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Evidence-Based Research for the Geriatric Population

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**THE FLORIDA STATE UNIVERSITY
COLLEGE OF MUSIC**

EVIDENCE-BASED RESEARCH FOR THE GERIATRIC POPULATION

**By
DANAE THOMASON**

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TABLE OF CONTENTS

Abstract.....	Page v
I. Introduction.....	Page 1
II. Review of Literature.....	Page 2
Gerontology.....	Page 2
General Symptoms.....	Page 3
Agitation.....	Page 3
Depression.....	Page 5
Participation/Social.....	Page 6
Memory.....	Page 8
Hearing.....	Page 11
Language/Voice.....	Page 11
Physical Rehabilitation Symptoms.....	Page 13
Physiological.....	Page 13
Gait Training.....	Page 13
Pain Relief.....	Page 14
Participation.....	Page 15
III. Method.....	Page 16
Procedure.....	Page 16
IV. Results.....	Page 17
Table 1. Study Characteristics.....	Page 18
Clinical Guidelines for Evidence-Based Practice.....	Page 27
V. Discussion.....	Page 40
REFERENCES.....	Page 44
BIOGRAPHICAL SKETCH.....	Page 49

ABSTRACT

The purpose of this study was to analyze the existing quantitative experimental research evaluating the effect of music on symptoms of the geriatric population. A review of literature was conducted on 47 studies found in twelve refereed journals evaluating. Common objectives, assessments, and procedures were identified and clinical guidelines for evidence-based procedures were developed. Results and further quantitative research are suggested and discussed.

CHAPTER I

Introduction

Healthcare clinicians try to make accurate diagnoses and selecting optimal treatments for patients in their practice. They must avoid anything that could be harmful and often wish to offer patients prognostic information (Guyatt & Rennie, 2002). However, before clinicians can incorporate the best evidence, they must find it. Healthcare professionals are also often expected to work as part of a multidisciplinary team in order to provide evidence based appropriate care to their patients. These professionals have a commitment to patients and a responsibility to be aware of new and emerging evidence about the health of their patients (Jordan, Field, & Pearson, 2006). This requires the ability to examine evidence related to a proposed course of treatment, and the ability to apply that evidence in their practice (Jordan, Field, & Pearson, 2006). Clinicians must be aware of how to recognize a high quality study, appraise its methodological quality, and apply its results to patients in their practice (Guyatt & Rennie, 2002).

In this thesis the author has identified and analyzed individual studies with original quantitative data in order to formulate suggestions for evidence based clinical practice. In evaluating the music therapy literature to come to conclusions for clinicians interested in the gerontology population, there were two steps followed. The first step was to identify and examine the evidence related to a specific client problem. The next step was to summarize and apply that evidence to suggestions for the clinician's practice (Jordan, Field, & Pearson, 2006). The thesis covers the analysis of music therapy effect on problems of aging and rehabilitation following medical problems.

CHAPTER II

REVIEW OF LITERATURE

Gerontology

Gerontology is the study of later life. It is said that by the year 2030 the older population will have almost doubled. Because of the growing society and fast paced life, older adults may experience unsatisfactory life qualities (Kane, Ouslander, & Abrass, 1994). The elderly are faced with the consequences of aging such as loss of social roles, loss of income, and loss of friends and relatives. They may also be forced to be dependent on other people (Kane, Ouslander, & Abrass, 1994). To understand and address the physical, psychological, and social needs of the elderly has historically been a topic of interest for health care professionals.

Like other areas of medical care, health care of the older adult population in the United States has emphasized illness care. Nursing practices have emphasized self-care and self-responsibility (Wilson, Patterson, & Alford, 1989). By remaining involved in society and their own community older adults can receive social stimulation, physical exercise, and relief of symptoms that they may experience with aging (Ghetti, Hama, & Burns, 2004).

There has been a growth in literature on the effects of music with geriatric clients and attempts to review the music therapy research (Brotons, 1997; Prickett, 2000; Smith, 1990). These reviews of literature have identified research where positive effects have been demonstrated using music with the geriatric population. For example Brotons (1997) studied articles from refereed journals from 1985-1996 and discovered a total of 69 references that included 30 clinical empirical reports (experimental, descriptive, or case studies) of music therapy and dementia. Results of this article suggested that in general, music/music therapy can be an effective intervention to retain and improve active involvement, to increase social, emotional and cognitive skills, and to decrease behavior problems of individuals with dementia.

Smith (1990) explored 32 therapeutic treatment interventions for the most commonly used treatments, treatment effectiveness, and extent of documentation. Smith then evaluated how these interventions can be used with music therapy and the geriatric population. Based on

his review, Smith says that music therapists would be more successful with more behavioral techniques.

Prickett (2000) investigated data-based literature examining music therapy knowledge about procedures for the elderly. She compiled literature concerning age-related issues apart from dementia and also discussed issues concerning specific issues of dementia. Prickett focused on refereed journals during the past two decades and concluded that although research is growing in this population, it would be wise to continue with more research in order to draw definitive conclusions.

A national survey was conducted using a representative sample of music therapists who worked with older adults (Smith & Lipe, 1991). Treatment goals of music therapists around the nation included socialization skills, sensory stimulation, cognitive skills, expression of feelings, physical functioning, relaxation/anxiety reduction, creative expression, problem behaviors, and spiritual affirmation.

This review of literature focuses on the different research on music techniques that therapists use a variety of symptoms of the elderly. The purpose is to develop evidence-based clinical guidelines in this area.

General Symptoms

Agitation. Agitation presents a serious management problem that can sometimes lead to disruptive behavior and can cause harm to other people. Clark, Lipe, and Bilbery (1998) found that when clients with Alzheimer's disease (AD) bathed while listening to their preferred music there was a significant decrease in agitation. Thomas, Heitman, and Alexander (1997) also found that familiar individualized music can significantly decrease agitation during bathing. Fourteen residents with dementia exhibited significantly decreased aggressive behavior.

Groene (1993) found that agitated AD patients' reaction to one on one music therapy sessions had increased attention spans during sessions with music therapy. Thirty patients were divided into two groups with one group having seven sessions, five sessions of live music, and two sessions of reading. The other group had five sessions of reading and two sessions of music. For both groups, times that these wandering patients remained in their seats and/or near the session was significantly greater during the music condition.

Gerdner (2000) found that agitation decreases when patients listened to preferred music. The patients ($N=39$) heard preferred music for thirty minutes twice a week for six weeks. Following the six weeks came two weeks of no music and then six weeks of relaxation music twice a week. The study lasted 18 weeks with half the patients listening to preferred music and half listening to non-preferred music. There was a significant decrease in agitated behavior in the individualized music rather than the non-preferred music.

Music therapy can provide structure for the elderly. Cohen-Mansfield, Marx, and Werner (1992) conducted another study where music decreased agitation. Twenty-four participants were observed throughout the day for agitated and non-agitated behaviors. Time sampling was used to record the times of agitation and the activity involved. Results indicated that there was less agitation with structured activities. The researchers suggested that music therapy sessions should be frequently included for nursing home patients. Another study by Cohen-Mansfield and Werner (1997) resulted in the management of verbally disruptive behaviors in nursing home residents with dementia. The greatest reduction of disruptive verbalizations occurred with individual music therapy, while videotape and music listening followed.

Brotons and Pickett-Cooper (1996) provided structure through singing, playing instruments, dance/movement, musical games, and composition/improvisation. Caregivers of the patients rated the subject's agitated behavior based on their observation. Results indicated that subjects appeared to be significantly more agitated before music therapy sessions than during sessions and after music therapy sessions.

Remington (2002) studied the effect of calming music and a hand massage with the agitated elderly. With 68 nursing home participants with dementia, the researcher had a ten-minute segment of music with or without a hand massage. With the Cohen-Mansfield Agitation Inventory, each intervention decreased agitation more than the control condition. The benefits of decreased agitation lasted up to one hour.

