Complementary Therapies in Clinical Practice 25 (2016) 1–7

Contents lists available at ScienceDirect

Complementary Therapies in Clinical Practice

journal homepage: www.elsevier.com/locate/ctcp

The effects of a simulated laughter programme on mood, cortisol levels, and health-related quality of life among haemodialysis patients

Eun Hwa Heo [a, 1], Sehyun Kim [b, 2], Hye-Ja Park [c, *], Suk Yong Kil [c, 3]

[a] Dialysis Center, Bundang CHA General Hospital, South Korea
[b] Graduate School, Dankook University, South Korea
[c] College of Nursing, CHA University, South Korea

ARTICLE INFO

Article history:
Received 25 June 2016
Received in revised form
22 July 2016
Accepted 25 July 2016

Keywords:
Health-related quality of life
Haemodialysis
Laughter
Mood

ABSTRACT

Objective: This study aimed to evaluate the effects of a simulated laughter programme on mood, cortisol levels, and health-related quality of life among haemodialysis patients.
Methods: Forty participants were randomly assigned to a laughter group (n = 20) or a control group (n = 20). Eleven participants completed the laughter programme after haemodialysis sessions and 18 control participants remained. The 4-week simulated laughter programme included weekly 60 min group sessions of simulated laughter, breathing, stretching exercises, and meditation, as well as daily 15 s individual laughter sessions administered via telephone. Mood, cortisol levels, and health-related quality of life were analysed using the rank analysis of covariance, and Wilcoxon's signed rank test.
Results: The laughter group exhibited improvements in mood, symptoms, social interaction quality, and role limitations due to physical health.
Conclusion: The simulated laughter programme may help improve mood and health-related quality of life among haemodialysis patients.

1. Introduction

Haemodialysis (HD) for end-stage renal disease (ESRD) is a major public health issue, based on its increasing worldwide prevalence, substantial burden, and high costs [1–5]. This issue remains relevant, despite the remarkable advances in ESRD treatment and dialysis therapy, which have improved dialysis adequacy, blood pressure control, anaemia treatment, and survival [4,5]. Patients with ESRD who are receiving maintenance dialysis experience multiple comorbidities and adverse conditions, such as progressive deconditioning, loss of functional capacity, and reduced physical activity, which leads to impairment of their health-related quality of life (HRQoL) [6,7]. This impairment in HRQoL worsens over time among dialysis patients, who perceive that their physical health deteriorates before their mental health [8]. However, patients with ESRD also experience emotional disturbances that are associated with psychosocial stressors, such as limited physical function, dietary constraints, time restrictions, loss of self-confidence, financial worries, reduced sexual function, family burden, loss of independence, and psychological constraints (e.g. depression, anxiety, hopelessness, and social withdrawal) [6–12]. Therefore, patients' reduced functional capacity and psychosocial limitations in their daily activities causes varying impairment of their health, and HRQoL is a consistent and powerful predictor of health outcomes and the patient's perception of their disease [6–13].

Sedentary lives, physical inactivity, and lack of motivation for regular physical activity are common problems that negatively affect health and HRQoL [13–17]. Furthermore, increased physical activity is associated with better HRQoL, prolonged survival, and lower rates of depression [13]. Therefore, enhancing HRQoL is a key goal for improving care quality [18], and increasing physical activity is an important consideration for treating dialysis patients with chronic kidney disease [6,10]. Nevertheless, although the K/DOQI Workgroup recommended regular counselling and encouragement to promote physical activity among dialysis patients [19], its incorporation into routine care has been slow [17] and nurses

* Corresponding author. Faculty of Nursing College, CHA University, 120, Haeryong-ro, Pocheon-si, Gyeonggi-do 487-010, South Korea. Tel.: +82 31 8017 5848; fax: +82 31 8017 5853.
E-mail address: clara@cha.ac.kr (H.-J. Park).
[1] Tel.: +82 31 780 1811; fax: +82 31 780 5545.
[2] Tel.: +82 31 260 5736; fax: +82 31 260 5736.
[3] Tel.: +82 31 8017 5849; fax: +82 31 8017 5853.

http://dx.doi.org/10.1016/j.ctcp.2016.07.001
1744-3881/

seldom include exercise interventions in the care plans for HD patients [20].

Laughter is a mind-body activity with emotional and cognitive effects that can change a person's mental or emotional state, improve attention, and promote mental relaxation [21]. An earlier study also defined laughter as a respiratory exercise, based on various bodily phenomena (e.g. rapid deep respiration and forcible jerky expiration), that helped improve muscle tone and relaxation [22]. In addition, laughter promotes expiratory muscle movement [23] and the activation of trunk muscles [24]. In this context, simulated laughter can be performed by the patient using purposeful and unconditional vocal sounds (e.g. ha, he, hi, ho, hu) in the absence of humour [25,26]. Interestingly, the human brain is not able to distinguish between spontaneous laughter and self-induced simulated laughter (the 'motion creates emotion theory'), and the health-related benefits are considered similar for both types of laughter [27]. Furthermore, simulated laughter may be associated with a greater intensity and duration, based on its intentional nature, which may provide greater psychophysiological benefits [26]. Moreover, simulated laughter can be implemented with breathing, stretching, and other activities (e.g. chanting, clapping, and meditation) [25–28].

