



Effect of Humor Therapy on Blood Pressure of Patients Undergoing Hemodialysis

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DOI: 10.24896/jrmds.20175615

ABSTRACT

One of the problems of the twenty-first century health community is the increasing prevalence of chronic diseases and the side effects of their treatment. Chronic renal failure undergoing hemodialysis is such a disease and controlling its complications through a low-risk approach is of utmost importance. Humor therapy is one of complementary treatment methods which can help these patients. The present study aimed to investigate the effects of humor therapy on blood pressure of patients undergoing hemodialysis in Bu-Ali Sina Hospital of Qazvin in 2010-2011. A total of 26 females and 14 males participated in this pre- and post-intervention clinical trial. The data were collected with a mercury manometer. Humor therapy was performed during hemodialysis using a CD for 30 minutes, 2 sessions per week for 8 weeks. The data were analyzed with SPSS-16. Findings: This study showed that humor therapy is effective on blood pressure of hemodialysis patients ($p < 0.001$). Conclusion: Humor therapy can reduce blood pressure in hemodialysis patients.

Keywords: Humor Therapy, Hemodialysis, Blood Pressure

HOW TO CITE THIS ARTICLE: Zahra Moshtag Eshg, Jaleh Ezzati, Navideh Nasiri, Raziye Ghafouri, Effect of Humor Therapy on Blood Pressure of Patients Undergoing Hemodialysis, J Res Med Dent Sci, 2017, 5 (6):85-88, DOI: 10.24896/jrmds.20175615

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Received: 15/10/2016

Accepted: 20/03/2017

INTRODUCTION

The increasing prevalence of chronic diseases is the most prominent problem in human societies faced with health staff in the twenty-first century [1]. Advances in the methods of treatment and health care as well as increased life expectancy are the causes of the increased prevalence of chronic diseases [2]. Chronic renal failure (CRF) is a chronic disease with a growing prevalence [3]. CRF is referred to irreversible renal dysfunction which often leads to the end stage renal disease (ESRD) [4] and the patients require hemodialysis (peritoneal dialysis) [5, 6].

Although hemodialysis can increase life expectancy, it cannot alter the natural course of the disease, is not a perfect substitute for full function of kidneys, results in numerous

complications in patients, and leads to physical, mental, and social problems for patients and their families [7]. Hypertension is the first and earliest sign of renal failure [8] and if left untreated, results in cardiovascular disease as the most common cause of death in renal failure patients [9]. About 80 to 90 percent of patients with renal failure are hypertensive and if left untreated, it may result in myocardial disorders in the form left ventricular hypertrophic cardiomyopathy [10].

Regarding the use of humor in nurse interactions, Riley stated that humor is a way of communication between nurses and patients and facilities training to patients [11]. humor can be an important tool in coping with the disease and reduces its stress. Several studies have been conducted on negative emotions, while positive emotions such as happiness and satisfaction are less studied [12].

Hostler wrote that humor reduces anxiety, relieves pain, and relaxes muscles [13].

Research has shown that humor can reduce blood pressure [14], acute pain [15], chronic pain [16], stress hormones, raise self-esteem, decrease depression [17] increase enkephalin and endorphin [18] and cardiac output [19], and improve pulmonary ventilation [20]. Laughter is effective in preventing hyperglycemia-induced renal failure [21] and in reducing anxiety in the first hemodialysis [22]. In this regard, the present study aimed to determine the effect of humor therapy on blood pressure of hemodialysis patients in Bu-Ali Sina Hospital of Qazvin in 2010-2011.

MATERIALS AND METHOD

A total of 41 patients referred to Bu-Ali Sina Hospital in Qazvin for hemodialysis were enrolled in the study based on inclusion criteria which were chronic renal failure treated with hemodialysis, willingness to participate in the research, constant blood pressure (no greater than 20% fluctuations in blood pressure a month before starting the study), and using a method such as venous fistula for dialysis a month before starting the study. The data were collected using a demographic questionnaire, a mercury manometer, and two depression assessment tools. Exclusion criteria were fluctuations in blood pressure, changing dialysis method, and unwillingness to continue the research. A participant excluded from the study during the study due to changing the dialysis method.

The demographic questionnaire included 11 items about demographic information and 14 items about the disease. Mercury manometer was calibrated and its reliability was assessed through the intra-rater test giving rise to a Pearson correlation coefficient of 0.93 after 10 repeats. Reliability of the researcher was assessed through the inter-rater test and after 10 times measurement of blood pressure by the researcher and another nurse, the Pearson correlation coefficient was obtained 0.94.