Agitation was also decreased with music at dinnertime. Goddaer and Abraham (1994) conducted a study that examined the effects of relaxing music on agitation during meals among nursing home residents with severe cognitive impairments. Behaviors that were observed were aggressive, physical non-aggressive, verbally agitated, and hiding/hoarding behaviors. Twenty-nine patients went through a four week protocol with week one being baseline, week two having

relaxing music, week three music was removed, and week four reintroduction of music. The music was defined as being music with a slow tempo, irregular, unpredictable rhythm, with no variance of intensity. There were significant reductions on incidences of agitated behaviors, non-aggressive behaviors, and verbally agitated behaviors.

Depression. Symptoms and signs of depression are common in the geriatric population. Ashida (2000) assessed 20 elderly depressed patients with dementia and determined the relationship between depression and change before and after music therapy. There was a significant decrease in depressive symptoms following sessions of reminiscence music therapy.

Emotionally, memories can be positive or negative and can also effect mood. Suzuki (1998) investigated music therapy's effect on mood changes and the accessibility of positive and negative memories among the depressed elderly ($N=8$). Sessions consisted of sing-alongs, music making and music relaxation. Results suggested that there were significant decreases in the percentages of unpleasant memories recalled after music therapy sessions. Facial affect was also investigated and found that with music therapy, negative affect scores decreased after sessions.

Hanser (1994) studied the effects of a music therapy strategy on depressed older adults. Thirty participants ages 61-86 either listened to music, learned stress reduction strategies, and participated in home visits with a therapist or learned a self-administered technique with moderate and indirect therapist contact. The participants were split into three groups consisting of home-based music therapy, self-administered music therapy, and no music therapy. The eight music techniques consisted of (1) gentle exercise to familiar, energetic music, (2) facial massage to familiar relaxing music, (3) progressive muscle relaxation to specially designed music with instructions from the therapist, (4) guided imagery to pragmatic music, (5) special imagery to music where client visualized positive actions to solve problem or heighten mood, (6) slow, repetitive music for sleep or relaxation, (7) rhythmic, energetic movement, (8) music listening with drawing, painting, or other art forms. Hanser found that participants in both music conditions performed significantly better than controls on the measures of depression, distress, self-esteem, and mood.

Hanser (1990) also studied a music therapy strategy for depressed older adults (age 65-74) that involved eight music listening programs facilitated by a MT-BC for home use. The music techniques used were body relaxation, imagery, stimulation and sleep enhancement, and

music that cued relaxing and positive thoughts. Results indicated that all subjects gained on all the measured variables for eight weeks and responded differently to imagery and body relaxation.

Participation/Social. Participation from the elderly is another objective that has been investigated by many researchers. A study done by Pollack and Namazi (1992) yielded significant results. The researchers studied the relationship between music participation and social behavior of moderately to severely impaired Alzheimer's individuals. Each subject participated with the music therapist in one or more music activities, selected according to preferred music response and adapted to cognitive and motor functioning level. There were positive responses from subjects to the music treatment as evidenced by increased participation, smiling, eye contact, and verbal feedback expressing pleasure in the activities. The researchers suggested that individualized music activity with Alzheimer's patients may facilitate interaction during music and encourage further social contact after music.

Groene (2001) studied the effect of presentation and accompaniment styles on attention and responsive behaviors of participants with dementia. In this study the dependent variables consisted of singing, attention before the song title was announced, leaving before the session was done, reading the lyrics, nods before the song began after announcing the title, compliments before the singing began, attention after the song had ended, compliments after the song had ended, nods after the song had ended, and applause. Eight subjects participated in 16 sing-along sessions divided into four conditions which included live music with simple guitar accompaniment, live music with complex guitar accompaniment, recorded music with simple guitar, and recorded music with complex guitar accompaniment. All songs were familiar and were identical in song order for each session. This study showed significant differences in group behavior before and after song presentations, which included attention, leaving the group, reading lyrics, compliments, and applause.

The influence of a highly participating peer (HPP) can motivate the group into higher levels of social interaction and participation. Christie (1995) found that when there was a highly participating peer in music therapy sessions the participation of the group as a whole had significant increases. Music therapy sessions took place two times a week for a span of thirty weeks. The researcher observed their singing, hand and arm movements, smiling, eye contact,

and head nodding when the HPP was in the room and not in the room. All participants sat at tables and were given cues and reinforcements verbally, and with gestures, and touch.

Sixty patients with Alzheimer's disease (age 72-103) were tested for the effects of music on behaviors such as social interaction, recall, and mood. Three groups equal in size were divided into three different conditions. The first group participated in music listening to "Big Band" music from the 1920's and the 1930's. The second group did a puzzle exercise, while the third group participated in standard acts of drawing and painting. Results indicated that music selected from a period when the patients were younger could assist in recall, social interaction, and improved mood. The subjects in the music therapy sessions displayed behaviors such as smiling, laughing, singing, dancing, and whistling to the music (Lord & Garner, 1993).

To get improved responses from the elderly Clair and Bernstein (1990) compared the durations of vibrotactile responses, nonvibrotactile responses, and singing in a sample of severely regressed persons with dementia ($N=6$). Four pilot sessions and ten experimental sessions were completed while the therapist sang songs while playing the guitar and encouraging singing throughout the session. For vibrotactile responses the subject held a drum in their lap while playing, while nonvibrotactile responses was defined as drum playing with the drum held in front of the subject. The final variable was singing. Results indicated that there were significant differences in durations of vibrotactile and nonvibrotactile responses. Vibrotactile responses kept attention of the subjects longer.

Clair (1996) examined the effect of music therapy on the alert responses in persons with late stage dementia. Head and eye movements, limb movements, changes in facial expressions, and vocalizations defined alert responses. A group of twenty-six had a session consisting of two-minute segments of reading the newspaper, singing unaccompanied familiar songs and sitting in silence. Although not significant, alert responses were most frequent during singing. The number of alert responses during silence was significantly lower than any other condition. This research suggested that the music therapist and others should use singing as a stimulus for responses in persons who are in late stages of dementia. Groene (1998) also examined the effect of individual therapy sessions on purposeful responses of AD/DRD patients. Three music therapists and one occupational therapist presented twenty-nine sing-along and exercise sessions to seven participants. Sixteen sing-along sessions consisted of live guitar playing and singing by

the music therapist and thirteen exercise sessions with recorded music. The participants with dementia responded significantly more during exercise than during the sing-along sessions.

Millard and Smith (1989) conducted a reversal behavioral design to examine 10 Alzheimer's patients' behavior during singing sessions and conversation sessions. With a behavior checklist patients were observed while sitting in a chair, walking with others, and during verbal/vocal participation. These behaviors were significantly higher during music sessions. The observers also concluded that patients walked with others after the music sessions significantly more than after no music therapy sessions.

Reminiscence groups programs are effective in enhancing the adaptation to daily life of an elderly person with Alzheimer's disease and vascular Dementia. Tadaka and Kanagawa (2007) found significant decrease of withdrawal in AD patients and VD patients with an eight-week reminiscence program. The multidimensional observation scale measured the group's daily life activities such as self-care, disorientation, depression, irritability, and withdrawal.

Cevasco and Grant (2006) analyzed average participation during singing and moving/playing, singing only, and moving/playing. Participation was highest during acapella singing followed by instrument playing. There was more participation and interaction from the clients for rhythm activities (83%), and then movement activities (51%). A similar study by Clair and Ebberts (1997) investigated participation levels of the elderly in late stages of dementia. They also found that participation levels were higher during rhythm playing followed by singing and dancing.