The deep and slow breathing component of relaxation techniques decisively influences the sympathetic modulation and perception of pain [29], and reduces depressive symptoms [10]. Thus, laughter therapy may help improve social relationships and physical health by increasing the ability of depressed patients to face their disease [30]. As laughter is considered a state of eustress, the quantifiable laughter-related changes in neuroendocrine and stress hormones are thought to positively affect the classical stress response [31]. Therefore, based on the evidence that laughter has positive effects on certain aspects of health, laughter may be useful as a complementary medicine [26]. Moreover, laughter programmes have been found to be safe and feasible interventions in the dialysis setting [32], and effectively motivate patients to participate in physical activity [33]. However, no studies have rigorously explored the effects of laughter therapy among dialysis patients with ESRD [32], although a few studies have reported physiological and psychological benefits from laughter programmes among dialysis patients [34]. Therefore, we hypothesized that a simulated laughter programme with breathing, stretching exercises, and meditation might help improve HRQoL (physical and respiratory exercise, relaxation, social interaction, and psychological support) among HD patients with ESRD.

2. Methods

2.1. Study design

This study used a non-equivalent control group and a pretest-posttest quasi-experimental design.

2.2. Ethical considerations

The institutional review board of Bundang CHA University General Hospital approved the study's protocol. The researchers provided information to the participants regarding the study aims and methods, their right to withdraw at any time without reprisal, and their privacy rights. All HD patients provided informed consent before being enrolled in the study.

2.3. Participants and setting

HD patients with ESRD were recruited from a dialysis centre at a Korean university hospital. All individuals were undergoing regular HD (4 h sessions 3 times per week) using Formula 2000 (Bellco, Italy) and the Synthetic Cellulose Membrane Dialyzer (NC1285, NC1485, NC1785, BLS812). The eligibility criteria were age of $\geq$18 years and HD duration of $\geq$6 months. Patients were excluded if they had a history of mental disease, stroke, myocardial infarction, or hypertension within the last 6 months, or if they had a physician diagnosis of dyspnoea or glaucoma.

Seventeen participants were required for each group based on Cohen's power analysis ($\alpha = 0.05$, $1- \beta = 0.8$, effect size $= 0.5$, $u = 1$). Thus, 40 eligible HD patients were randomly assigned in a 1:1 ratio to receive either HD with the simulated laughter programme or HD alone. Among the laughter group, 11 participants completed the 4 weekly group sessions and the 28 daily individual sessions, and 9 participants withdrew because of switched or missed dialysis appointments ($n = 6$) or patient exhaustion after the HD ($n = 3$). This small sample from the laughter group ($n = 11$) was barely adequate, based on the criterion of $\leq$10 participants for a small sample size [26]. The final control group included 18 participants because 2 individuals refused to complete the questionnaire.

2.4. The simulated laughter programme

The simulated laughter programme was administered by a laughter therapist who had 2 years of experience and a dialysis nursing specialist who was certified through a laughter training course. The 4-week laughter programme included simulated laughter, exercises (breathing, stretching, chanting, and clapping), and meditation, with four 60 min weekly group sessions and daily 15 s individual laughter sessions that were administered by the nursing specialist via telephone. These characteristics were based on the designs of other simulated laughter programmes [25,26].

The group sessions were performed using the themes of 'networking' (first week), 'mind and body laughing for improving self-esteem and self-approval' (second week), 'daily life and laughter for stress reduction' (third week), and 'happiness for improving self-positivity' (fourth week). Each 60 min group session included a warm-up phase (10 min), the main theme (40 min), and a cool-down phase (10 min). During the warm-up phase, the participants and researchers exchanged greetings and introduced themselves, and then performed relaxation activities (humming, hugging, clapping, massage, and muscle stretching) for 10 min. At the first session, an additional 15 min phase was provided to help the participants understand the laughter programme, how to laugh louder and longer, and laughing as an exercise. After the opening lecture, the participants performed warm-up exercises, and practiced loud and prolonged simulated laughter. During the main phase, laughter with breathing was performed by chanting 'ha-ha-ha,' 'he-he-he,' 'hi-hi-hi,' 'ho-ho-ho,' and 'hu-hu-hu,' with arm stretching exercises (named butterfly, mosquito, airplane, happiness, and cellular phone laughter) for 30–45 s; regular intervals were maintained between the laughter and stretching to prevent exhaustion. The cool-down phase provided time to perform stretching exercises, share feelings, and say goodbye.

2.5. Measurements

2.5.1. Demographic and clinical characteristics

The participants' demographic characteristics were collected using a self-administered questionnaire. HD duration, ESRD cause, and clinical and laboratory data were collected from the participants' medical records at the time of enrolment and study completion. The Charlson comorbidity score was also calculated for each participant (http://touchcalc.com/calculators/cci_js) [35].