

The Effect of Educational Intervention based on Social Support Theory on Improvement of Hemodialysis Patients' Quality of Life

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ABSTRACT

Chronic kidney failure is a progressive and irreversible degeneration of renal function that affects the quality of life of patients. Social support as a coping mechanism can help promote health and improve the quality of life of a person. The purpose of this study was to determine the effect of educational intervention based on social support theory on the improvement of hemodialysis patients' QOL.

This is a controlled quasi-experimental conducted in 2015 in Sari and with the participation of 100 hemodialysis patients that were randomly assigned to 2 groups. Prior to education, the patients were evaluated with demographic form, quality of life (WHOQOL-BREF) and social support (MOS-SSS) questionnaires. Then, an educational program was developed based on social support theory and implemented for the intervention group. The two groups were re-evaluated with the same questionnaires after 1 and 3 months and the data were analyzed in SPSS.

In the intervention group compared to the control group, the mean scores of quality of life and social support increased significantly after the intervention ($p < 0.001$). There was a significant relationship between quality of life with education and income, and likewise between social support and income ($p < 0.05$). There was no significant relationship between social support with education, age, gender, marital status, and duration of dialysis, or between QOL with age, gender, marital status, and duration of dialysis.

Educational intervention based on social support theory is effective in the improvement of hemodialysis patients' quality of life. Accordingly, patients' nursing care and education in terms of social support and its dimensions should be high on the agenda.

Keywords: Quality of Life, Social Support, Educational Intervention, Hemodialysis Patients.

ABBREVIATIONS

QOL: Quality of Life

SD: Standard Deviation

INTRODUCTION

Chronic kidney failure is one of the major health problems increasing worldwide and it is associated with high risks of morbidity and mortality [1, 2]. According to the global burden of disease study, chronic kidney failure subsequent to AIDS is ranked 2nd in the list of causes of deaths [3]. At the end of 2016, the number of patients with chronic kidney failure has been estimated to be about 3730000 throughout the world, of which 2648000 individuals have been treated with hemodialysis. The highest incidence of chronic kidney failure is in Taiwan with 3500 people in a million, and the global average is 510 in a million. This ratio in Iran is 680 people in a million and it is above the global average [4]. People with chronic kidney failure will have reached 1200 people

per million by 2020 [5]. At the end of 2016, there were 57800 patients with chronic kidney failure in Iran, of which 29200 were hemodialysis patients. Tehran province with more than 500 hemodialysis patients was ranked the highest among the provinces of the country. The incidence of chronic kidney failure in Iran at the end of 2016 ranged from 225 to more than 450 people in a million and the average incidence in all provinces was 365 people in a million [4].

Hemodialysis is the most common method for treating chronic kidney failure; although it increases the patient's life, it causes several problems [6]. Hemodialysis and kidney cause the reduction of the effectiveness and ability in doing activities, weakness, fatigue, social isolation, immobility, family problems, and reduced confidence and hopelessness about the

future [7, 8]. Various studies have shown that chronic kidney failure can cause changes in a person's lifestyle, health status, and role; and because of the physical, social and economic disorders, it changes the patient's appraisal of his health status and quality of life [9-11]. Quality of life, which includes physical, psychosocial, and social welfare, is the individuals' perception of their current status of life with regard to the cultural context and value systems of the society they live, and with regard to their goals, expectations and interests [12, 13]. In fact, patients undergoing hemodialysis compare to other normal people and even patients with other chronic diseases have a lower quality of life [14, 15]. The multiple problems in the course of treatment and the long-term dependence of the patients on hemodialysis reveal the necessity of paying attention to the quality of life of these patients [7].

In recent years, researchers have focused on psychosocial factors that may affect the disease and the patient's quality of life [16]. Social support is a coping mechanism that affects the quality of life [17] and is defined as a mental sensation about affiliation, belonging, attachment and support in urgent circumstances [18]. Social support can be emotional support (e.g. to show affection and to love the patient, to create a sense of belonging and to respect him), informational support (provision of information to people at the incidence of physical and mental strains), and an instrumental support (provision of money or service) [19]. Given the long term treatment process and the many problems that the patients face, the family members and friends lose their attention on them over time, whilst, having chronic kidney failure and the changes that occur in patients' life because of the hemodialysis increase their dependence on others, and as a result, reduce their self-esteem and cause the feeling of loneliness and thus they need more support from others [11].