Memory. Memory and recall have been a main focus in the geriatric literature. The research has indicated that music therapy can aid memory significantly. A study done by Prickett and Moore (1991) found that patients recalled the words to songs dramatically better than they recalled spoken words or spoken information. All sessions had a similar format of familiar material, sung and spoken. The therapist conducting the session invited the subject to begin singing along as soon as the song was recognized.

Borod and Goodglass (1980) studied 102 right-handed males in groups according to age. Groups A (24-39), group B (40-49), group C (50-59), group D (60-69), and group E (70-79) recalled digits and initial phrases of nursery tunes. A significant difference associated with age was found. As age increased the number of recall decreased. Another study found that the

amount of recall decreased as age increased (Lynch and Steffens, 1994). In the study, a group of young people (24), and ten elderly people (68.5) listened to culturally familiar and unfamiliar musical scales. For both ages recall of familiar songs were equal except for unfamiliar songs. The older persons' detection decreased. Maylor (1991) conducted a similar study that suggested that age does affect recognition and naming. Thirty-seven adults (55-64.3 years) and 32 older adults (65.4-83.8 years) responded to theme tunes from past and recent television programs. Neither group performed well in identifying themes or providing information about shows that were unfamiliar. However, for frequently watched programs, older adults responded to fewer theme tunes and gave less information about the shows than did the younger adults. In both studies, age was a predictor of performance.

Long term and short term memory can also be affected by music. Barlett and Snelus (1980) had groups of 32 younger subjects (37-57) and 32 older subjects (60-76) recall popular songs. The investigators found that long-term memory for songs exists and recall of lyrics is better when a melodic cue (title of song) is given. The subjects were able to place the song in its decade more accurately for familiar tunes than unfamiliar even when the lyrics were not remembered.

Brotons and Marti (2003) suggested that music activities such as music listening, singing, instrument playing, and movement/dance with client preferred music improved short and long term memory. Patients were able to learn and recall the names of the others in the group as well as past life experiences. Not only was there an improvement in memory, but there was progress in attention span and expressive language. Carruth (1997) investigated the ability of patients with ADRD to recall names of staff members using music with a spaced retrieval task. Due to the small sample size, data were not analyzed statistically, but average percentages suggest that music can be a beneficial tool to improve the naming abilities of nursing home residents with memory loss.

The Mini mental state examination is a commonly used test for complaints of memory problems. Silber (1999) did not find background music to be an effective tool. Eleven residents with Alzheimer's disease took the Mini mental state examination using music as a background. The music was James Last's "Violins in Love," which was chosen for its absence of rhythmical beat and the uniformity of the dynamics. The role of the background music was not to captivate the participants. The patients were examined three times, the first exam serving as a baseline

without background music, the second with background music, and the third without background music. This suggests that music therapy interventions over a longer period of time accompanied with live music is a more effective technique.

A study done by Smith (1991) compared group performance and song familiarity on cued recall tasks with older adults. Retirement center residents listened to six songs while adult day care participants and nursing home participants completed an abbreviated assessment composed of three of those six songs. Each participant completed a cued recall task using song phrases sung by a vocalist. Although recall performance was not significantly different between songs designated as familiar and those that were considered less familiar, the author concluded that tempo, duration per word, and the total number of words which were recalled were closely associated with lyric recall and not the familiarity of the song.

Wylie (1990) investigated the effect of old songs, antique objects, historical summaries, and general questions on the reminiscence of nursing home residents. The dependent variables in this study were reminiscence statements and the number of references to relatives, non-relatives, places visited and/or lived, places not visited, personal events experienced, non-personal historical/cultural events, and adulthood activities. There was a statistically significant difference between all of the treatment conditions for the total number of statements produced for the dependent variables. The highest mean score for old songs was adulthood activities.

Stroke patients can be classified as having a right cerebral-vascular accident or a left cerebral-vascular accident. In Prior, Kinsella, and Giese's study (1990) 39 older adults (53-78) with one of these types of cerebral accidents were analyzed for perception of pitch and rhythm of a familiar tune and unfamiliar tune. Results indicated that the LCVA group had significantly more errors on rhythm tasks than did the RCVA and the control groups. LCVA persons were more impaired in all tasks, but the results were not statistically significant.

In another study, Prior, Kinsella, and Giese (1990) assessed the production of music in similar groups by asking subjects to sing an original melody and a well-known tune. The groups were told to sing "Happy Birthday, a three, 6 or 8 note original melody modeled by a music therapist, and to tap out two short rhythmic patterns with a model. There were significant group differences on each task. The control group and the RCVA group performed significantly better on rhythm production. The control group was better than both the stroke groups concerning

singing the familiar tune. The left lesioned group showed greatest difficulty in musical tasks, but only on the original melody was this significant.

Problems with memory not only affect patients with dementia, but can also affect healthy older adults. Music can be used to elicit short and long-term memory and has provided significant results when used.

Hearing. To make the music therapy intervention beneficial, the clinician needs to know what range of sound the client prefers. In the following studies preferences of stimulation are found. Smith (1988) studied the effect of enhanced higher frequencies on the musical preferences of older adults. Participants (N=20) were exposed to music on two tapes that had been recorded with frequencies around 3 kHz level, and increased by 15 dB. The subjects were informed to indicate preference from the normal recording to the enhanced recording. The results found that on the Version A tape there was a significant preference for music recorded normally, but on the Version B tape participants spent more time listening to the enhanced version. The researcher concluded that overall results of this study were not significant.

Another study by Smith (1989) explored the intensity preferences in music listening that allowed the subjects to alter loudness levels. Subjects were tested using six individualized songs and loudness preferences were assessed using four frequency bands (110, 330, 1,000, 3,000 Hz). Results indicated a significant difference between age groups. Subjects in the younger age groups preferred louder volume levels than did the older age group. The researcher also found that the older subjects with hearing loss did not compensate by increasing volume, but younger subjects with better hearing abilities did increase the loudness levels.

Language/Voice. The deterioration of language abilities including both comprehension and production is a very common symptom of dementia (Appell, Kertesz, & Fisman, 1982). The decline of cognitive functioning during ADRD results in a deterioration of language. Reading, comprehending, utilizing context, and using sequential relations all are components of language that can suffer due to deteriorating cognitive function. Brotons and Koger (2000) studied the impact of music therapy on language functioning in dementia. Subjects participated in groups of two to four, twice per week for 20-30 minutes for a total of eight sessions. Both conditions of music therapy and conversation sessions were paired with reminiscence music therapy with and

without music. The results show that music therapy significantly improved performance on both speech content and fluency dimensions of spontaneous speech sub scale of the Western Aphasia Battery.

Not only does the language of dementia patients deteriorate over time, Parkinson's disease patients also can be affected. Haneishi (2001) examined the effect of music therapy voice protocol on speech intelligibility, vocal intensity, maximum vocal range, maximum duration of sustained vowel phonation, vocal fundamental frequency, and mood of individuals with Parkinson's. In the study facial music massages were administered with inhalation and exhalation abdominal muscle movements, vocal exercises and breathing exercises. Results showed a significant increase in speech intelligibility and vocal intensity.

Breath management and voice exercises can be done individually or in a group setting. Different exercises can benefit the patient and help with quality of life. An important exercise that has been identified is deep breathing. Good breath support helps with daily activities, facilitates speech, and provides sufficient volume. Proper breath support can facilitate relaxation (Wong, 2004).

Breath management for the elderly with emphysema can affect quality of life. The procedure spanned a period of 9 weeks with group sessions. The methods consisted of posture and breath management exercises. The bulk of the treatment consisted of choral speaking and singing. Although there were no significant differences found on measures of physical health such as forced expiratory volume, inspiratory threshold, or distance walked in six minutes; functional outcomes such as breath control and breath support showed a significant change over time. According to the study quality of life measures showed mixed results. The researcher came to the conclusion that vocal instruction and inclusive breathing exercises may help to improve the quality of life for senior citizens with emphysema (Engen, 2005).

