



The Effects of Comfort-Based Interventions (Back Massage and Patient and Family Education) on the Level of Comfort Among Hemodialysis Patients

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Abstract

Background: Providing patients with comfort is the basis of nursing care and a favorable outcome of nursing care measures. Comfort is of special importance to hemodialysis patients because they spend a large part of their lives in hemodialysis units and are constantly dealing with different physical and mental health problems. This study aimed to evaluate the effects of comfort-based interventions (back massage along with patient and family education) on the level of comfort among hemodialysis patients.

Methods: As a randomized controlled trial, this study was undertaken in 2016 in the hemodialysis unit of Shahid Chamran hospital, Ferdows, Iran. A convenience sample of forty hemodialysis patients was recruited. Patients were alternately allocated to control or intervention groups based on their hemodialysis days. The hospice comfort questionnaire was completed for all participants at the beginning and at the end of the study. This questionnaire showed that the comfort needs of patients were related to muscle cramps, headache, back pain, nausea, lack of knowledge about arteriovenous fistula care, dietary and treatment regimens, itching, rest and sleep disorders, and impaired comfort. Patients in the intervention group received massage as well as patient and family education in six consecutive hemodialysis sessions, while their counterparts in the control group solely received the routine care services of the study setting. The SPSS software (v. 18.0) was used for data analysis through running the paired- and the independent-sample t tests. The significance level was set at less than 0.05.

Results: The mean scores of comfort and its environmental and psychospiritual dimensions significantly increased in the intervention group ($P < 0.001$). Significant increases were also observed in the mean scores of comfort and its psychospiritual dimension in the control group ($P < 0.05$). Before the intervention, there were no significant differences between the groups respecting the mean values of comfort and its dimensions ($P > 0.05$). However, after the intervention, there were significant between-group differences in the mean scores of comfort and its environmental dimension as well as in the pretest-posttest mean difference for the environmental dimension of comfort.

Keywords: Comfort, Comfort-Based Interventions, Back Massage, Patient Education, Hemodialysis

1. Background

Hemodialysis is the most common treatment for chronic renal failure (1, 2). However, alongside with positive outcomes, it can cause different problems and complications (3, 4). Physical dysfunction, nutritional alterations, fluid restriction, pain, attention deficit, dependence, employment loss, financial strains, frequent hospitalizations, and fear over death can negatively affect hemodialysis patients' lifestyle, health status, and comfort (5, 6).

Comfort is a key concept in nursing, the main goal of nursing care (3), and the basis of nursing care (3, 7). Nursing theorists, such as Paterson, Zderad, Watson, and Leiniger, referred to comfort as a basic human need, an im-

portant nursing responsibility, and an outcome of nursing care measures (7-10). Catharine Kolcaba presented a comfort-specific theory that can help identify factors affecting patient comfort (11). Kolcaba's theory holds that comfort is a state experienced when physical, psychospiritual, sociocultural, and environmental needs are fulfilled and the client feels empowered (12). Accordingly, in order to improve their clients' comfort, nurses need to take appropriate nursing measures for fulfilling their comfort needs (13).

Nursing care consists of multi-component holistic programs, which aims to fulfill patients' needs, resolve disease-related problems, and evoke feelings of peace and

comfort (14). One of the nursing care measures is complementary and alternative modalities such as massage. Massage facilitates the process of nurse-patient communication, gives patients senses of attention and safety, alleviates their anxiety and pain, improves their comfort, and promotes their participation in care delivery (12, 15, 16). Massage alleviates pain through blocking pain transmission pathways and promoting endorphin production. It also promotes blood circulation and reduces peripheral edema (17, 18). Previous studies reported the positive effects of massage on relaxation (12), comfort (18), pain, and physiological stability (15, 17, 19). Contrarily, some studies reported conflicting findings respecting the effects of massage. For instance, a study showed that foot reflexology had more significant effects than back massage on fatigue and quality of life (20). Another study reported that back massage had no significant effects on fatigue and comfort among hemodialysis patients (21).

