# The impact of telenursing consultation by using the social networks to promote the self- efficacy and weight control in patients treating with hemodialysis

**Marzieh Sadat Hosseini[1] and Marzieh ZiaeiRad[2]\***

[1]*MSc student of Nursing Education, Nursing and Midwifery Faculty, Isfahan (khorasgan)
Branch, Islamic Azad University, Isfahan, Iran*
[2]*MSc nursing, phd student, Faculty member, Department of nursing, faculty of nursing and
midwifery, Isfahan (khorasgan) Branch, Islamic Azad University, Isfahan, Iran*
*\*CorrespondingEmail:Mziaeirad@gmail.com*

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## ABSTRACT

*Hemodialysis as the most common renal replacement therapy alone cannot ensure the health and survival of the patient's life and along with it, training and consulting about self-care and adherence is one of the fundamental pillars of treatment. This study was conducted to determine the impact of telenursing consultation by using networks to promote the self-efficacy and weight control in patients treating with hemodialysis. This study was a clinical trial for two groups and had a pre-test and two post-test. 52 patients under treatment by hemodialysis were divided randomly into two groups of experimental and control groups. The experimental group received consultations by using the telegram software and the control group received usual nursing care for a month. The data were collected by the weight control of the patients before and after the sessions of hemodialysis and general self-efficacy questionnaire and were analyzed by SPSS software version 20, and using descriptive statistics and analytical tests. The two groups did not have a significant statistically differences in demographic variables. The average rates of the self-efficacy after intervention in the experimental group was significantly more than the control group and also the average overweight after the intervention was significantly lower. telenursing consultation by using the social networks is effective on the improvement of self-efficacy and weight control in patients treating with hemodialysis and due to the shortage of nurses and their high volume of work it can be used as a new way for training.*

**Keywords:** Telenursing, Social network, Self-efficacy, Hemodialysis
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## INTRODUCTION

On the verge of the 21st century the most prominent incident that the communities and the health team members are faced is the increasing prevalence of chronic diseases. One of the diseases that have considerable stress for patients, and needs long-term follow-up and treatment is the chronic renal insufficiency [1]. Chronic renal insufficiency is a term used to describe renal damage by reducing glomerular filtration rate for 3 months or more that without the treatment, it can lead to the end-stage of the renal disease in which the body's ability to maintain the fluid and electrolyte balance is destroyed and leads to uremia and azotemia and requires renal replacement therapies [2] including hemodialysis, Peritoneal Dialysis and kidney transplant [3]. Millions of people annually suffer from this disease and a lot of financial costs are spent for this disease in the health and hygiene system so that the high incidence of 1000 cases per million in population in developed countries is predicted [4]. Statistics in the United States show that by 2010 the number of patients who needed dialysis treatment has reached to 660,000 people [5, 6]. In Iran the available statistics also show the growth of this disease [10]. So that the growth rate of this disease is higher than the average global growth and is about 12% per year. The incidence and prevalence rate of ESRD disease in 2000 in Iran was respectively 238 and 9/49 in million, while in 2006 the prevalence and incidence rate of this disease reached respectively to 357 and 8/63 in million [12]. All patients under treatment with hemodialysis across Iran were approximately 8500 people in 2002 and around 11.250 people in 2003 and this

figure has reached to18,000 people in 2007[11]. Also, according to the statistics of the department of treatment in Isfahan, in 2011, 1,400 patients were treating with hemodialysis in this province [3]. Hemodialysis can cause numerous complications for patients. One of the most common side-effect is fluid retention that is resulting from the nonconformity of dietary recommendations and fluid limitations and lack of adequate and effective dialysis and can lead to edema, shortness of breath and high blood pressure. The patients are usually weighed before and after each hemodialysis and the weight of pre-hemodialysis of the patient is compared with his weight after hemodialysis in the previous session and the patient's ideal dry weight. The dry weight is the ideal weight of the patients after hemodialysis without any increase or decrease of fluid in the body. If the weight of the patient remains more than the dry weight; at the end of the hemodialysis the symptoms of fluid load increase occurs such as edema throughout the body, Inflammation and pulmonary edema. The patient is allowed to have up to 0.5-1 kg Overweight between dialysis sessions [13]. Problems caused by hemodialysis can cause dramatic changes in the life of these patients. So treatment of hemodialysis patients without their participation and without doing some self-care activities cannot be effective enough, therefore, the increase in self-efficacy can increase the adherence to treatment regimen and from this way reduces the patient's physical and psychological symptoms [7]. Bandura (1997) defines the self-efficacy as a person's conviction that can do satisfactorily a particular and necessary behavior to achieve to a desired result [8]. Self-efficacy is directly associated with healthy behaviors and indirectly impacts on healthy behaviors in order to achieve the goals [9].