Evidence suggests that social support plays an important role in the maintenance of people's health and the reduction of negative effects imposed by environmental and social stresses and, consequently, it has a direct impact on quality of life. The people who enjoy high social support can better adapt to life events [20, 21]. In research by Plantinga *et al.*, favourable social support improved the quality of life and life satisfaction, and reduced hospitalization time of the hemodialysis patients [22]. Moreover, a study by Szeto *et al.* showed that social support as an independent factor is effective in the survival rates of patients undergoing hemodialysis [23].

Considering the importance of social support and the need to improve the quality of life in hemodialysis patients, this study aimed to determine the effect of educational intervention based on the social support

theory on the improvement of the hemodialysis patients' quality of life in Sari. The results of this study are useful in planning interventions for the promotion of social support and improvement of the quality of life of these patients.

MATERIALS AND METHODS

This is controlled quasi-experimental research that was done as a single-blind study and the patients in two groups of intervention and control had no contact with each other and they were not informed whether they are placed in an intervention or non-interventional group. The study community consisted of all patients with chronic kidney failure at the end-stage who attended Fatemeh-Zahra Hospital in Sari. The inclusion criteria included the patient's willingness to participate in the study, undergoing hemodialysis for at least two or three times a week, age over 18, the passage of at least three months since the onset of hemodialysis, the consciousness, and the ability to make interactions. Exclusion criteria included volunteers to be transplanted, transmission to other centres or death of the patient. The sample size is determined through the mean and standard deviation of QOL and social support in the study of Rambod *et al.* [24]. Hence, the sample size for each group was 46 individuals, though, with a prediction of 10% sample attrition in each group, 50 people were estimated. The sampling method was simple randomization. The names of patients that met the inclusion criteria were numbered based on odd and even visitations and listed. Then, 100 patients were randomly selected from morning, evening and night shifts and based on odd and even visitations split up into two groups of intervention and control.

The data gathering tool included two questionnaires; a standard QOL (WHOQOL-BREF) questionnaire that includes 4 domains of physical health (7 questions), mental health (6 questions), social health (3 questions) and environmental health (8 questions). The questionnaire also has two other questions that do not belong to any of the domains and assess the health status and quality of life in general, and in total it consists of 26 questions. The scores of questions are from 1 to 5. Due to the number of items in each domain, the scores are computed differently. And for each item, the average score of all items is multiplied by 4. Therefore, the minimum and maximum scores in each domain fall between 4 and 20. A score of 4 is the worst and 20 is the best status. In this study, the criterion is QOL total score (100 points). The validity and reliability of this tool are confirmed in Tavakkoli and Dehghan study [25].

A standard social support survey was developed by Sherbourne and Stewart (MOS-SSS) and measures the amount of social support received by the subject. The

survey has 19 items and 5 subscales: tangible support (instrumental) that measures physical and behavioural support (4 questions); emotional support that assesses positive emotions, empathy and encouragement for expressing feelings (4 questions); informational support that measures the provision of guidelines, information or feedback (4 questions); kindness that measures the expression of love and affection (3 questions); positive social interaction that evaluates the recreational activities (3 questions); and the last question is designed as an extra item. This scale is a self-reporting instrument, and the subject expresses his degree of consent or dissent through a 5-point Likert Scale (never: 1 point, rarely: 2 points, sometimes: 3 points, very often: 4 points, always: 5 points). The minimum and maximum score are 19 and 95 respectively. To obtain the total score, all scores are added. The subject's high score on this scale indicates that the subject has favourable social support. The reliability of the survey was analyzed using Cronbach's alpha test and reported in the range of 0.74 to 0.93 [26]. Tamannaefar and Mansourinik confirmed the content and face validity of the instrument from the perspectives of psychology experts, and using Cronbach's alpha test reported its reliability as 0.97 [27]. In this study, the criterion for categorizing the social support score was considered as mean \pm standard deviation.