Another nursing care measure is patient and family education. It can empower patients for self-care and disease management, improve relationships among patients' family members, and thereby, improve care quality (22, 23). Moreover, the need for adequate health- and illness-related information is among patients' basic needs, the fulfillment of which can give them senses of peace and safety (24). Different studies demonstrated the positive effects of patient and family education on patient outcomes (25-28). A study also showed that education and counseling alleviate hemodialysis patients' and their family members' concerns and discomfort (29). However, some studies reported that patient education had no significant effects on serum biochemical parameters (30) and hemodialysis outcomes (31) because education per se cannot result in behavior modification or adherence to healthy behaviors (32).

Given the ambiguous, variant, and subjective nature of the concept of comfort, nurses need to view different experiences and phenomena from the perspectives of patients to be able to alleviate patients' problems and concerns. However, despite the great need of hemodialysis patients for comfort (33), hemodialysis-related nursing care measures are mainly focused on the fulfillment of their physical needs (4, 7). Given the paucity of studies into the level of comfort among Iranian hemodialysis patients and the contradictory results of previous studies, this study was conducted to evaluate the effects of comfort-based interventions (back massage and patient and family education) on the level of comfort among hemodialysis patients.

2. Methods

As a randomized controlled trial, this study was undertaken in 2016 in the hemodialysis unit of Shahid Chamran hospital, Ferdows, Iran. The sample size was calculated using the sample size calculation formula for comparisons of two means. Based on the results of an earlier study in Iran, which reported two comfort mean scores of 35.64 ± 6.9 and 47.36 ± 6.98 , and with a confidence level of 95%, eight persons were estimated for each group of the study. Nonetheless, the sample size was increased to twenty for each group in order to improve the power of the study. Sampling was done conveniently based on the following criteria: an age of 18 - 70, a thrice-weekly dialysis history of more than six months, complete consciousness, ability to communicate verbally, and no skin lesions on the back. Exclusion criteria were alterations in the level of consciousness or in the ability to communicate, changes in treatments, and voluntary withdrawal from the study. For random allocation, the names of the patients who referred to the study setting in odd and even weekdays were independently listed and then, one list was randomly allocated to the control group and the other to the intervention group.

A demographic questionnaire (including items on patients' age, gender, marital status, educational status, and place of residence) and the short form of hospice comfort questionnaire (HCQ) were used for data gathering. Developed by Katharine Kolcaba (34), HCQ contains 24 items in the following four dimensions: physical (5 items), psychospiritual (10 items), social (4 items), and environmental (5 items). Item scoring is done on a six-point Likert-type scale from 1 ("Strongly disagree") to 6 ("Strongly agree"). Items 2, 4, 7, 11, 13, 14, 15, 18, 19, and 22 - 24 are scored reversely. The possible total scores of the physical, psychospiritual, social, and environmental dimensions and the total HCQ score are 5 - 30, 10 - 60, 4 - 24, 5 - 30, and 24 - 144, respectively. With Cronbach's alpha values of 0.65 - 0.85, this questionnaire has an acceptable reliability (13, 34).

Initially, HCQ was completed for all patients. The results showed that the most common comfort needs of patients were related to muscle cramps, headache, back pain, nausea, lack of knowledge about arteriovenous fistula care, dietary and treatment regimens, itching, rest and sleep disorders, and impaired comfort. Patients in the intervention group received back massage and patient and family education in six sessions on their hemodialysis days. The sessions were held every other day for two consecutive weeks. Back massage was provided based on the techniques proposed in the textbook fundamental of nursing (35). Accordingly, at the end of each hemodialysis session, the second author used room-dividers and curtains to create a private environment for the back massage. Then,

she placed the patient in the lateral position and exposed patient's back for the massage. After that, she washed her hands with warm water and used baby oil to provide back massage in the following steps. Initially, she massaged the shoulders, back, and sacral area using gentle friction movements. Then, she placed her hands next to each other at the button of the spine and massaged the back from buttocks to shoulders and vice versa again using gentle friction movements. The bony prominences, such as the iliac spine and the sacrum, were massaged with circular movements. After that, the different areas of the back were compressed gently. Finally, baby oil was cleaned from the back and the patient was placed in the supine position. Back massage was performed for fifteen minutes. For male patients, back massage was provided by a male colleague. At the beginning of the study, the second author and her male colleague performed the back massage technique in presence of three faculty members of the fundamentals of nursing department of Birjand faculty of nursing and midwifery, Birjand, Iran. The faculty members approved the proper performance of the technique.