In long-term the hemodialysis cannot lonely provide the health and survival of the patient's life, therefore, with the hemodialysis, following a diet, fluid restriction and medication regimen are the fundamental pillars of the treatment of renal insufficiency that all of them requires an accurate and complete training. Patient education is one of the most important roles of the nurses [3]. The development of communications technology allows to the patients with chronic diseases to receive a new type of communication, care and training and increases the interaction between patients and their caregivers. This patient-centered improves the self-care in patients [14]. One of the standard programs that can be named for Continuous and regular training is telephone interventions and Internet connections by trained nurses [15].

American Nurses Association has defined the Tele-nursing under the branch of the remote health [16]. Remote nursing or Tele-nursing means to provide nursing services through the use of communications technologies such as phones, computers, remote monitoring tools and the Internet [17]. Using this technology leads to rapid access for the better services,Cost reduction and easy access to the most appropriate specialized skills and an all-round increase in the quality of the provision of health services to patients [18]. Also Tele-nursing provides training and remote consultation for patients and creates the submission conditions of the training programs by email for patients and relatives of the patients [19]. With the advent of social networks in online spaces and meeting of its users to exchange information with each other, new possibilities provided for training. Currently social networks have become one of the most important means of communication in the society and the world [20]. Due to the widespread benefits of social networks in teaching and learning, these networks can be used as a method of communication and education in the health system to facilitate the educational process of the patients, Considering the importance of Tele-nursing and potential of this technology in promoting access to hygienic facilities regardless of the time and space limitation and also due to the chronic nature of the hemodialysis and the important role of nurses in patient training and that in Iran has not been done a study based on Tele-nursing education through social networks in patients under treatment with hemodialysis, so this study was conducted to determine the impact of telenursing consultation by using networks to promote the self-efficacy and weight control in patients treating with hemodialysis.

## MATERIALS AND METHODS

This study is a clinical trial for the two groups and has been done in three stages: before, immediately after and one month after the intervention and the impact of the independent variable of the remote nursing consultation was studied on tow dependent variables of self-efficacy and weight control in patients treating with hemodialysis. The research location is the hemodialysis department of Nour and Ali-Asghar hospitals in Isfahan this department has 20 active beds and 120 patients who are treating with hemodialysis and these patients refer to this department on average 12 hours per week for hemodialysis. Among all patients undergoing the treatment of hemodialysis in Nour and Ali-Asghar Medical Center, using convenience sampling, 52 samples were selected which had Inclusion criteria for the study. Then the samples were divided randomly to two groups of experimental and control such that the experimental group received nursing consultations by using the telegram software for a month and the control group received usual nursing care. The inclusion criteria were as follows: Lack of known mental illness, Full consciousness, Ability to read and write and the acceptable ability of listening and speaking to answer the questions, The possibility and ability to use the media like internet and Android phones by the patient or a family

member of the patient, Willingness to participate in research, Passing at least 3 months after the first turn of hemodialysis, Conducting hemodialysis regularly (2 to 3 times a week) and ranging in age from 18 to 65 years.

The data collection tools in this study included: Check list of weight control, Demographic and clinical questionnaire and the self-efficacy questionnaire of Shereretal(1982).

Demographic and clinical questionnaire includes information suchas Gender, Age, the education, marital status and supervision of the family, Occupation, The underlying diseases, the duration of hemodialysis and the number of hemodialysis sessions per week. For formal validation, the questionnaire was checked by 10 qualified experts and was used after getting their ideas about them.