The implementation process was as follows that after obtaining approval from the Ethics Committee of Iran University of Medical Sciences and then providing coordination with the authorities of Fatemeh Al-Zahra Hospital in Sari in Autumn 2015, and attending to the hemodialysis department of the same hospital and reviewing the list of patients in the department, the patients that met inclusion criteria were identified. The patients that met inclusion criteria were provided with the necessary information and after receiving participants' informed consent the study was conducted. Initially, the subjects' demographic data were recorded and the questionnaires were completed in both groups and collected. Then, based on the preliminary results through the analysis of data obtained from the completed questionnaires, a test for the educational program was designed and conducted only for the intervention group. This program included 5 training sessions of 45 minutes that were held in groups of 10 people using short lecture, group discussion, question and answer, consultation and the use of educational materials including a booklet. Meanwhile, 3 sessions were also held for families as

the main sources of social support. In educational sessions, the concept of QOL and social support; the effect of social support on QOL improvement; dimensions of social support (informational support, instrumental support, emotional support, kindness and social interaction); social support resources (family, relatives, neighbours, healthcare providers and support groups); and factors affecting the social support (age, gender, marital status, educational level, economic status, occupation, ability to perform daily activities, duration of the disease, depression) were discussed. The questionnaires were completed again 1 and 3 months after the intervention.

The data obtained from the two groups were entered into SPSS 21 and after the normality test, were analyzed and compared by means of descriptive indexes (mean, standard deviation, number, and percent) and analytical tests (independent t-test, paired t-test, ANOVA, Pearson correlation coefficient).

RESULTS

among 100 patients participated in this study, 63 were men and 37 were women. 26 people were illiterate, 34 had primary education, 16 had secondary education, 10 had a diploma, and 14 had upper diploma education. 7 people were single, 76 were married, 1 was divorced and 16 were widows. 23 people incomes were less than 500 dollars, 18 people with 500-850 dollars, and 59 people with more than 850 dollars. The minimum and maximum dialysis times were 1 year and 20 years. The mean of dialysis duration was 3.29 with a standard deviation of 3.35. The age ranges of participants were 28 to 93. The mean age of the subjects was 59.66 with a standard deviation of 13.12. The lowest and highest scores obtained for social support were 27 and 90. The mean score of the subjects' social support was 69.37 with a standard deviation of 11.52. The lowest score in the study for QOL was 30.31 and the highest score was 79.29. The mean score of the subjects' QOL was 60.32 with a standard deviation of 10.11.

There was no significant difference between the intervention and control group regarding the mean scores of QOL before the educational intervention. 1 and 3 months after the intervention, however, based on independent t-test, the mean scores of QOL in the intervention group increased significantly in comparison to the control group ($p < 0.001$) (Table 1, Fig.3 and 4).

Table 1: The Mean Scores of Social Support in the Two Groups during the Measurement Periods

| variable | Before intervention | After 1 month | After 3 months | p-value |
|--------------------|---------------------|-------------------|-------------------|---------|
| | SD \pm mean | SD \pm mean | SD \pm mean | |
| Social support | 12.48 \pm 69.86 | 12.64 \pm 75.23 | 11.24 \pm 78.13 | <0.001 |
| Intervention group | 10.35 \pm 70.78 | 9.9 \pm 71.23 | 10.99 \pm 71.23 | 0.655 |
| Control group | | | | |

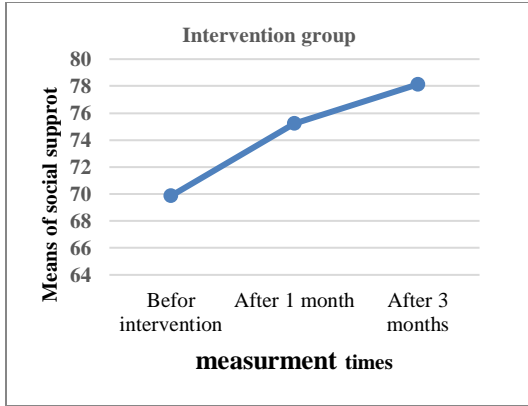


Fig. 1: The Mean Score of Social Support in the Intervention Group during the Measurement Period based on repeated measurement test