Deteriorating language can affect an aging person's quality of life. Music has shown significant increases in areas of language. With different exercises, such as deep breathing exercises and vocal exercises, language can improve.

Physical Rehabilitation Symptoms

Physiological. In a study by Matsushita and Takahashi (2006), long-term effects of group music therapy were assessed. Music therapy sessions were carried out once weekly on the elderly suffering from moderate or severe dementia. Music therapists observed changes in the cortisol level in saliva and in blood pressure. Results showed that systolic blood pressure determined one and two years after the start of therapy increased significantly in the non-music group compared with that in the music therapy group. Though blood pressure increases with aging, the blood pressure was significantly lower in participants who were in the music therapy group. Results also showed that the music therapy group maintained their physical and mental states during the two-year period better than the non-music therapy group. These results indicate the lasting effect of once-a-week continuous music therapy

Gait Training. Research has been conducted to promote the effects of music with exercise, nutrition, and quality of life of older adults. Research indicates that regular exercise and physical function increase independence, good health, and improved quality of life. Music can function as a catalyst to exercise and preserve nonmusical processes even in the latest stages of the disease (Ghetti, Hama, & Woolrich, 2004). Due to the increase in functional decline as people age, the potential for deteriorated physical strength and flexibility can lead to falls. Falls are one of the most serious and common medical problems suffered by adults (Province et al., 1995).

Persons in late stage dementia can lose the ability to walk because of deteriorating psychomotor skills. Thus walking is essential for their health (Reisberg, Ferris, de Leon, & Crook, 1982). Rhythmic auditory stimulation may provide good nonverbal, auditory cues to facilitate gait characteristics that include appropriate walking cadence, enhanced velocity and stride length. However, Clair and O’Konski (2006) found that RAS, in which metronomic beats were imbedded in music, had no statistical significance when observing stride length, cadence, and velocity. The study was imbedded into the participants’ individualized regular ambulation program. The individual walked to music with clear rhythmic beats, the rhythmic beats of a metronome, or no auditory stimulation. Although the dependent measures were not significantly affected, stride length did approach significance and showed the greatest difference during the music conditions.

Hamburg and Clair (2003) used music to enhance physical flexibility, balance, gait speed, diaphragmatic breathing, coordination, and spatial awareness of 16 healthy older adults. The researchers used 14 movement sequences to music composed to reflect dynamics, rhythm, timing, and phrasing of the movements. Tempos were matched to the repetition rate of movements and the duration of musical phrases that cued the ranges of motion through space. Each movement sequence had a two to four measure introduction that gave a clear indication of the type of movement that followed and were taught in three alternate positions: standing unassisted, standing holding onto a chair, or seated. After the 14-week process individuals showed statistically significant increases in measures of one-foot stance balance, gait speed, and functional reach.

Pain Relief. Researchers emphasized the need of rehabilitation for the elderly on a daily basis in order to maximize their physical functioning. Their symptoms such as pain interferes with daily activities therefore it is crucial for the patients to continue their rehabilitation. Kim and Koh (2005) studied the effects of music on pain perception of geriatric stroke patients during upper extremity joint exercises. The subjects ($N=10$) had severe hemiplegia and two of them had both mild hemiplegia and limited language skills. This study consisted of a song (music with lyrics, melody, and pop instrumental accompaniment), karaoke accompaniment (same music to condition A except a singers' voice), and no music. Exercise movements in this study included hand, wrist, and shoulder joints. During an eight-week period of music therapy sessions, subjects randomly repeated the three conditions. After each condition subjects rated their perceived pain on a scale. Although there were no significant differences in pain rating among the three music conditions positive affects and verbal responses were observed during exercises with both music and karaoke accompaniment music. Movement and exercise are an important part of everyday life and can act as a social and healthy way for the elderly to be involved in activities. As a person gets older exercise and movement are important to maintain a healthy lifestyle.

Participation. Increased participation can be achieved through music therapy interventions. It can also be increased in exercise programs. Johnson, Otto, and Clair (2001) examined the effect of instrumental and vocal music on the focus on a physical rehabilitation exercise program with

persons who were elderly. All subjects participated in six treatment sessions under three conditions. Two sessions had live instrumental music, two had live vocal music and two had no music (control group). All of the conditions and exercises had the same duration and metronome tempos established. Results indicated that there were significant treatment effects and treatment differences among 6 out of the 14 exercises. Subjects indicated that they preferred music to no music conditions while exercising, but were distracted by the familiar music and often sang along with music used in the exercise program. Participants were less likely to engage in exercising while they were singing.

Another study by Cevasco and Grant (2003) compared different methods for eliciting exercise to music with patients with ADRD. The researchers compared two methods of intervention and compared responses to vocal versus instrumental music. In the first condition, independent variables were as follows: (1) verbalizing the movement of each task once, one beat before, followed by visual cuing for the remainder of the movement, (2) verbal and visual cuing for each revolution or change in rhythm for the duration of the task. In the second condition independent variables were exercise to vocal music, exercise to instrumental music, exercise with instruments to vocal music, and exercise with instruments to instrumental music. Results indicated that continuous verbal cuing/easy treatment showed significantly greater participation than one verbal cue/difficult treatment. Additionally, both types of activity and the the type of music had effect on participation. Participation in exercise to instrumental music was significantly greater than exercise with instruments to vocal music.

CHAPTER III

METHOD

Procedure

The researcher identified and investigated 47 articles from different populations within the area of gerontology. The different populations included Alzheimer's disease and related diseases, Parkinson's disease, stroke patients, and patients with emphysema. The articles were found through electric databases such as Eric, Psych-info, and the J-store, using keywords such as "geriatrics," "music," "music therapy." Literature used in this analysis were articles published in refereed journals, written in English, which studied and quantified the use of music/music therapy in the geriatric population, which had participants of the age of least 60. These articles were of quantitative research with an experimental or behavioral design, Case studies were excluded. The refereed journals included Journal of Music Therapy (1964-2007), Music Therapy Perspectives (1983-2007), Journals of Gerontology, Journal of Applied Gerontology, Perceptual and Motor Skills, Journal of Clinical and Experimental Neuropsychology, Archives of Psychiatric Nursing, International Psychogeriatrics, Geriatrics and Gerontology International, Nursing Research, Neuropsychologia, and Journal of Gerontological Nursing.

The selected empirical research studies were categorized according to the variables affected by music. These variables were identified in a table and then analyzed to find the most important result to the study and common procedures. The variables included general symptoms and physical rehabilitation symptoms. Physical rehabilitation variables that were affected by music included physiological, gait training, pain relief, and participation. The general variables affected by music were agitation, memory, social, language, hearing, and depression. Clinical guidelines for evidence-based practice were then developed.

CHAPTER IV

RESULTS

The most used techniques were compiled from the 47 journal articles. Table 1 indicates author, population, independent variable, dependent variable, the number of subjects, and the most important results from the study. From this table, evidence-based clinical guidelines were developed.

Clinical guidelines for evidence-based practice with the most commonly researched techniques for geriatric clients have been organized into music therapy models of applications and procedures. The clinical guidelines for evidence-based practice are grouped according to symptoms of the elderly. Each guideline cited includes a description of the possible therapeutic objective, the target populations, the documentation found for assessing effects, specific music therapy procedures, and the conclusions drawn from literature reviewed.

