

Music Appreciation on Blood Pressure during Haemodialysis

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I. Introduction

Background Information

Hemodialysis lowers blood pressure (BP) in most hypertensive end-stage renal disease (ESRD) patients while some patients exhibit a paradoxical increase in BP during hemodialysis. This increase in BP during hemodialysis, termed intradialytic hypertension, has been recognized for many decades (Chen & Gul, 2016). In hemodialysis patient, there are chances for developing complications which occur during routine hemodialysis treatment. These include hypertension, hypotension, back pain, cramps, itching, chills, and fever. The resolution for these complications is more effective when they are treated with a combination of pharmacological treatment and an alternative/complementary therapy. Among these therapies, the most commonly used therapies are music therapy, aromatherapy, imagery therapy and massage. Out of which the music therapy has a predominant effect on hemodialysis patients (Mitra, 2017). Music therapy addresses the multi-dimensions of pain; discomfort, displeasure, anxiety, insecurity as well as the motivational aspects of pain related to pain management. Listening to music is soothing and has often been associated with controlling patient-reported pain or anxiety and acutely reducing blood pressure (Lin, Lu, Chen, & Chang, 2012).

Studies conducted revealed that their interaction with hemodialysis patients observed that they are very anxious during the hemodialysis procedure. Very few studies have been done to assess the effectiveness of music therapy on anxiety and blood pressure during hemodialysis (Varghese & Manju, 2015; Pothoulakiet al., 2014; Linet al., 2012). Due to the long hours of hemodialysis session, patients become anxious by involuntarily focusing on their worries and problems which leads to fluctuation of blood pressure and other vital signs.

To overcome this something needs to be done, so that patient feels relaxed during those 4-5 hours of hemodialysis. It was proposed that music therapy would be better as it is a simple technique, less expensive, non-invasive and without any side effects. The patient only must hear the prerecorded music through headphones during the procedure and felt that alleviation of this anxiety. It was also hypothesized that music will lower the high blood pressure. If it helps the patients, they will accept it and make it a routine therapy to improve their quality of life. By doing this study, the evidence can be generated, and music therapy can be adopted as a complementary therapy to reduce the suffering of these clients.

Problem statement

The people who are undergoing hemodialysis develop anxiety. Anxiety is known to cause increased blood pressure, heart rate and respiration rate, all of which lead to poor circulation, and can cause fluctuations in body temperature, urinary urgency, enlarged pupils, and loss of appetite. Thus, it is always a challenge to care providers to keep anxiety at a minimum for patient's comfort and safety (Cousineau, McDowell, Hotz, & Hébert, 2013). Though many research studies have been conducted abroad on the effect of music therapy on various physiological and psychological parameters of patients in Kenya, not much published literature could be retrieved. Evidence suggests that music therapy relieves anxiety and lowers high blood pressure as well as promotes a feeling of wellness and completely relaxes the patients during the 4-5 hours of hemodialysis procedure, and it is also cost-effective.

Study Objectives

- i. To assess the blood pressure and anxiety level of patients on hemodialysis before the administration of music therapy.
- ii. To associate the blood pressure and anxiety level with the selected socio-demographic variables of patients on hemodialysis.
- iii. To evaluate the effect of music therapy on the values of blood pressure and anxiety level patients on hemodialysis.

II. Literature Review

Blood pressure and anxiety level of patients on hemodialysis before the administration of music therapy

Páez et al., (2013) carried out a study to investigate the anxiety and depression in patients with chronic renal insufficiency undergoing dialysis treatment. Thirty patients (15 women) with chronic renal insufficiency and hemodialysis treatment, ages between 25 and 85 were selected for the study as a sample. A semi-structured

interview for dialyzed patients. It was found that 56.7% of them manifested some degree of anxiety. The study concluded that state anxiety was higher on chronic renal patients of older age and during the first months of hemodialysis.

Sqalli-Houssainiet *al.*, (2015) conducted a study to find the effects of anxiety and depression on hemodialysis adequacy. Ninety-three hemodialysis patients were selected from in Ibn-Sina Haemodialysis department in Rabat. The psychiatric rating scale (BPRS) and Hamilton anxiety and depression rating scales were used as a tool. It was found that the depression and anxiety among the patients was 67% and 69.3% respectively. Seven patients had a severe depression. The study concluded that anxiety and depression are associated with several hemodialysis adequacies.

Hoyois and Jadoul (2015) conducted a study on anxiety and depression in chronic hemodialysis. A cross-sectional study was done with 54 patient samples on in-center hemodialysis. Psychometric Self Rated Questionnaire was used as a tool. The study concluded that subjective perception of the disease seems to have an important impact on the anxiety and the mood level, which can also be influenced by the emotional regulation abilities.

Blood pressure and anxiety level with the selected socio-demographic variables of patients on hemodialysis

Dziubeket *al.*, (2016) focused on the level of anxiety and depression in dialysis patients undertaking regular physical exercise training—a preliminary study. The aim of the study was to evaluate the effects of a six-month physical training undertaken by hemodialysis (HD) patients, on the depression and anxiety. Patients with end-stage renal disease (ESRD) were recruited. A personal questionnaire, the Beck Depression Inventory (BDI) and the State-Trait Anxiety Inventory (STAI) were used in the study. A total of 28 patients completed the study: 20 were randomized to endurance training and 8 were randomized to resistance training. Statistical analysis of depression and anxiety at the initial (t_1) and final examination (t_2) indicated a significant reduction in depression and anxiety, particularly anxiety as a trait (X2) in the whole study group. The change in anxiety as a state correlated with the disease duration, duration of dialysis and the initial level of anxiety as a state (t_1X1). The change in anxiety as a trait significantly correlated with age and the initial level of anxiety (t_1X2). The study concluded that playing undertaking training during dialysis by patients with ESRD is beneficial in reducing their levels of anxiety and depression.