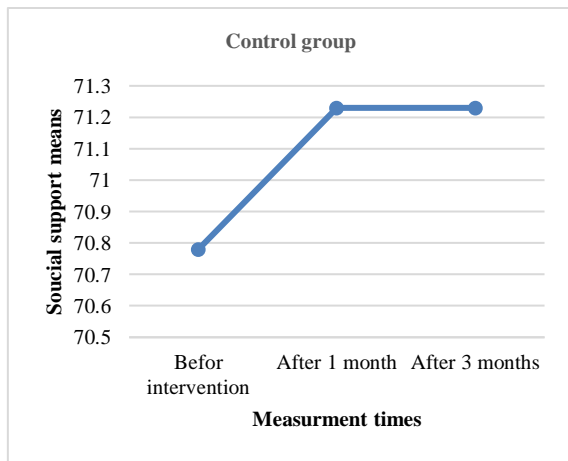


Fig. 2: The Mean Score of Social Support in the control group during the Measurement Period based on repeated measurement test

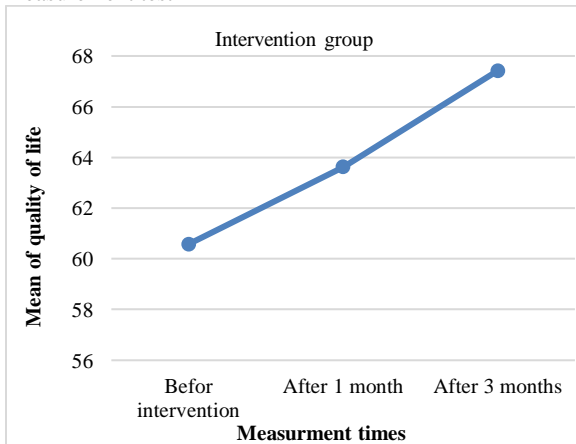


Fig. 3: The Mean Score of quality of life in the Intervention Group during the Measurement Period based on repeated measurement test

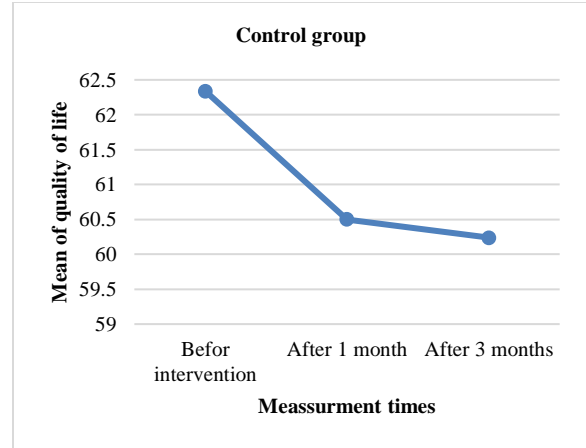


Fig. 4: The Mean Score of quality of life in the Control Group during the Measurement Period based on repeated measurement test

The results of ANOVA test showed that the mean scores of social supports are significantly different between the study groups ($p=0.002$). Paired comparison analysis using Tukey’s post-hoc test showed that the mean score of the social support for people with an income of less than 500 dollars is more in comparison to people with an income of over 850 dollars ($p<0.001$), and other comparisons were not significant at the 0.05 level. (Table 2).

Results of ANOVA test showed that the mean scores of QOL are significantly different between the study groups ($p=0.012$). The results of Tukey’s post-hoc test showed that the mean score of QOL for illiterate people was more in comparison to the group with primary educations ($p=0.013$), but other paired comparisons were not significant at the 0.05 level. (Table 2).

The results of ANOVA test showed that the mean scores of QOL are significantly different between the study groups. The results of the Tukey’s test showed that the mean score of quality of life for people with an income less than 500 dollars was more in comparison to people with an income higher than 850 dollars ($p<0.001$), and other paired comparisons were not significant at the 0.05 level. (Table 2).

There was no significant relationship between social support with education, marital status, gender, age, and years of dialysis. Moreover, there was no significant relationship between quality of life with marital status, gender, age, and years of dialysis.