Table 1. Study Characteristics

General Symptoms	Author	Population	Independent Variable	Dependent Variable	N	Results
<i>Agitation</i>	Clark, Lipe, Bilbery (1998)	Alzheimer's Disease and Related Disease (ARD)	Preferred Music versus No Music	Agitated behavior	18	When clients bathed while listening to their preferred music there was a significant decrease in agitated behavior.
	Brotons & Pickett-Cooper (1996)	ARD	Music therapy versus No music therapy	Agitation levels	20	Participants appeared significantly more agitated before music therapy sessions than during the sessions and after the music therapy sessions.
	Cohen-Mansfield, Marx, Werner (1992)	ARD	Structured activities versus Non-structured activities	Agitated behaviors and non-agitated behaviors	24	There was less agitation with structured activities. (pp.17-19)
	Cohen-Mansfield & Werner (1997)	ARD	1:1 music therapy, family generated videotape, and music vs. No music	Verbally disruptive behaviors	32	The greatest reduction (56%) was 1:1 music therapy, while videotape, music, and no contact accompanied reductions of 46%, 31%, and 16%. (pp.17-19)
	Gerdner (2000)	ARD	Preferred Music vs. non-Preferred music	Agitated behavior	39	There was a significant decrease in agitated behavior in the individualized music rather than the non-preferred music. (pp.17-19)
	Goddaer & Abraham (1994)	ARD	Relaxing music versus no music	Aggressive, physical non-aggressive, verbally agitated, and	29	There were significant reductions in incidences of agitated behaviors, non-aggressive behaviors, and verbally agitated behaviors.

Table 1. Continued

				hiding/hoarding behaviors		
	Groene (1993)	ADRD	Live music versus reading Sessions	Attention span	30	Times that the patients remained in their seats and/or near the session was significantly greater during the music condition.
	Remington (2002)	ADRD	Calming music, hand massage, no music	Agitation	68	Each intervention with music decreased agitation more than the control condition (no music)
	Thomas, Heitman, Alexander (1997)	ADRD	Bathing with music versus no music	Agitated behavior	14	Individualized music significantly decreased agitation during bathing.
<i>Depression</i>	Ashida (2000)	ADRD	Music therapy versus no music therapy	Depressive symptoms	20	There were significant decreases in depressive symptoms.
	Hanser & Thompson (1994)	ADRD	Home-based music therapy, self-administered music therapy, and no music therapy	Depression, distress, self esteem, and mood	30	Participants in music conditions performed significantly better than controls on measures of depression, distress, self-esteem, and mood.
	Hanser (1990)	ADRD	Body relaxation, imagery, stimulation and sleep enhancement, and music that cued positive thoughts	Depression symptoms	4	Participants gained on all the measured variables and responded differently to imagery and body relaxation.
	Suzuki	ADRD	Sing-alongs, music	Positive memories	8	There were significant

Table 1. Continued

	(1998)		making, and music relaxation	versus negative memories		decreases in percentages of unpleasant memories.
Participation	Cevasco & Grant (2006)	ADRD	Singing and moving/playing, singing only, and moving/playing	Participation level	15	There was more participation from clients for rhythm activities and then movement activities.
	Christie (1995)	ADRD	Highly participating peer vs. no highly participating peer	Participation such as hands and arm movements, smiling, eye contact, and head nodding	8	Participation levels from the group as a whole significantly increased with a highly participating peer involved.
	Clair (1996)	ADRD	Reading the newspaper, singing unaccompanied familiar songs, and silence	Alert responses	26	The number of alert responses during silence was significantly lower than any other condition.
	Clair & Bernstein (1990)	ADRD	Vibrotactile responses, nonvibrotactile responses, and singing	Durations of responses such as attention	6	Vibrotactile responses kept the attention of the participant longer.
	Clair & Ebberts (1997)	ADRD	Rhythm playing, singing, dancing, no music therapy	Participation level	30	Participation was highest during rhythm playing, singing, and then dancing.
	Groene (2001)	ADRD	Live music with simple guitar, live music with complex guitar, recorded music with simple guitar, and recorded music	Singing, attention, leaving before the session was done, reading the lyrics, nods before for affirmation, compliments	8	There were significant differences in group behavior before and after song presentations, which included attention, leaving the group, reading lyrics, compliments, and applause.

Table 1. Continued

			with complex guitar	before, attention after, compliments after, nods after, and applause		
	Groene, Zapchenk, Marble, & Kantar (1998)	ADRD	Music versus no music	Purposeful responses	7	Participants with dementia responded significantly more during exercise than during the sing-along sessions.
	Lord & Garner (1993)	ADRD	Music listening, puzzle exercise, drawing and painting	Social interaction, recall, and mood	60	Music selected from a period when the patients were younger could assist in recall, social interaction, and improved mood.
	Olderog-Millard & Smith (1989)	ADRD	Singing sessions versus conversation sessions	Sitting in a chair, walking with others, and verbal/vocal participation	10	Sitting in a chair, walking with others, and vocal/verbal participation was significantly higher during music sessions. Patients walked with others after the music sessions significantly more than with no music therapy sessions.
	Pollack & Namazi (1992)	ADRD	Music treatment sessions versus no music	Social behavior and non-social behavior	8	There were significant results with positive responses for the music treatment.
	Tadaka & Kanagawa (2007)	ADRD	Reminiscence music therapy versus no music.	Withdrawal, self care, disorientation, depression, and irritability	60	There were significant improvements of withdrawal in AD patients and VD patients.
Memory	Carruth (1997)	ADRD	Music vs. no music	Ability to recall names of staff	7	Music improved patients' recall of targeted staff

Table 1. Continued

				members of the nursing home		members' names.
	Barlett & Snelus (1980)	ADRD	Familiar tunes versus unfamiliar tunes	Long-term memory	64	Long-term memory for songs was found and recall of lyrics was better when the title is given.
	Borod & Goodglass (1980)	ADRD	Digits versus initial phrases of nursery tunes	Amount of recall	102	The amount of recall decreased as age increased.
	Brottons & Marti (2003)	ADRD	Singing, instrument playing, and movement/dance	Social and emotional areas	28	Improvements in recall, attention span, and expressive language.
	Lynch & Steffens (1994)	ADRD	Culturally familiar and unfamiliar musical scales	Amount of recall	34	Recall decreased as age increased.
	Maylor (1991)	ADRD	Theme tunes from the past and recent television programs	Recognition and naming	69	Recall decreased as age increased.
	Prickett & Moore (1991)	ADRD	Words spoken versus singing	Recall of words	10	Patients recalled the words to songs better than recalling words while speaking.
	Prior, Kinsella & Giese (1990)	Cerebral Vascular Accident	Familiar tune versus unfamiliar tune	Perception of pitch and rhythm	39	LCVA group had significantly more errors on rhythm tasks than did the RCVA and control group.
	Prior, Kinsella, & Giese (1990b)	Cerebral Vascular Accident	Singing "Happy Birthday," a three, 6 or 8 note original melody, two short rhythmic patterns	Production of music	39	Control group (healthy older adults), and RVCA performed significantly better on rhythm production. Control group was better in singing the familiar tune.

Table 1. Continued

	Silber (1999)	ADRD	Background music versus no background music	Progress of Mini Mental State Examination	11	No significant difference with background music versus no background music.
	Smith (1991)	Healthy Older Adults	Familiar versus unfamiliar songs	Group performance and song familiarity on cued recall tasks	10	Recall was not significantly different between familiar songs.
	Wylie (1990)	Nursing Home Residents	Old songs, antique objects, historical summaries, and general questions	Amount of recall and references to relatives, non-relatives, places visited, and/or lived, places not visited, personal events experienced, non-personal historical/cultural events, and adulthood activities	60	There were statistical significant differences between all of the conditions for the total number of statements produced for dependent variables. The highest mean score for old songs were adulthood activities.

Table 1. Continued

Hearing	Smith (1988)	Healthy Older Adults	Music with frequencies around 3 kHz level, recordings with enhanced 15 dB and normal recorded music	Preferences of loudness	20	There were no preferences for music recorded under enhanced conditions, which was not significantly different.
	Smith (1989)	Healthy Older Adults	Four frequency bands (110, 330, 1000, 3000 Hz)	Preferences of loudness	200	Subjects in the younger age groups preferred louder volume than did the older age group.
Voice	Brotons & Koger (2000)	ADRD	Music therapy versus conversation sessions	Language function	26	MT significantly improved performance on speech content and fluency.
	Engen (2000)	Emphysema	Group singing instruction versus no singing instruction	Physical health, quality of life, functional outcomes	7	No significant differences in measures of physical health. Breath Management and breath support were significant. Quality of life had mixed results.