Besides back massage, need-based educations were provided to each patient and his/her family member during each hemodialysis session. Educations were based on the determined educational needs regarding the management of itching and muscle cramps, improvement of sleeping, skin care, fistula care, and adherence to dietary and treatment regimens. Educations were provided using the lecture method and a pamphlet. Each educational session was usually held before the back massage and lasted 15 - 20 minutes. The content of educations was approved by an attending physician. Patients in the control group received the routine care services of the study setting. At the end of the sixth session, HCQ was re-completed for all patients in both groups.

The aim of the study was explained to all participants and their informed consent was secured. Moreover, after the posttest, the educational pamphlet was provided to patients in the control group and their family members for the sake of ethical practice.

The data were analyzed via the SPSS software (v. 18.0). Primarily, the Kolmogorov-Smirnov test was run for normality testing. The measures of descriptive statistics (such as mean, standard deviation, and absolute and relative frequencies) were employed to present the data. The paired- and the independent-sample t tests were respectively run for within- and between-group comparisons respecting the mean scores of comfort and its subscales. The significance level was set at less than 0.05.

3. Results

Among forty patients who participated in this study, eleven (55%) in the intervention group and twelve (60%) in the control group were males. The mean age in these two groups was 56.75 ± 11.34 and 55.65 ± 12.19 , respectively. There were no significant between-group differences respecting patients' demographic characteristics ($P > 0.05$; Table 1).

Table 1. Between-Group Comparisons Concerning Demographic Characteristics^a

Characteristics	Group		P Value
	Intervention	Control	
Age, mean in years	56.75 ± 11.34	55.65 ± 12.19	P = 0.77
Gender			P = 0.75
Male	11 (55)	8 (40)	
Female	9 (45)	12 (60)	
Marital status			P = 0.5
Single	3 (15)	4 (20)	
Married	17 (85)	16 (80)	
Place of residence			P = 1
Urban areas	14 (70)	14 (70)	
Rural areas	6 (30)	6 (30)	
Educational status			P = 1
Below-diploma	12 (60)	12 (60)	
Diploma or higher	8 (40)	8 (40)	

^aValues are expressed as No. (%).

The baseline mean score of comfort in the intervention group was 14.52 ± 1.07 . After the intervention, this score significantly increased to 15.48 ± 1.13 ($P < 0.001$). The mean scores of the environmental and psychospiritual dimensions also significantly increased in the intervention group ($P < 0.0001$). On the other hand, in the control group, the mean scores of comfort and its psychospiritual dimension significantly increased after the intervention ($P < 0.05$; Table 2).

Between-group differences respecting the baseline mean values of comfort and its dimensions were statistically insignificant ($P > 0.05$). However, after the intervention, the mean scores of comfort and its environmental dimension were significantly greater in the intervention group than in the control group ($P < 0.05$; Table 2). The between-group difference respecting the pretest-posttest mean difference was statistically significant only for the environmental dimension of comfort ($P = 0.02$; Table 3).

Table 2. Within- and Between-Group Comparisons Concerning the Mean Scores of Comfort and Its Dimensions^a

Comfort	Group							
	Intervention			Control			Between-Group Comparison	
	Before	After	Within-Group Comparison	Before	After	Within-Group Comparison	Before	After
Physical	17.55 ± 2.7	17.85 ± 3.39	P = 0.65	16.65 ± 2.25	17.05 ± 2.39	P = 0.53	P = 26.0	P = 0.39
Psychospiritual	31.60 ± 5.33	35.85 ± 5.30	P < 0.001	32.10 ± 4.20	34.20 ± 4.58	P = 0.03	P = 74.0	P = 0.30
Environmental	20.35 ± 2.66	21.95 ± 2.37	P = 0.004	19.10 ± 3.06	18.70 ± 2.72	P = 0.58	P = 18.0	P < 0.001
Sociocultural	15.10 ± 1.77	15.75 ± 2.71	P = 0.18	15.60 ± 1.93	16.35 ± 1.95	P = 0.09	P = 40.0	P = 0.43
Total comfort score	14.52 ± 1.08	15.48 ± 1.13	P < 0.001	13.08 ± 0.94	14.66 ± 1.78	P = 0.01	P = 18.0	P = 0.01

^aValues are expressed as mean ± SD.