The self-efficacy questionnaire of Sherer has 17 Articles which has five options that for each article according to Likert scale, one to five points are awarded and is classified at three levels: low, medium, and fine [21]. Sherer reported the Cronbach's alpha coefficient of the general self-efficacy equal to 0.76 [22]. Barati (1997) in order to evaluate the reliability of Self-Efficacy Scale used the two halves method. The test validity coefficient through the method of Spearman – Brown with equal and unequal length and also with Guttman split-half method obtained 0.76 [23]. In the first meeting the purpose of the study was explained by researchers to patients and after obtaining the written informed consent, the demographic questionnaire completed by using the patients file and questioning of patients. Their Weight was measured before and after the sixth session of hemodialysis in both groups and the self-efficacy questionnaire was filled by them. Then the research samples randomly divided into two groups with 26 people for the experimental and the control group. Then by forming a group on social software of telegram, all participants were added to this group and samples were placed in care of hemodialysis patients and adherence to treatment regimen in the form of Tele-nursing for a month and nursing consultation was carried out in the form of asking questions and getting answers and discussion according to the educational needs and patient inquiries. Training materials included: The nature and causes of chronic renal insufficiency, Hemodialysis mechanism and its benefits, the function of hemodialysis machine, diet and limitations, diet and Medicinal complications, Side effects after hemodialysis and ways to prevent it, fluid restriction, activity rate, taking care from vascular access site, Fluid restriction and usage limits and the presentation time of training materials for patients in group was three days a week from 8 am to 8 pm and the consulting and Q&A duration was three hours (agreed with the patient) daily for a month. The control group received all the usual nursing trainings during this month. Immediately after the intervention the self-efficacy questionnaire was completed by both groups and the weight of patients were recorded before and after the sixth session of hemodialysis. In pursuit of a month after the end of the intervention, again self-efficacy questionnaire was completed by both the control and the experimental groups and their weight were recorded before and after the sixth session of hemodialysis. At the end of the research process, an instructional booklet containing training materials that were presented in social network group was given to both the experimental and control groups. During the intervention, two people from the experimental group, one due to the immigration and the other due to the sudden death were excluded from the study.

In this study, all moral criteria based on ethical codes were observed such as: obtaining written informed consent, explaining the purpose of research, ensuring from the confidentiality of information and the study was approved by the Ethics Committee of the Isfahan University of Medical Sciences. The data were analyzed by descriptive (Frequency table, mean and standard deviation) and analytical (Analysis of variance with repeated measures $3 \times 2$) statistics in SPSS software version 20. The level of significance for results was considered less than 0.0.

## RESULTS

This study was conducted in three stages on 52 patients treated with hemodialysis that were divided in to two groups of the control and the experimental. Based on the results of statistical tests, there was no significant statistically difference between the experimental and control groups in terms of clinical and demographic characteristics $P > 0.05$ and the two groups were statistically similar in the cases cited.

Based on the results, there was no significant difference among the average related to the scores of self-efficacy in the control group before, after and one month after intervention ($P > 0.05$), but in the experimental group after the intervention, the average of scores was significantly higher than the average of their scores before the intervention ($P < 0.05$). But there was no significant difference between the average related to the self-efficacy scores after intervention and one month after intervention ($P > 0.05$). Also the average of scores related to patients, one month after the intervention was significantly higher than the average of their scores before the intervention ($P < 0.05$).

Based on the statistical results, in the control group, there was no significant difference between the average of overweight before and after, and one month after the intervention ($P > 0.05$), but in the experimental group, the

average of overweight for patients after the intervention was significantly less than the average of their scores before the intervention (P<0.05), and the average of overweight for patients after the intervention was significantly less than the average of overweight in a month after the intervention in to the experimental group (P<0.05). One month after the intervention, the average of overweight was significantly less than their average of overweight before the intervention in to the experimental group (P<0.05).

**Table 1.The average related to score of self-efficacy for research units before, immediately after and one month after the intervention in to two groups of experiment and control**

| Group Time | The control | | The experiment | |
|---|---|---|---|---|
| | The average | Standard deviation | The average | Standard deviation |
| Before intervention | 56.54 | 7.27 | 58.04 | 8.65 |
| The end of intervention | 56.96 | 7.57 | 63.58 | 10.77 |
| One month later | 55.62 | 7.79 | 62.50 | 10.16 |

**Table 2.The average of weight variations of the research units before, immediately after and one month after the intervention in two groups of experiment and control**

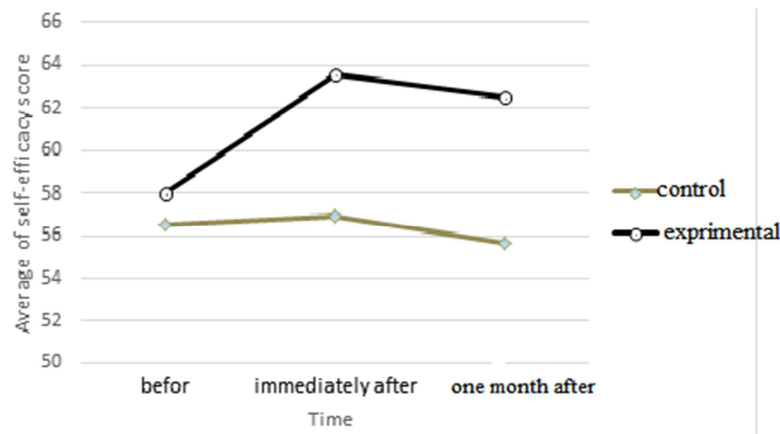| Group Time | The control | | The experiment | |
|---|---|---|---|---|
| | The average | Standard deviation | The average | Standard deviation |
| Before intervention | 2.59 | 0.45 | 2.53 | 0.64 |
| The end of intervention | 2.63 | 0.43 | 2.28 | 0.55 |
| One month later | 2.61 | 0.44 | 2.46 | 0.60 |



