Seminars in Dialysis

Laughter and Humor Therapy in Dialysis

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ABSTRACT

Laughter and humor therapy have been used in health care to achieve physiological and psychological health-related benefits. The application of these therapies to the dialysis context remains unclear. This paper reviews the evidence related to laughter and humor therapy as a medical therapy relevant to the dialysis patient population. Studies from other groups such as children, the elderly, and persons with mental health, cancer, and other chronic conditions are included to inform potential applications of laughter therapy to the dialysis population. Therapeutic interventions could range from humorous videos, stories, laughter clowns through to raucous simulated laughter and Laughter Yoga. The effect of laughter and humor on depression, anxiety, pain, immunity, fatigue, sleep quality, respiratory function and blood glucose may have applications to the dialysis context and require further research.

Background

Therapies predominantly involving laughter and humor have been used in health care for centuries (1) with the goals of achieving physiological and/or psychological health-related benefits (2). Laughter can include genuine or spontaneous laughter; simulated laughter; stimulated laughter; induced laughter; and pathological laughter while humor can be present without laughter (3). Pediatrics, aged care, mental health and oncology have seen the highest uptake of therapeutic laughter. Despite the known anecdotal benefits of laughter and humor, there is limited evidence to support actual health benefits (4), with little evidence in chronic kidney disease (CKD) or dialysis (5,6).

Two reviews in the past 5 years have explored laughter therapy and humor in health care. One reviewed both humor and laughter therapy specifically relating to nursing implications (7) followed by a more recent comprehensive review concluding that there were some health benefits and no contraindications (3). Both reviews suggested that rigorous research is lacking to support health benefit claims (3,7). Neither review associated humor or laughter therapy specifically with the dialysis context.

The aim of this paper is to review the evidence related to laughter and humor therapy as a medical therapy relevant to the dialysis patient population. Literature from other groups such as children, elderly persons, and persons with other chronic diseases will be included to inform potential applications of laughter therapy to the dialysis population. The review used the search terms laughter, laughter therapy and humor, and then combined those with chronic disease, kidney disease, dialysis, and hemodialysis. Pubmed, CINAHL, Cochrane, Medline and Google Scholar databases were searched, limited to the years 1993–2013. Included studies are presented in Table 1.

Pediatric

Although therapies including clown doctors and health clowns are common in children's hospital wards, few rigorous studies with measurable outcomes have been undertaken to test their effect. In saying this, the use of clowns during peri-operative periods has been shown to possibly reduce anxiety

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TABLE 1. Laughter and humor interventions in disease-related cohorts

Author, Country, Year	Design	Sample	Intervention	Findings	Relevance to dialysis context	Limitations
Hirosaki, Japan, 2013	Stepped-RCT	Community-dwelling elderly people Step 1: $n = 14$ Step 2 (3-month delay): $n = 12$	Combined comedy (video &/or live) and exercise program	↑ bone mineral density (BMD) ↑ Self-rated health ↓ HbA1C	BMD, HbA1C	Combined laughter/ exercise intervention
Shin, Korea, 2011	Nonequivalent control group	Postpartum women Intervention: n=33 Control: n=34	Laughter Yoga	↓ fatigue	Fatigue	Healthy Postpartum women
Lebowitz, United States, 2011	RCT of a subset of patients	Chronic obstructive pulmonary disease (COPD) patients Intervention: $n = 11$ Control: n=11	Humorous Video (control = neutral, instructional video)	↑ pulmonary hyperinflation	COPD in Dialysis	
Shahidi, Iran, 2011	RCT	Older women with depression Laughter yoga: $n = 20$ Exercise: $n = 20$ Control: $n = 20$	Laughter Yoga	↑ life satisfaction ↓ depression	Depression and older women on dialysis	
Ko, Korea, 2011	Nonrandomized controlled trial	Community-dwelling elderly Intervention: $n = 48$ Control: $n = 61$	Laughter Yoga	↓ depression ↑ sleep quality	Depression and sleep disturbance	Nonrandomized
Cho, Korea 2011	Nonequivalent control group, pretest–posttest design	Breast Cancer survivors Intervention: $n = 16$ Control: $n = 21$	Laughter Therapy	↑ quality-of-life ↑ resilience ↔ immune (T and NK cell) response ↔ depression	Female dialysis patients with cancer	
Hirsch, Germany, 2010	Cluster comparison	Older persons with depression Intervention: $n = 52$ Control: $n = 38$	Humor Therapy	↑ quality-of-life ↑ resilience	Depression	Nonrandomized
Fernandes, Portugal, 2010	RCT	Children pre minor surgery Intervention: $n = 35$ Control: $n = 35$)	Clowns	↓ anxiety	Children going for VA surgery, other dialysis-related procedures	
Meisel, Spain, 2009	RCT	Children postsurgery Intervention: $n = 28$ Control: $n = 33$	Clowns	↔ stress ↔ maladaptive behaviors	Children going for VA surgery, other dialysis-related procedures	
Hayashi, Japan, 2007	Pre-/post crossover study,	Diabetes patients $n = 10$	Comic video (control = education lecture)	↑ Natural killer cell activity	Improved BGL regulation, improved fitness.	Pre-/postdesign
Matsuzaki, Japan, 2006	Pre/post with "healthy" control group	Rheumatoid arthritis (RA) patients: $n = 41$ Healthy control group: $n = 23$	Comic audio	↓ IL-6 and IL4 in RA group, no change in control	IL-6 predicts mortality in dialysis patients	No RA control group