Table 2: Comparison of the Mean Scores of the Social Support and Quality of life regarding the Level of Income and Education after the Intervention

| variables | | groups | SD ± mean | p-value |
|-----------------|-----------------|------------|-------------|---------|
| Social Support | Income (dollar) | <500 | 65.85±12.49 | 0.002 |
| | | 500 to 850 | 72.85±11.68 | |
| | | >850 | 76.05±9.89 | |
| Quality of life | Education | illiterate | 55.74±10.73 | 0.012 |
| | | primary | 64.5±9.64 | |
| | | secondary | 63.72±8.62 | |
| | | Diploma | 63.84±13.9 | |
| | Upper Diploma | 62.13±8.28 | | |
| | Income (dollar) | <500 | 2.97±57.9 | 0.026 |
| | | 500 to 850 | 8.72±58.89 | |
| >850 | | 9.45±64.36 | | |

DISCUSSION

In the present study, the mean of QOL in hemodialysis patients was 60.32. In the research by Baraz *et al.*[28], the mean of QOL in hemodialysis patients was 51.5; in the research by Fujisawa *et al.*[29], it was 68.3; in the study of Levendoğlu *et al.*[30], it was 65, and in the research by Vázquez *et al.*[31], it was 65. This indicates that despite the relative improvement, hemodialysis patients' QOL is still below the global level in our country. The fact may be the result of dialysis problems and the difficulties of gaining access to it by the patients and of their inability in self-care, thus it is necessary to cast special attention to this issue in the planning process. On the other hand, the mean of social support for hemodialysis patients in our research was 69.37. In the research by Farahani *et al.*[32], the mean of total social support was 127.97 and in the study by Haririan *et al.* [33], it was 69.65. Before the educational intervention, there was no significant difference between the intervention and control groups regarding the mean scores of social support, but 1 and 3 months after the intervention, the increase in the mean score of social support in the intervention group was statistically significant ($p<0.001$), which is consistent with the study by Patel *et al.*[34]. However, the mechanisms used by social support are unknown, but practical help is important in achieving that. That is to provide better access to health care, improves social psychosocial status, nutrition status, safety performance, and reduces stress. Patel also showed that social support can be provided by family, friends, co-workers, counsellors, medical staff, social members or neighbours to patients and this manner can also have a significant effect.

Regarding QOL, there was no significant difference between the intervention and control groups with respect to the mean score of QOL, but 1 and 3 months after the intervention, the results of QOL showed a significant difference ($p<0.001$), that was consistent with the study by Baraz *et al.*[28]; Salar *et al.*[35]; Soltani Nejad *et al.*[36]; Salehi *et al.*[37]; Dehghani

[38] and Cukor *et al.* [39] all showed that health-related quality of life (HRQOL) in dialysis patients has improved after educational interventions. Moreover, Fatehi *et al.* [40] showed that the education of coping strategies has a positive effect on hemodialysis patients QOL. Appropriate interventions for the improvement of the health-related quality of life can have a great impact on the patient's status. Besides, video tutorials are recommended since they are effective, inexpensive, simple and interesting for hemodialysis patients. In their study, Shahgholian *et al.* [41] also found that training chronic patients and providing appropriate therapeutic and educational methods could be effective in improvement of QOL. In their view, physical activity effectively improves the quality of life, and the provision of educational classes in hemodialysis patients' rehabilitation programs can have a positive effect on the quality of life. Comparison of the findings of the researches mentioned above with the present research shows education helps to increase social support and, consequently, to improve the hemodialysis patients QOL.

In this study after the intervention, there was a significant statistical relationship between the mean score of social support and the income level ($p=0.002$), which was consistent with the study by Rambod and Rafiei [24] and the study by Rambod *et al.*[42]; they showed that there is a significant correlation between perceived social support and economic status. It seems that the economic factor is a determining factor in many health issues, including social support. People with a better economic status have a better interaction with the society and, consequently, a better economic status is a strong support when individuals encounter stressful events. In the present study, the mean score of QOL in terms of income was also significantly different after the intervention ($p=0.026$), which is consistent with the research by Nemadi and Movahdpoor [43] and Suet-Ching [44]. These findings indicate that income is a determinant in patients' QOL. People with better economic status can meet their needs and as a result, they have better life satisfaction.