**Figure 1. The average related to score of self-efficacy for research units before, immediately after and one month after the intervention in to two groups of experimental and control**



**Figure 2. The average of overweight related to the research units before, after and one month after the intervention in to two groups of experimental and control**

**DISCUSSION**

Using random allocation Based on the results of statistical tests, there was no significant statistically difference between the experimental and the control groups in terms of gender, age, the education, marital status and

supervision of the family, occupation, the underlying diseases, the duration of hemodialysis and the number of hemodialysis sessions per week (P>0.05) and the two groups were statistically similar in the cases cited. It must be noted that such an outcome was expected because of the random allocation of the samples in the experimental and the control groups and the two groups are matched in terms of demographic data.

The results of this study showed that the average of the self-efficacy scores before, after and one month after the intervention in to the control group have no significant difference with each other (P>0.05). Such a logical conclusion is expected because the control group did not receive any training, during the intervention. In this regard, the results of Azizi Finney et al (2011) study on patients under treatment of bone marrow transplantation revealed that the average of self-efficacy scores had no significant difference with each other before and after the intervention in the control group (P>0.05), due to lack of training on health promotion by the samples of the control group [24].

Analyzing the results of this study showed that the average of the self-efficacy scores had no significant difference between the two groups of the experimental and the control before the intervention (P>0.05), which represents that the experimental and the control groups were the same before the intervention. This was expected because of of the samples and non-interference. KavehSavadkuh et al (2012) study with the title: effects of the self-management program in improving the level of self-efficacy in patients with primary hypertension, states that the results of independent T- test that was used to compare the two groups before the intervention, shows that the two groups of the experimental and the control are homogeneous in terms of self-efficacy amount before the intervention (P=0.1) that also confirms the results of this study [25].

Analysis of the data showed that the average of the self- efficacy scores has increased immediately after and one month after the intervention which indicates that the nursing consultation using the social networks was effective in the enhancement of the self-efficacy in the research units. In similar studies, Habib Zadehet al., (2011) investigated the effect of Orem Care Model on the self-efficacy of the patients under treatment with hemodialysis in teaching hospitals affiliated with the Orumieh University of Medical Sciences in 2010 that after the self-care education, the average of the self-efficacy level was increased, but this increase was not statistically significant (P=0.418) [26]. The increase of the self-efficacy level after the intervention is consistent with our results.

In another study, Hosseini et al. (2015)Showed that the Web-based teaching methods has been effective in the enhancement of the academic achievement and self-efficacy [27]. Tissay and Chiyo in a study that examined the web-based training determined that the web-based training increases the self-efficacy of the learners [28]. Poudaret al., in a research on Web-based educational interventions concluded that education and intervention through the web increases the self-efficacy [29]. Web-based training as well as training and consulting through the social networks is one of the new methods for patient training which the results of other studies, confirms the results of this study. On the other hand, some of the results of the studies were inconsistent with our results. For example, the results of Elzenet al., (2007) intervention, which is in the field of: the effect of self-management program on self-efficacy and health status in elderly patients with chronic diseases in the Netherlands, showed that the intervention has increased in the average of the total self-efficacy and its subscales in the group, but, this increase was not in such a way that could create significant differences in the three weeks before and after the meetings (P<0.05) [30]. It seems that the old age of the patients and different conditions of their disease from one hand and lack of following up by the researcher has prevented from the significant effect of this intervention in to the patients which is inconsistent with the conditions of intervention in this study. In this study, the frequency distribution of the age related to the research units was from all ages of 18-65 years and the nature of the intervention in this study was in the form of consulting and training for patients in all age groups that naturally the consultation and training had different effects in patients with different age groups.