in both children and parents (8). This study was a nonrandomized posttest comparison group design and did not account for other external and internal predictors; however, reduced anxiety levels and positive health professional acceptance were reported. This built on the findings from a previous study that demonstrated the effectiveness of clowns in decreasing anxiety as measured by the Modified Yale Preoperative Anxiety Scale (9). Conversely, in a randomized control study of 61 Spanish children undergoing surgery, clown doctors were not able to reduce stress even though a trend toward improved postoperative adaptive behavior was reported (10). The apparent benefits of making sick children laugh are not yet clearly measured and thus more rigorous studies are required.

Aged Care

Laughter therapy has been implemented to improve the quality of life of elderly people. Clowns have been used as therapy, not so much to make patients laugh, but to increase social interaction with other people and their environment (11, 12). Small but significant effects of laughter on sleep quality and depression have also been demonstrated for older persons (13). When laughter was combined with exercise, the effects were augmented with improved self-rated health, glycated hemoglobin (HbA1c), and bone density and, not surprisingly, contributed to older people being more active (14). It appears that laughter therapy has shown increased popularity and promising potential to improve the health and the lives of elderly people.

Cancer

The effects of laughter and humor on immunity, quality of life, and resilience have been explored in people with cancer with mixed findings. Increased immunity levels were found following the use of the Smile-Sun technique, a set of positive verbal and nonverbal communication techniques with positive humor as a component (15). When a more traditional laughter therapy technique was used with 37 breast cancer survivors using a nonequivalent control, pre-/posttest design, no effect was found on T- and natural killer cell responses (16). However, it was positive to note that laughter therapy improved the secondary outcomes of quality of life and resilience in this Korean study. Given the altered immune response in people with kidney disease, immunity changes associated with laughter therapy may be a promising area to explore further. This is particularly important given that the indicators of health disease impact for cancer patients such as quality of life, symptom burden, morbidity, and mortality are comparable to those with end-stage kidney disease (ESKD).

Mental Health

Laughter and humor therapy have been used to treat various mental health disorders, most predominantly depression. The probable mechanism involves laughter stimulating sensitive cerebral regions and recalibrating the hypothalamic pituitary adrenocortical system (17) improving depression (18) and mood (19). In a study of older women with depression randomized into three groups of laughter therapy, exercise therapy, and control, exercise enhanced the effect of laughter on depression (20). In a smaller study of six patients with significant depression, humor training improved mood and coping capacity (21). Given that mental illness, particularly depression, is common in patients with ESKD, laughter therapies may be particularly applicable to dialysis units. The social and physical attractiveness of laughter may increase the ability of people with depression to face the disease (17) whether they have kidney disease or not.

Chronic Disease: Nonrenal

Laughter and humor have been used therapeutically for people with other chronic diseases such as respiratory disease, heart failure, diabetes, and arthritis. Studies have varying primary measures and outcomes, but are mostly associated with positive effects such as improved heart rate and vigor (22) and positive genetic up-regulation in diabetes (23). Decreased Interleukin-6 (IL-6) levels were associated with laughter in people with arthritis (24) raising the potential for the same to occur in the CKD population. Improvement in glycemic control has been demonstrated (14,23) which has particular relevance for the dialysis context.

Kidney Disease and Dialysis

There is no extant research rigorously exploring the effects of laughter or humor therapy on people with CKD or ESKD. By its nature, laughter may have significant therapeutic effects, given the high levels of depression, physical dysfunction, and altered immunity in the chronic kidney disease population. Anecdotally, humor assists patients dealing with kidney disease (6) and is a key component in the quality of life in dialysis patients (25). Confirming this point, Norwegian researchers monitored 52 dialysis patients for 2 years and concluded that an increased sense of humor had a negative association with mortality and disease-related stressors (26). However, this does not support or refute the notion that an active laughter-based therapeutic intervention may improve health-related measures.

Studies promoting laughter's effect on lowering IL-6 levels could be significant in the kidney disease population. Elevated IL-6 levels are associated with

increased atherosclerosis and mortality in CKD and ESKD (27) and are a better predictor of mortality than homocysteine, C-reactive protein and advanced oxidation protein products in dialysis patients (28). In addition, natural killer cells have been shown to increase with an increase in mirthful laughter in healthy populations (29, 30) and this may translate to increased natural killer cell activity in renal patients. We are not suggesting that laughter can influence inflammation-related mortality, but this area may be a worthwhile path for further study.