In the first session of laughter therapy, the mean blood pressure of participants was measured by the researcher prior to initiation of dialysis using the mercury manometer. The CD used in the research was provided to the Security Office

of Qazvin University of Medical Sciences, the Cultural Council of Qazvin University of Medical Sciences, and the Public Relations of Qazvin University of Medical Sciences and was approved by the Deputy of Student and Cultural Affairs. The participants in both groups were undergone hemodialysis in two groups of 15-20 people and humor therapy was performed 30 minutes after initiation of dialysis therapy using the approved CD for 30 minutes. Blood pressure was measured at the end of the first session after the end of hemodialysis. Humor therapy and data collection was continued for 8 weeks, 2 sessions per week (totally 16 sessions). Blood pressure was monitored at all sessions during the study, and in case of sudden changes (more than 20% to the previous blood pressure), the subject was excluded from the study. During this research, none of the participants had more than 20% change in blood pressure compared with the previous measurement. The maximum, minimum, and mean arterial blood pressures of the participants were measured at the beginning and end of hemodialysis in the first and last sessions of humor therapy and the obtained data were analyzed with independent *t*-test and paired *t*-test.

RESULTS

A total of 26 women and 14 men with a mean age of 56 years were participated in this study. The most common cause of morbidity was hypertension followed by hyperglycemia. There was no significant difference between men and women in the blood pressure ($p>0.05$). No significant difference was found between the cause of renal failure and hypertension ($p>0.05$).

According to paired *t*-test, a significant difference existed between blood pressure in the first and last sessions of humor therapy at all times of investigation (beginning of hemodialysis, an hour after the initiation of dialysis, and at the end of humor), which shows that humor therapy is effective on blood pressure in patients undergoing hemodialysis ($p>0.001$). Unilateral evaluation of the effect of humor therapy also showed that humor therapy can decrease blood pressure of patients undergoing hemodialysis ($p>0.001$).

Table 1: Result of blood pressure comparison in first and last sessions of hemodialysis

Pvalue	Last session		First session		Time
	SD	Mean	SD	Mean	
$p>0.001$	13.5	125.4	20.7	141.8	Systolic BP
$p>0.001$	8.7	76.0	605	81.3	Diastolic BP
$p>0.001$	10.6	91.8	10.4	100.9	Mean Arterial pressure (MAP)
$p>0.001$	18.8	119	18.6	136.5	Systolic BP
$p>0.001$	7.8	74.3	7.3	80.8	Diastolic BP
$p>0.001$	10.1	88.2	10.8	97.7	Mean Arterial pressure (MAP)
$p>0.001$	14.6	118	9.22	136.5	Systolic BP
$p>0.001$	7.8	75.5	6.6	80.3	Diastolic BP
$p>0.001$	9.38	89.2	10.2	98.1	Mean Arterial pressure (MAP)

DISCUSSION

In this study, 65% of the participants were female and 35% were male. The most common cause of renal failure in the present study was hypertension followed by hyperglycemia. According to Andreoli *et al.*, the most common cause of renal failure was hyperglycemia and then hypertension [23]. Their finding was same as this study.

This study showed that humor can reduce blood patient undergoing hemodialysis. Jalali *et al.* demonstrated that humor therapy is effective in reducing blood pressure [14]. Humor reduces blood pressure by influencing vessel wall performance through two ways:

1. Activation of nitric oxide secretion [20].
2. Effect on the activity of vasoconstrictors receptors and reducing their activity and number [24].

Further research is needed regarding the therapeutic effect of laughter on blood pressure to explicitly claim that downregulation of blood pressure with humor therapy is whether through activating the secretion of nitric oxide in blood vessels and reduction of catecholamines (stress hormones) or through regulation of vessel wall receptors and affecting neurotransmitters receptors of the endocrine system in two directions and regulation of blood pressure within normal limits [24]. In a study by Wolter *et al.*, no significant difference existed between drug therapy and drug therapy plus humor therapy; the reason of which was attributed to the existence of drug therapy in both groups of intervention and control [25].

On the other hand, Martin confirmed the therapeutic effect of humor on the psychologic and refused its physical effects [26]. Cutdief and

McKenna did not confirm the physiological effects of laughter therapy; this was attributed

to the lack of research on positive emotions and their performance in small statistical societies. They suggested more research in this field in order to demonstrate the physical effects of humor [12].

CONCLUSION

According to the findings of this research, humor therapy is effective in reducing blood pressure in patients undergoing hemodialysis.

Acknowledgement

The author would like to thank the nurses and staffs of the dialysis ward of Bu-Ali Sina Educational Hospital of Qazvin University of Medical Sciences that helped us in conducting this study.

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