Table 1. Continued

	Haneishi (2001)	Parkinson's disease	Facial massages, abdominal muscle movements, vocal exercises, and breathing exercises	Speech intelligibility, vocal intensity, maximum vocal range, maximum duration of sustained vowel phonation, vocal fundamental frequency, and mood	4	Results showed a significant increase in speech intelligibility and vocal intensity.
Physical Symptoms						
<i>Physiological</i>	Matsushita & Takahashi (2006)	ADRD	Music therapy versus no music therapy	Long-term effects of group music therapy	43	Music therapy group maintained their physical and mental states during the two-year period better than the non-music therapy group.
<i>Pain Relief</i>	Kim & Koh (2005)	Elderly with Hemiplegia	Recorded song, karaoke accompaniment, no music	Pain perception	10	There were no significant differences in pain rating across the three conditions. There were positive affects and verbal responses from the patients.

Table 1. Continued

<i>Gait Training</i>	Clair & O'Konski (2006)	ADRD	Music with clear rhythmic beats, rhythmic beats of a metronome, no stimulation	Stride length, cadence, and velocity	28	RAS had no statistical significance when observing stride length, cadence, and velocity.
	Hamburg & Clair (2003)	ADRD	Music versus no music	Functional reach, balance, gait speed, diaphragmatic breathing, coordination, and spatial awareness	16	Significant increases were found in measures of one-foot stance balance, gait speed, and functional reach.
<i>Participation in an Exercise Program</i>	Cevasco & Grant (2003)	ADRD	Verbalizing/visual cue one beat before, verbal/visual for each revolution & vocal music, instrumental music, instruments with vocal music, instruments with instrumental music	Participation level	15	Continuous verbal cueing showed significantly greater participation than one verbal cue.
	Johnson, Otto, & Clair (2001)	Elderly in physical rehabilitation	Instrumental, vocal music, no music	Participation level	19	Subjects indicated preference over music versus no music while exercising.

Clinical Guidelines for Evidence-Based Practice

Variable I. Agitation

Therapeutic Objective:

To decrease agitation during daily activities of life

Populations:

Alzheimer's disease and related diseases

Documentation:

Assessments:

Cohen-Mansfield Agitation Inventory

Behaviors:

Hiding/hoarding, physically non-aggressive behavior, verbally agitated behavior, aggressive behavior, wandering, verbal disruptions

Procedure:

Use patients preferred live or recorded music.

Use "calm" music.

1:1 music therapy sessions were best at reducing agitation

Use structured music therapy activities such as music listening, music participation and music combined with massage.

Music can be used to decrease agitated behaviors during everyday life activities such as bathing and eating meals.

Discussion:

Agitation is a common symptom of Alzheimer's disease. It can be defined as inappropriate verbal, vocal, or motor activity. As a person gets older they experience losses in their life such as loss of hair, loss of teeth, and loss of health. They may also experience loss of family or friends. These consequences of age may cause the elderly to experience feelings of

agitation and/or frustration. Music's therapeutic objective for agitation is to decrease these behaviors during daily activities of life. To facilitate a music therapy intervention for aggressive behaviors live and recorded music have both been used. The therapist should also use the patient's preferred music during sessions, which then will decrease agitated behaviors. Studies showed that the therapist chose to either ask the patient or ask the family about music preferences. Because of cognitive deterioration the client may not have been able to answer the question of preferred music, but family was able to identify music choice. Preferred music was used because clients related better to the music and it helped keep their attention longer during the music therapy intervention.

There were also many studies that used calm and relaxing music. This type of music is very important to get responses from the client. Calm/relaxing music with a slower beat caused agitated behavior to decrease

One on one music therapy sessions were best to decrease agitation. This may be because everybody had a different level of agitation and meeting the client at their own level with music resulted in more successful interventions. Nursing home residents sometimes do not experience a lot of structure in every day life. With music therapy sessions they are presented with structure and more stimuli than they may get during their stay at a nursing home or long term care facility. Individuals with ADRD responded positively to the structure provided through music during interventions.

Behaviors to be observed are hiding/hoarding, physically non-aggressive behavior, verbally agitated behavior, and aggressive behavior. Good assessment of agitation is necessary for improved understanding of these different behaviors. One then can develop interventions and management strategies for agitation. The assessment of elderly persons with dementia is difficult because clients are not always able to verbalize their needs or behaviors. The most commonly used assessment for agitation is the Cohen-Mansfield Agitation Inventory. In the nursing home version the staff rates the frequency of 29 behaviors. Behaviors such as pacing, complaining, grabbing or pushing are typical items in the assessment. Another version of the CMAI includes the frequency and intensity rating of disruptiveness of the behaviors (Cohen-Mansfield, 1996).

Variable II. Depression

Therapeutic Objectives:

Increase mood and overall quality of life

Heighten mood with music therapy and maintain it over a period of time

Populations:

ADRD

Healthy Older Adults

Documentation:

Assessment:

The Beck Depression Inventory, Geriatric Depression Scale, The Self Esteem Inventory, Brief Symptom Inventory, Cornell Scale for Depression in Dementia

Behaviors Observed:

Affect and participation levels

Procedure:

Use guided imagery and reminiscence music therapy to facilitate interpersonal emotions.

Use “calm” music to encourage relaxation.

Hanser and Thompson (1994; 1998) used 8 techniques in two studies to achieve increased mood.

- 1.) Gentle exercise to familiar energetic music
- 2.) Facial massage to familiar relaxing music.
- 3.) Progressive muscle relaxation to specifically designed music with cues from therapist.
- 4.) Guided imagery to programmatic music.
- 5.) Special imagery to music where the client visualized positive action to solve problems they are experiencing.

- 6.) Rhythmic, energetic music to heighten mood
- 7.) Slow repetitive music for sleep or relaxation
- 8.) Music listening with drawing, painting or other art forms

Discussion:

Consequences of depression create impairments in activities of daily life. Aging changes physical features such as graying and loss of hair, wrinkled skin, loss of teeth, stooped posture and slowed gait, which can cause depression. While dementia has no cure, depression is treatable and can be affected by the music therapist. Guided imagery has had successful results in decreasing depression and increasing mood. Guided imagery is a technique that helps the patient to enter a state of relaxation. It acts as a stimulus to release unconscious material for therapeutic use. These materials could range from images, feelings, and different thoughts about the patients' past and present situations. It also elicits an in-depth look at internal struggles that one might have when experiencing depressive symptoms (Burns & Woolrich, 2004). It is able to heighten mood and also maintain it over a period of time.

Participating in a reminiscence group has been found to be a very effective tool for treating depressive symptoms. Also relaxing or calm music may help the elderly with their depressive symptoms. Just like guided imagery, relaxing music can be used to help the patient to be calm and also distract them from symptoms such as agitation or sadness.

Studies that have non-pharmacological approaches for depression such as music therapy often attempted to increase group participation. Often new groups that focused on the individual's needs at that time were created. Hanser and Thompson (1994) created eight techniques to achieve a way to enhance mood including gentle exercises, facial massages, and guided imagery to familiar, pragmatic, or energetic music. With guided imagery clients visualized positive action to solve problems they were experiencing. Facial massage was used in 3 clinical studies to show an enhancement in positive affect and mood. Progressive muscle relaxation is a technique used with cues from the therapist. Progressive muscle relaxation is the process of tensing one's muscles, holding, and then releasing large muscle groups at the end. This is a part of guided imagery and helps relaxation and concentration. Slow repetitive music was used for sleep and relaxation and music listening was paired with drawing, painting or

another art form. Insomnia can be caused by depression, which then can lead to more depressive symptoms. By enhancing sleep, the clinicians actually helped the patient control depression.