Table 3. Between-Group Comparisons Concerning the Pretest-Posttest Mean Differences of Comfort and Its Dimensions

Comfort	Group	Mean ± SD	t	P Value
Physical	Intervention	0.06 ± 0.58	0.11	P = 0.91
	Control	0.08 ± 0.55		
Psychospiritual	Intervention	0.43 ± 0.33	1.83	P = 0.08
	Control	0.21 ± 0.41		
Environmental	Intervention	1.60 ± 2.16	2.35	P = 0.02
	Control	-0.40 ± 3.14		
Sociocultural	Intervention	0.16 ± 0.52	0.16	P = 0.88
	Control	0.19 ± 0.47		
Total comfort score	Intervention	0.24 ± 0.15	1.55	P = 0.13
	Control	0.24 ± 0.14		

4. Discussion

This study aimed to evaluate the effects of comfort-based interventions (back massage and patient and family education) on comfort among hemodialysis patients. Results illustrated that after the intervention, the mean score of comfort significantly increased in the intervention group. Two earlier studies on hemodialysis patients also showed the positive effects of back massage on fatigue (20, 21), quality of life, energy level, calmness (20), and comfort (21). Similarly, other studies reported that back massage alleviates the effects of discomforting factors such as pain, nausea, itching, and muscle cramps (5, 36, 37). The positive effects of back massage are attributed to the improvements in blood flow and lymphatic drainage, reduction of serum cortisol level, and increases in serum serotonin and dopamine levels (5, 20, 28, 31, 36, 37). As an inexpensive and noninvasive complementary modality, massage can also facilitate patient care and improve nurse-patient communication (37). A major factor behind the effects of massage on patient outcomes is the duration of the massage. A study showed that fifteen-day massage had no significant effects while thirty-day massage significantly al-

leviated fatigue and improved comfort (21).

Another component of our intervention was patient and family education. In line with our findings, most previous studies showed the positive effects of education on weight management (38), itching, and nausea (25, 39, 40). Nonetheless, a study reported that education did not significantly affect fluid intake and was not effective in behavior modification (41).

Study findings also indicated that after the intervention, the mean scores of comfort and its environmental dimension were significantly higher in the intervention group than in the control group. An earlier study also reported the same finding (31). Comfort-based interventions may improve psychospiritual and environmental conditions of patients because these interventions help patients feel that nurses are supporting them, caring for them, and attempting to alleviate their problems and improve their comfort. Moreover, satisfaction with psychological and environmental conditions, greater access to nurses, and sense of familiarity with the environment can give patients greater levels of comfort (33).

Another study finding was the significant improvement in the mean scores of comfort and its psychospiri-

tual dimension in the control group. This finding can be attributed to the effects of routine care services provided to all patients in the study setting. Hemodialysis patients regularly refer to hemodialysis units to receive hemodialysis care and therefore, they are in direct contact with nurses. Easy access to nurses can be a significant factor behind patients' calmness and comfort (33).

The findings also indicated no significant between-group differences respecting the pretest and posttest mean scores of the sociocultural dimension of comfort. This finding may be due to the relatively short length of the intervention. It seems that long-term interventions are needed to make significant changes in the mean scores of the sociocultural dimension. An earlier study also reported the shortages of care delivery equipment and welfare facilities as the barriers to the improvement of the sociocultural dimension of comfort (33). On the other hand, our findings revealed no significant change in the mean score of the physical dimension of comfort. An explanation for this finding is that 37% - 57% of hemodialysis patients suffer from moderate-to-severe chronic rhythmic, periodical, or constant pain (42) and therefore, making significant improvements in their physical conditions needs a long-term massage on different areas of the body (21).

One study limitation was the probable differences in patients' mental and cultural attitudes and behavioral responses to massage. Another limitation was the differences in their educational needs. Moreover, the study included no follow-up assessment and we had limited control, if any, over environmental factors such as foul odors in hemodialysis unit, quality of patient beds, and welfare facilities in the study setting.

4.1. Conclusion

Combined massage therapy along with patient and family education can significantly improve comfort among hemodialysis patients. Given the insignificant effects of the study intervention on some aspects of comfort, further studies are needed to determine the best comfort-based interventions for improving different aspects of comfort among these patients.

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Footnote

Conflict of Interests: The authors declare no conflict of interests.

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