Fischer et al., (2010) looked at the sociodemographic factors contribute to the depressive affect among African Americans with chronic kidney disease. The study was a cross-sectional analysis of individuals at enrollment in the African American Study of Kidney Disease and Hypertension Cohort Study. Depressive affect was assessed by the Beck Depression Inventory II and quality of life by the Medical Outcomes Study-Short Form and the Satisfaction with Life Scale. Beck Depression scores over 14 were deemed consistent with an increased depressive affect and linear regression analysis was used to identify factors associated with these scores. Among 628 subjects, 166 had scores over 14 but only 34 were prescribed antidepressants. The mean Beck Depression score of 11.0 varied with the estimated glomerular filtration rate (eGFR) from 10.7 (eGFR 50–60) to 16.0 (eGFR stage 5); however, there was no significant independent association between these. Unemployment, low income, and lower quality and satisfaction with life scale scores were independently and significantly associated with a higher Beck Depression score. Thus, the study showed that an increased depressive affect is highly prevalent in African Americans with chronic kidney disease, is infrequently treated with antidepressants, and is associated with poorer quality of life. Sociodemographic factors have especially strong associations with this increased depressive affect. Because this study was conducted in an African-American cohort, its findings may not be generalized to other ethnic groups.

Effect of music therapy on values of blood pressure and anxiety level of patients on hemodialysis

Varghese and Manju (2015) investigated the effect of music therapy on blood pressure and anxiety in hemodialysis patients. High blood pressure and anxiety level during hemodialysis remain a common problem in Chronic Kidney disease patients. The study was conducted to evaluate the effect of music therapy on blood pressure and anxiety in hemodialysis patients at selected hospitals in Indore. Through simple random sampling (lottery method) a total of 60 samples were selected from the accessible population and then the subjects were assigned to an experimental and control group through randomization (lottery method). After the pre-test, music therapy was given to the experimental group and routine care was encouraged to be continued in the control group. The values of blood pressure score in each group before and after the intervention were measured using blood pressure apparatus (mercurial sphygmomanometer) and anxiety level was assessed with the help of Beck Anxiety Inventory-I. Findings of the study revealed that the mean post-test blood pressure score in the experimental group was 2.075 and the pre-test score was 4.815 which was statistically significant at $t_{29}=4.840$ at the level of $p < 0.001$. The values revealed that there is a significant change in blood pressure as well as anxiety level after the administration of music therapy.

Pothoulakiet al.,(2014) did an investigation of the effects of music on anxiety and pain perception in patients undergoing hemodialysis treatment. This study aimed to investigate the effects of preferred music listening to anxiety and pain perception in patients undergoing hemodialysis. A two-group experimental design was used. Sixty people diagnosed with end-stage renal failure undergoing hemodialysis treatment participated in this study. Preferred music listening was applied as an intervention. Anxiety and pain were measured pre-test and post-test. The control group scored significantly higher in state anxiety than the experimental group and experienced significantly higher pain intensity in the post-test phase. Findings provide experimental evidence to support the effectiveness of preferred music listening in medical settings.

Schuster(2015) looked at the effect of music listening on blood pressure fluctuations in adult hemodialysis patients. The purpose of this study was to investigate the efficacy of music therapy in reducing the amount of fluctuation in the blood pressures of patients undergoing hemodialysis treatment. Adult dialysis patients (N = 63) between the ages of 22 and 81 were included in the study. The control group received a blood pressure measurement after each hour of dialysis. The experimental group received the same blood pressure measurement; in addition, they received music for 1-hour beginning 30 minutes after the onset of treatment, and another hour of music after 2½ hours of treatment. Statistical tests revealed no significant difference between the groups or between the baseline and treatment sessions for the experimental group. Results for both groups, however, were statistically significant for every blood pressure reading from onset to termination of treatment.

Lin, Lu, Chen, and Chang(2012) focused on the effects of music as therapy on the overall well-being of elderly patients on maintenance hemodialysis. The study explored the use of music during hemodialysis (HD) as a complementary therapy to improve the overall well-being of elderly patients. The study recruited a convenience sample of 88 patients on maintenance HD from a teaching hospital in northern Taiwan and randomly assigned them to either an experimental group (n = 44) or a control group (n = 44). In the first week, participants in the experimental group created their own music playlists. During the second week, these participants listened to music from their own playlists during each HD session (three times/week). The study evaluated the effects of music as therapy by assessing its impact on perceived stressors and adverse reactions during HD (HD Adverse Reactions Self-Assessment Scale and HD Stressor Scale [HSS]) and measuring changes in physiological indices during the music listening. After 1 week of the use of music as therapy during HD, the study noted significant reductions in the frequency and severity of adverse reactions during dialysis and in scores on the HSS, $p < .001$. The study also observed significantly decreased respiratory rate and significantly increased finger temperature and oxygen saturation, $p < .001$, during the same period. In conclusion, listening to music during HD may promote overall patient well-being. It may thus serve as a complementary form of therapy that facilitates care and delivery of adequate dialysis and thus improves overall patient well-being in the long run.

III. Research Methodology

Research Design: Qualitative research design.

Population: Patients who are hypertensive and are anxious during the procedure of hemodialysis.

Sampling technique: Simple random sampling (lottery method).

Sample size: 60 hemodialysis patients. Tool: Structured interview guide. Data analysis: Content Analysis.

Ethical Considerations

An informed consent will be obtained from each respondent for their participation in the study. The ethical principles of respect for human dignity, beneficence, and justice will be observed. Any potential risks and benefits will be described to the subjects. Confidentiality of information will be assured as well as the right to participate or to withdraw from the study without penalty.

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