A combination of interviewing the patients and direct observation might be the most accurate way to test for depression. There are many assessments used in studies by music therapists. The most popular assessments for depression are the Beck Depression Inventory, Geriatric Depression Scale, and the Cornell Scale for Depression in Dementia. Behaviors that can be examined when observing a patient with depression are changes in affect and also participation levels in activities. The Beck Depression Inventory is a twenty-one self report inventory that is one of the most widely used instruments by healthcare professionals and researchers for measuring levels of depression. The assessment rates symptoms such as hopelessness, fatigue, weight loss, and irritability. The Geriatric Depression Scale is a self-rating scale that can rate levels of mood with yes or no questions. And finally the Cornell Scale for Depression in Dementia is a scale to assess signs and symptoms of major depression. This is based on a semi-structured interview by a qualified observer.

Variable III. Participation/Social

Therapeutic Objective:

Increased participation and social interaction during and after music therapy sessions.

Populations:

ADRD

Health elderly adults

Documentation:

Behaviors Observed:

Smiling, eye contact, verbal feedback, head nodding, hand and arm movements, smiling, speaking, changes in facial expression, echoed rhythmic accuracy

Procedure:

Use client's preferred music for better responses to the structured activity.

Live music is preferred and significantly improves participation and social interaction.

Use Reminiscence Music Therapy to provide opportunities for patients to respond to information from the past.

There are significant increased responses with vibrotactile responses such as instrument playing (ex. drums).

The geriatric population with ADRD participate in structured music activities into late stages of dementia.

Instrument/Rhythm playing is the number one preferred activity followed by dance/movement to elicit participation.

Modeling of responses either by a peer or therapist seems to elicit and maintain increased participation.

Attention span significantly improved when patient responses were emphasized.

Activities designed to elicit responses should occur over a series of sessions.

Discussion:

A music therapist wants to increase participation and social interaction with structured music activities. When creating interventions to achieve this objective the therapist should use the client's preferred music. Clients are going to participate in group activities more and will interact more with others if the music in the intervention is something they know and like. Also there was more participation with live music compared to participation with recorded music. Live music can get more responses from patients with ADRD, which then will lead to increased participation. Even though people in the late stages of dementia are experiencing more symptoms from the disease they are still able to participate in structured music activities.

Procedures that clinicians can use to improve participation and social interaction with their clients are as follows. Instrument and rhythm playing is the number one preferred activity followed by dance and movement interventions. These two interventions require a lot of movement and stimuli for the patients. Instrument/rhythm playing and dance/movement is an

affective way for the clients to express themselves without actually talking. When more people are participating in therapy the less threatening the environment is for patients. Like the study by Christie (1995) having peers that are highly participatory will encourage the group to participate even more during the intervention. Modeling responses by the therapist or by a peer can help maintain more participation.

In order for the clinician to observe participation from clients they must observe behaviors such as smiling, eye contact, verbal feedback, head nodding, and hand and arm movements. Each behavior tells the therapist the level of client interaction. Smiling can give the clinician evidence that clients are enjoying themselves and are focused on the moment at hand. Eye contact is another behavior that shows attention and focus on therapist and activity. Verbal feedback is very important whether it be singing or comments about the intervention. With feedback the level of participation is more obvious with either enjoyment of the session or non-enjoyment of the intervention. Head nodding is a way for patients that have trouble speaking to express their level of attention and participation during therapy. And finally hand and arm movements were included when range of motion was an objective of a session.

Variable IV. Memory

Therapeutic Objectives:

To increase cognitive functioning with memory.

Populations:

Alzheimer's Disease and related diseases

Documentation:

Assessment:

Multidimensional Observation Scale, Memory Retrieval Test, List of memory and behavior problems, Disregarding Order of Report, Hasegawa Dementia Scale (HDS-R), Dementia Scale

Behavior observed:

Ability to recall names, adulthood activities, places and events in the

present and in the past

Procedure:

Client preferred music elicits more to enhanced memories.

Reminiscence music therapy facilitates past memories such as past events, names, and places.

Information presented in song form can enhance retention and recall information.

Discussion:

The therapeutic objective for memory is to increase cognitive functioning, which increases recall. Music was most effective in enhancing memory and recall of ADRD. Many of the studies used similar techniques. Research indicated that enhancing memory required familiar individualized music. Familiar and preferred music achieved the responses the clinician wanted in a more comfortable environment for the client.

Another way to enhance memory and achieve better outcomes was by presenting information in song form. Music therapists left spaces in songs for clients to fill in one word or whole phrases. Clinicians must take note that as age increases, memory recall decreases. The therapist has to design interventions for each client at their level of function for success.

To document improvement in memory clinicians many assessments to choose from and may also observe different behaviors such as recall of events. The assessments that may be used to test levels of memory are the Multidimensional Observation Scale, the Memory Retrieval Test, and the Disregarding Order of Report. There was not a specific assessment commonly used for memory. There is no conclusion as to why so many different assessments are being used for research on memory and music with this population. The researcher also examined studies using observed behaviors such as ability to recall names, dates, places and events in the past and present. In these studies data were collected by the therapist and an observer for reliability. One could conclude that patients that were able to recall more events benefit from the experience of music therapy.

Variable VI. Hearing

Therapeutic Objective:

Find preferences of loudness levels.

Populations:

Healthy Older Adults

Documentation

Assessment:

Audiometric evaluation

Behaviors Observed:

Listening time

Procedure:

There were mixed results concerning procedures (see Discussion).

Discussion:

Studies on hearing and the elderly provided mixed results concerning preferences of loudness. This may be because everybody has a different level of hearing and different preferences. Only one study (Smith, 1989) concluded that the elderly preferred music that had decreased intensity levels. He did find that older subjects with deteriorating hearing abilities did not compensate by increasing the listening volume. Another reason for mixed results could be that Smith's study sample size was very large with 200 subjects. In Smith's earlier study (1988) the sample size came to only 20 participants. Perhaps if the size of the second was larger there may have been more concrete results. When working with the geriatric population, music therapists who use music listening for intervention should be aware of individual preferences concerning loudness.

Variable VII. Language/Voice

Therapeutic Objective:

Increase language and increase breath management with music.

Populations:

ADRD

Emphysema

Parkinson's disease

Documentation:

Assessment:

Western Aphasia Battery, Respirdyne Pulmonary Function Meter, Inspiratory Muscle Trainer, Speech Intelligibility Inventory: Self-Assessment Form, Parkinson's Disease Questionnaire

Behaviors Observed:

Breath control, breath support, intensity of speech, timed walking

Quality of life measures:

The Modified Borg Symptom Rating Scale, Visual analog scales, Duke Health Profile

Procedure:

Use live music, which is preferred.

Group therapy was common amongst researchers.

Deep breathing exercises facilitated better breath support, breath control, and vocal measures.

The client's quality of life was affected by better vocal measures.

Language and breathing benefit, required two or more music therapy sessions a week.

Four weeks of music therapy sessions or more allowed for better language content, breathing, vocal intensity, and speech

intelligibility.

Language deficits were addressed through use of reminiscing techniques
in music therapy sessions.

Discussion:

The procedure common to research for enhancement of language and breathing was deep breathing exercises. These exercises were able to enhance breath support, breath control, and vocal measures. The technique common to research to address language deficits was the use of live reminiscence music therapy. When the activity was more familiar, the patient was more comfortable. Even though one would think that language and breathing might benefit more with one on one interaction, the successful interventions were done in group therapy. Groups were more likely to participate in the intervention and be more successful at exercises consisting of language and breathing. The researcher found that benefits from music therapy required at least two weekly sessions for four weeks or more of language and breathing interventions. .