Pain is a significant problem for people with ESKD on dialysis with over 50% of people on dialysis reporting pain as a significant problem(31). The pain can be related to dialysis treatment regimens (e.g., needling, cramps) or can be chronic (e.g., musculo-skeletal, neuropathic) (32). In healthy people, laughter has been associated with increased pain tolerance (33) and pain thresholds (34) and this could possibly translate to the dialysis population.

No study has rigorously demonstrated the effects of laughter and humor in predialysis, hemodialysis, peritoneal dialysis, or transplant populations. One Israeli group demonstrated its utility and feasibility in a hospital hemodialysis unit (5) with patients reporting decreased fatigue, pain relief and improved communication; however, no primary outcomes were clearly described. In an observational study conducted in community dialysis units, humor was frequently observed; but not recognized as a therapy (35). In the hemodialysis context, therapeutic use of humor may be highly appropriate in highly stressful situations such as anxiety related to needling (36) and at a patient's first dialysis treatment (37). It may also be of use in the increasingly frequent occurrence of aggressive behavior in the dialysis unit (38). Similarly, in pediatric dialysis units, humor may be appropriate in decreasing anxiety for both the patient and his/her family.

Potential Interventions in Dialysis

Therapeutic interventions in dialysis could range from humorous videos, stories, laughter clowns to raucous simulated laughter. Humor videos and stories can certainly be used as diversionary therapy (39), which may be as simple as putting on a culturally appropriate humorous video during painful needling (37). Laughter clowns, or clown doctors, are very popular in pediatric environments and the dialysis context would be no different (8–11,40). However, of more interest is the long-term potential of raucous simulated laughter (3,41). Laughter Yoga, an increasingly popular laughter therapy, which includes deep breathing, meditation and simulated laughter leading to genuine laughter, has been shown to be feasible in the hemodialysis context (5). Laughter Yoga can be easily applied intradialyically by Laughter Yoga therapists where the inclusion of the clock-watching, dialysis triathlon, and dialysis Mexican waves can be performed (42). Furthermore, nurses and patients could be trained as laughter therapists to ensure the sustainability of such an intervention. However, it is still not clear that these interventions have long-term therapeutic effects in the dialysis population.

Limitations of Current Laughter Research

The scientific support for using laughter therapy and the evidence to support positive effects is still equivocal (43). Furthermore, there are suggestions that excessive laughter may indeed be harmful with potential lung hyperinflation in chronic obstructive pulmonary disease (44) and the disenfranchising of specific groups of patients (45). A further limitation to many of these studies is the nonseparation of laughter and humor, and thus a cautious approach to laughter and humor should be taken (7). For example, clown doctors may be appropriate for children's therapy, but may not be in adults where people may be scared of clowns. The understanding and knowledge of laughter and humor as medical therapy remain unclear and the majority of scholars in this area suggest that a much greater body of research is required to support laughter's and humor's place in the health care.

Laughter: Is It Health Care?

"Laughter can relieve suffering but it cannot cure disease" (46). The utility of laughter may be limited to relieving suffering, reducing pain and anxiety; however, is not much of our health care directed toward reducing disease symptoms, implying that laughter may be an underutilized therapy? Maybe the reluctance to use laughter as a therapy is associated with the perception that it may be an alternative therapy or that healthcare professionals may not want to become emotionally close to patients (47). These may be a barrier to the use of laughter and humor by healthcare professionals.

If laughter and humor can claim a place in health care, then prescription or at least guidelines are required. Laughter prescription could be based on Richman's guiding principles requiring a positive, affirming healthcare professional–patient relationship, social cohesion, interactivity, and devoid of stress (48). Laughter education could be provided for healthcare professionals at both undergraduate and postgraduate levels (49). Given that patients frequently use humor and laughter when sharing their stories (50), the healthcare professional may only need to embellish the humor to become a potential therapy. This therapy may then be used to decrease pain, anxiety, stress, depression, and fatigue, and improve immunity, quality of life, happiness, sleep quality, and resilience.

Future Directions and Dialysis

Laughter and humor may have applications appropriate to the dialysis context. The use of humor to decrease anxiety could be used in patient's first dialysis or assist those who suffer high levels of cannulation pain. Clown doctors, particularly in pediatric nephrology, could be used in a face-to-face strategy or even through videoconferencing and the web (51). The mental health of patients could be improved and the frequently hostile dialysis environments could be improved. Possible improvement in immunity, fatigue, sleep quality, respiratory function, and blood glucose regulation may all be relevant to dialysis patients.

Therapies, such as Laughter Yoga that combine deep breathing, prolonged simulated laughter, and natural laughter, could be applied in the dialysis environment. Certainly, there is evidence for the support of laughter over simply just smiling (41). However, before laughter therapies can be fully embraced, well-designed studies such as the proposed large SMILE cluster randomized control study (52) are required. Furthermore, given the similarities of other healthcare environments such as residential care common rooms and chemotherapy day units, the learnings from other group environments could enable laughter therapy to be systematically applied to dialysis units.

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