After the intervention, there was a significant statistical relationship between the quality of life and level of education. In other studies, there is a relationship between the hemodialysis patients' level of education and the quality of life [40, 43, 45]. This suggests that as the patients' level of education and literacy increase, their quality of life also improves; therefore, in planning and policymaking in this regard, the increment of patients' literacy and awareness should be considered.

In our study, there was no statistical relationship between social support and education, which was not consistent with the study of Rambod *et al* [42] that showed there was a relationship between perceived social support and education. There was no significant difference between age and social support; and between age and QOL. These results were not consistent with the findings of Namdar *et al* [46] that showed there was a significant relationship between QOL and age. In our study, there was no significant difference between social support and marital status. In Rambod and Rafiei [24], and Rambod and Rafiei [42] studies, however, there was a significant relationship between perceived social support and marital status. Besides, there was no relationship between QOL and marital status. These results were consistent with the study of Ghahfarokhi Javanbakhtian and Abbaszadeh[45]; however, they were not consistent with findings by Namdar *et al* [46] that showed there was a significant relationship between QOL and marital status. The reason for this discrepancy can be related to the different types and sample numbers of the two studies. Another result of the study was that the mean scores of social support before ($p=0.247$) and after ($p=0.419$) the intervention had no significant differences regarding the gender, which was not consistent with the results by Rambod and Rafiei *et al*. [24] and Mousavi Sardashti *et al*. [47] that showed women had less satisfaction with quality of life and lower emotional support than men. In addition, the mean score of QOL regarding different gender was not statistically significant. This result was not consistent with the findings by Namdar *et al*. [46] and Ghahfarokhi Javanbakhtian and Abbaszadeh [45] showed there was a significant relationship between QOL and marital status. The study by Baioumi *et al* [48] also showed that the male gender is a negative predictor of QOL. In general, gender affects QOL and Social support; as women are vulnerable to external events due to physiological and mental conditions and these incidents will have a greater impact on the different aspects of their lives. For this reason, it is expected that these women have lower QOL; however, since the sample size was small in our study, this relationship was not observed. Our study did not show a definite relationship between social support and the

duration of dialysis. In Rambod *et al* [42] study, the duration of dialysis with perceived social support was not significant; however, Untas *et al*. in their study showed that the dialysis patients that have limited social activities due to the disease and have no effective social support have more mortality rate. On the other hand, reduced social support has increased the duration of dialysis and weight gain at the interval of dialysis sessions [49]. The reason for this difference may be due to the sample size and different measurement instrument; the study by Untas *et al*. was conducted in 12 countries, but our study was conducted in 1 city and on 100 patients. In the present study, there was no statistically significant relationship between QOL and dialysis duration. In the studies by Namadi and Movahdpoor[43], and Ghahfarokhi Javanbakhtian and Abbaszadeh [45], there was no significant relationship between the duration of the disease and QOL, while in the research by Taghizadeh Afshari *et al*. [50], the relationship between these two variables was significant. In general, the reason that there was no relationship between the variables age, gender, marital status and duration of dialysis with two main variables, namely, social support and quality of life, can be attributed to the setting, different sample size and instrument, and cultural and social differences.

In the absence of the authorities of the hospital-keeping correspondence and holding administrative meetings to encourage cooperation and to provide justification for the plan; and the lack of cooperation of some of the patients and their relatives- some coordination was provided with the doctors in order to justify them to conduct this research. Among the limitations of this research were the lack of relevant Iranian studies and the use of Latin papers and resources.

CONCLUSION

The results of this study indicate the effect of social support theory on the mean score of patients' QOL. Given that, nursing care and education for patients in terms of social support and its dimensions should be at the top of the objectives. This study can help the authorities to take a reasonable and wise step in planning care management programs for dialysis patients to improve their QOL.

ETHICAL ISSUE

Ethical issues have been completely considered by the authors. The project has a code of ethics (IR.IUMS.REC 1394.94-04-27-27105) from the Medical Ethics Committee of this University and the registration code (IRCT2015122615650N6) from the Iranian Registry of Clinical Trials.

CONFLICT OF INTERESTS

The authors have declared that there are no conflicts of interest

AUTHORS CONTRIBUTIONS

All authors equally participated in drafting, revising and approving of the manuscript.

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