There were no common assessments in research for language. An important aspect of increased ability in language was an increased quality of life. Quality of life was also affected by better breathing. In one study Engen (2006) measured quality of life using a variety of assessments.

Variable VIII. Physical

Therapeutic Objective:

Increase range of motion, gait training, and social interaction with exercises.

Populations:

ADRD

Healthy older adults

Documentation:

Assessment:

Functional Independence Measure

Behaviors Observed:

Walking 10 meters, balance (one-foot), arm extension, participation

Procedure:

Recorded and live music were both recorded as successful

Group exercises were used to elicit more participation.

Music was preferred to no music in studies with

music therapy and exercise to enhance flexibility, balance
and gait training.

Dance/movement seemed to be favored second to rhythm playing in
interventions.

Cuing or modeling before the movement happened provided for a more
successful outcome for elderly patients.

Unfamiliar music showed a better outcome for adherence to the exercise while
familiar music was shown to be distracting to the patients.

Music was used to improve flexibility, balance, and gait speed.

Discussion:

To increase range of motion, gait training and social interaction clinicians can use music and exercises. The populations affected by exercise and music are healthy older adults and older adults with Alzheimer's disease and related diseases. Clinical implications have shown that unfamiliar music can be used to facilitate better adherence to exercise programs and all together better experiences for the patients. Familiar music was shown to be distracting to patients while exercising because of the temptation to sing with it. Attention then was not on the exercises and results were lessened.

Interventions can be structured with recorded and live music with group exercises to elicit social interaction and participation. In a group with other patients doing the same exercise program, the clients seemed more comfortable in their environment and were more willing to participate in the program. Studies have shown that elderly patients prefer music versus no music and do prefer dance/movement as an activity for intervention. Singing and instrument playing were also common therapeutic activities for geriatric patients. When leading an exercise

program it was helpful for the therapist to give continuous cues for more successful outcomes. The therapist should enhance therapeutic experiences with reinforcement of successive approximation.

There were not many formal assessments used by the researchers, but there were behaviors observed to document benefits of exercise programs. These behaviors included walking ten meters, balance, arm extension, and participation. Participation was an important behavior to observe because it indicated that the patient was benefiting and focused on the exercise program. Exercise improvement created a better lifestyle and better wellness functions for the elderly.

CHAPTER V

DISCUSSION

The purpose of this literature analysis was to examine existing research on music therapy procedures with the geriatric population. Results indicated that there were many effective techniques, for clinical practice. Overall results indicated that music is an effective tool with the geriatric population.

The most researched symptom of the elderly found by the author was memory. Memory was a very common objective for the geriatric population and was increased when information was paired with familiar music. It should be noted that this is because music stimulated cognitive functioning, which in turn stimulated memories. Not only do patients with ADRD experience memory loss, but non-Alzheimer's disease patients do also.

The author found that many articles established the fact that as age increased, memory decreased. Cognitive functioning deteriorated as the elderly continued to age. The clinician can recognize age-related memory loss when the patient continues to repeat questions and accounts of events. They can then distinguish ADRD and age-related memory loss by observing the patient's ability to recall events and other areas of intellectual function.

Another commonly researched measure was participation. Participation was a very important aspect of a successful music therapy intervention. If the music therapist is able to keep the attention of the patient during intervention, the session was more beneficial for the patient.

Being more social can lead to increased quality of life. Many nursing home patients do not experience structure during their stay at the facility and are likely to withdraw from their social community. With music therapy, they were able to practice being social with other residents and staff through different interventions. Music therapy can provide familiar music which seem to help the client feel more comfortable with the environment around him/her.

Limitations

A limitation of this literature analysis was limited quantitative research. From the twelve journals found by the researcher 47 articles were identified. Evidence-based clinical practice in music therapy would be enhance with more research.

Suggestions for Further Research

Research has shown significant results for music and the geriatric population. From existing literature on music therapy in the geriatric population, future research is encouraged. There are many quantitative studies that support music and geriatric care music therapy, but there are some areas of research that need more attention. Although the researcher indicated significance in many of the studies many of the measures lacked enough research to conclude that some of the procedures were viable. The areas that have a paucity of research are physical rehabilitation, depression, hearing, and language.

It was noted that there are no studies that apply the Iso-principle to agitation. This technique may help patients reduce their agitated state. Researchers may wish to test the theory of the Iso-principle to reduce agitation.

The elderly suffer from different physical impairments while aging. The goal of rehabilitation is to restore function and prevent any further disabilities. The author found a lack of articles pertaining to physical rehabilitation and music. Physiological studies are few in the geriatric field. The research found only one study concerning physiological outcomes and music. The geriatric population would benefit from more research on blood pressure as it does increase with age (Takahashi & Matsushita, 2006).

Pain and music although successful in the study by Kim and Koh (2005) was not further researched. This was the only study indicating music could alleviate pain symptoms. Future research for music therapy and pain might include a larger number of participants in the study with different behaviors observed such as verbal responses and facial affect. Also the researchers used a facility that already had existing music therapy sessions. It is suggested that research should be done on pain and music when the patients are in their beginning stage of rehabilitation.

More research on gait training would help contribute to music therapy for rehabilitation. There were mixed results concerning gait training and the effectiveness that music had on it. Mixed results could have been because nursing personnel were reluctant to mobilize patients for fear of their falling. The music therapist will need help from the staff in order to assist patients with gait training and demonstrated the effectiveness of music therapy.

Depression is also a frequently occurring diagnosis among elderly people. This area had exhibited a lack of research in music therapy with the elderly. Although the few studies found

that music was an effective tool to decrease depressive symptoms, research should be done to find new techniques that are successful. There were only three studies with two of them using the same successful techniques. More research might lead to different activities for clinician's repertoire in treating depression.

Another issue that should be addressed is depression with non-Alzheimer's patients. The author found articles about depression and patients with ADRD, but was not able to find articles with issues apart from ADRD. Not only do depressive symptoms occur in patients with dementia, but they also can occur in healthy older adults. Because depression does occur in the elderly with issues apart from dementia, research should be done to determine the best approaches and techniques for these older adults. Aging and environment can contribute to the older adult's depression. Because of changes such as moving to a nursing home or losses in life such as hair, physical features, and family, healthy older adults must frequently adapt to life changes.

We live in a highly industrialized society. Noise and age can contribute to hearing loss. Hearing preferences could benefit from more research. Results suggested from studies by Smith (1988; 1989) that there are mixed results regarding preferences of different hearing frequencies. With more research clinicians would benefit from knowing how to determine their population's specific preference of loudness.

The geriatric population could also benefit from more research on language and music. The researcher gathered three studies in this area. The studies consisted of small sample sizes and this area would benefit from studies with larger sample sizes. Also there should be more research conducted on each type of population in the geriatric community. The researched studies show that there is not one specific population with enough research to fully document the benefits of music therapy on language. Because of the growing elderly population new and existing forms of therapy should be tested in this area.

One article that was different from others was Silber's (1999) research on background music and the ability to improve scores on the Mini Mental State Examination. This was the only article that was found with background music used to achieve the objective. Silber did not find any significance with improvement of scores due to the use of background music during the test. Further research should be done on background music to determine if it has benefit.

The author did find multiple assessments throughout literature reviewed. But there were not many common assessments for selected symptoms. There were no articles reviewing effectiveness of assessments and identifying common assessments for the different variables. Research on the different assessments would help clinicians choose the most successful for their interventions.

Music therapists should be aware that the “baby boomers” are aging and entering the geriatric population. Therapists should take note that procedures such as preferences of music and style are going to change. The clinician should appreciate that everyone does not age in the same way or at the same rate. The preferences and composition of today’s geriatric population compared to a generation ago has changed. Therapists should take note and are encouraged to provide more research on this growing population.

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