Also the results of this study showed that, the average of the self-efficacy scores immediately after and one month after the intervention had increased in the experimental group and there is no significant difference between the averages. These observations indicate that the enhancement of the self-efficacy related to research units has remained constant that is a reason for the stability of the effect of training and consultation through social networks. In the explanation of this finding, it can be said that after the intervention, training materials and text of the questions and the answers with patients can store and remain in the telegram software and mobile and is always available for patients and as soon as the patient feels the need to train or feels having questions or trouble, has referred to the Telegram software and has used the training materials and the continuation of the training materials has stabilized the effect of training and consulting on the research units.

Another finding of this study was associated with weight gain of the patients that in the experimental group the average of overweight for patients immediately after the intervention was significantly lower than the average of

their scores before the intervention (P<0.05) and the average of the overweight for patients immediately after the intervention was significantly less than the average of overweight In a month after the intervention in the experimental group (P<0.05). Also the average of the overweight, one month after the intervention was significantly less than their average of overweight before the intervention in the experimental group (P<0.05). In this case, Imani et al (2013) in a study with the title: Impact of face to face training on body weight and some serum parameters in patients under treatment with hemodialysis, that has shown the effect of diet on the overweight between two dialysis sessions, this finding is consistent with the results of present study [31].

The results of the Dorossiet al, (2004) study showed that training diet and limitation in fluid intake in hemodialysis patients can cause limitation in fluid intake and subsequent weight loss [32]. Researchers such as Barnett et al., (2008) showed in their study that weight of patients under treatment with hemodialysis has decreased significantly after training (P<0.05), and training is effective on removing the educational need and the control of the fluid intake [33].

According to the observation obtained, the average of overweight between two hemodialysis sessions in the control group has no significant difference before, immediately after and one month after the intervention, because of the lack of training or consultation, and the samples of the control group have received only routine trainings in hemodialysis that had no positive effect on weight control of the patients. In a study conducted by Imani et al, (2013), data analysis showed that the face to face training in the control group resulted to the overweight improvement between the sessions in these patients. While in this study, the average of overweight between sessions showed no significant change after the implementation of routine trainings [31]. It seems that the reason for this difference is due to the different educational approach in two studies. In Imani et al (2013) study, training program for the control group was performed in the form of face to face training during the three sessions of twenty minutes and a BS degree in nursing had taught the trainings to the patients after finishing the session of hemodialysis in the waiting room and a training booklet was provided to each patient. While in the present study, patients received routine trainings and training pamphlets by the nurses. These results indicate the non-effectiveness of the routine trainings.

Research findings of Shomalyet al, (2012) with the title: The effect of the training based on the educational needs on the weight change of the hemodialysis patients between dialysis sessions, shows that the average of the overweight has significantly decreased between hemodialysis sessions and fluid intake after the training (P>0.05) (3) which is consistent with our results.

## CONCLUSION

The results of this study as the first study which is done in this field in Iran, showed that the training and the consultation by the usage of the social networks through increasing the knowledge of patients under treatment with hemodialysis in self-care can increase the level of the self-efficacy which plays a key role in reducing the complications and the number of hospitalizations and the health care costs for these patients. The benefits of training based on the social networks are: Quick and easy access to the training content, Reading at the desired speed, No need to commute, Saving time and costs, and the use of new tools for training. In the explanation of the effectiveness of training through the social networks on the enhancement of the self-efficacy, it can be said that suffering from chronic renal insufficiency and long-term treatment of patients with hemodialysis, causes tiredness from the routine trainings of medical staff and the patient's inability for communication, but formation of a group and communication with other patients and quick access to nurses at any time and place without any limitation to express the problems, has provide an opportunity that patients can express their problems in new ways and can receive the useful trainings in order to solve the problems and through this the sense of trust and confidence in the relationship between nurses and patients may develop. This feeling of assurance that the nurses are always available increases the self-efficacy in the patient and expressing the problems in a group, between the people who have common features gives the person more sense of self-efficacy and the self-confidence in self-care.

Researches based on the effects of the distance learning using social networks on the improvement of the self-efficacy in patients treated with hemodialysis and the key role of the nurses in these trainings can teach nurses in this field and can provide the necessary facilities for this type of trainings. Uncontrolled limitations in this research are: Individual and different physiological responses of the people to the questionnaire and reduction of the accuracy of answering to the questions because there are too many questions in the questionnaire. According to the findings of this study, it is suggested that about the other chronic diseases such as diabetes, Cardiac and respiratory insufficiency, training programs through the Internet and the social networks must be designed and its effect on self-efficacy should be considered.

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