THE EFFECT OF MUSIC THERAPY ON STRESS AMONG CAREGIVERS OF PATIENTS WITH DEMENTIA

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Abstract

The purpose of this study was to investigate the effectiveness of music therapy interventions on stress reduction among caregivers of patients with dementia in Thailand. A quasi-experimental repeated-measures design was used to compare the effect of music therapy on stress level among pre-test, mid-test, and post-test. 10 participants were selected to participate in music therapy activities for 10 sessions through the Zoom Meeting Platform. Music therapy interventions consisted of music listening, music and relaxation, music playlist, and songwriting activities. In terms of research instruments, the Perceived Stress Questionnaire (PSQ) was used to measure the stress level and a general questionnaire was used to collect the demographic background of the participants. Repeated-Measures ANOVA was used to compare the results among pre-, mid-, and post-interventions. The results showed that mean stress scores in dementia caregivers among pre-, mid-, and post-test were statistically significant at .05 level. The mean stress score of post-test (M = 65.60, SD = 16.801) was lower than both the pre-test (M = 85.60, SD = 19.317), and mid-test (M = 71.10, SD = 19.122). The findings revealed that music therapy is significantly effective in reducing stress among caregivers of patients with dementia.

Keywords: Music Therapy/ Stress/ Caregivers of Dementia

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บทคัดย่อ

การวิจัยครั้งนี้มีวัตถุประสงค์เพื่อศึกษาผลของดนตรีบำบัดต่อภาวะความเครียดในผู้ดูแลผู้ป่วยภาวะสมองเสื่อม ในประเทศไทย โดยใช้ระเบียบวิธีวิจัยกึ่งทดลองแบบการวัดซ้ำเพื่อเปรียบเทียบระดับความเครียดก่อนการทดลอง ระหว่างการทดลอง และหลังการทดลอง มีผู้เข้าร่วมวิจัยจำนวน 10 คน เข้าร่วมกิจกรรมดนตรีบำบัดทั้งหมด 10 ครั้ง ผ่านสื่อออนไลน์ แอปพลิเคชัน Zoom กิจกรรมดนตรีบำบัดประกอบไปด้วยกิจกรรมการฟังเพลง ดนตรีเพื่อการผ่อนคลาย กิจกรรมการจัดเรียงบทเพลง และกิจกรรมแต่งเพลง เครื่องมือที่ใช้ในการเก็บรวบรวมข้อมูล ได้แก่ แบบวัดการรับรู้ความเครียด PSQ (Perceived Stress Questionnaire) และแบบสอบถามข้อมูลทั่วไปเพื่อเก็บข้อมูลพื้นฐานของผู้เข้าร่วม การวิจัยครั้งนี้ใช้การวิเคราะห์ความแปรปรวนแบบวัดซ้ำ (Repeated-Measures ANOVA) ในการเปรียบเทียบค่าเฉลี่ยคะแนนความเครียด ก่อนการทดลอง ระหว่างการทดลอง และหลังการทดลอง ผลการวิจัยพบว่า ค่าเฉลี่ยระดับความเครียดมีความแตกต่างกันอย่างมีนัยสำคัญทางสถิติที่ระดับ .05 เมื่อพิจารณาจากค่าเฉลี่ยของการทดสอบแต่ละครั้ง พบว่า ระดับความเครียดหลังการทดลอง (M = 65.60, SD = 16.801) ลดลงเมื่อเปรียบเทียบกับก่อนการทดลอง (M = 85.60, SD = 19.317) และระหว่างการทดลอง (M = 71.10, SD = 19.122)

คำสำคัญ : ดนตรีบำบัด/ ภาวะความเครียด/ ผู้ดูแลผู้ป่วยภาวะสมองเสื่อม

Introduction

Dementia, most often affect the elderly, is a syndrome with deterioration of brain function in different areas which have a huge impact on daily life such as experiencing memory loss, poor judgment, difficulty speaking, losing balance and problems with movement. Because of a long-term of disease progression, it is necessary to rely on caregivers all the time, especially, in the middle and late stage of the disease.[1]

Caregivers for dementia often experience stress from their caring role. Too much distress may cause both physical and mental health such as high blood pressure, anxiety and depression.[2] Spending time with long-term care and handling on unexpected behaviors of the dementia patient may cause the caregivers to forget to take care of their own health.[3]

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[1] Weerasak Muangpaisan, "Burden of Dementia," in *Dementia: Prevention, Assessment and Care*, ed. Weerasak Muangpaisan (Bangkok: Parbpim, 2013), 9-14. (in Thai); Nantaporn Srinim and Tharinee Nontaput, "Professional Home-Based Care for Persons with Dementia," *EAU HERITAGE JOURNAL Science and Technology* 11, no. 2 (2017): 83. (in Thai); Tasanee Tantirittisak, ed., *Clinical Practice Guidelines: Dementia* (Bangkok: Tanapress, 2014), 33-46. (in Thai)

[2] Juthamas Hanjone, *Emotion and Stress Management* (Chonburi: Get Good Creation Company Limited, 2015), 79-84. (in Thai); "Stress," Mental Health Foundation, accessed November 11, 2021. https://www.mentalhealth.org.uk/a-to-z/s/stress.

[3] Chalinee Suvanayos and Darawan Thapinta, "Reducing Stress in Caregivers of Person with Dementia," *The Journal of Psychiatric Nursing and Mental Health* 34, no. 2 (2020): 5. (in Thai)

Not only can stress affect caregivers but also dementia patients. Kasemkitwattana and Prison (2014, 24) found that stress of caregivers is one of the causes that the dementia patients are abused and neglected and directly impacted on the quality of life of patients.[4] Having a stress or physical and mental distress suffering in caregivers, definitely decline in quality of patients care and increase complications of dementia patients.[5] There are scientific evidences showing that music can be helpful in emotional regulation, reducing stress, and effectively increasing the satisfaction of living.[6] People mostly agree that music can affect their emotion in different ways such as music in fast tempo can lift happier mood than slow tempo.[7] For the purpose of psychosocial rehabilitation, listening to music or joining music activities can reduce distress and promote quality of life of the patients[8] and also can reduce the level of emotional states.[9] Additionally, music has an impact on physical such as brain function[10] particularly, in the right hemisphere that is activated while listening to music as shown in the result of MRI scans.[11] During listening to music, the people's heart rate, heart rate variability, Systolic Blood Pressure (SBP), and Diastolic Blood Pressure (DBP)

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[4] Saipin Kasemkitwattana and Piyaporn Prison, "Chronic Patients' Family Caregivers: A Risk Group That Must Not Be Overlooked," *Thai Journal of Nursing Council* 29, no. 4 (2014): 23-24. (in Thai)

[5] Zhu Liu, Catrina Heffernan, and Jie Tan, "Caregiver Burden: A Concept Analysis," *International Journal of Nursing Sciences* 7, no. 4 (2020): 441-42; Kultida Summawong, Sirilak Somanusorn, and Chommanard Sumngern, "Factors Related to Elder Abuse from Perspectives of Older Adults and Family Members," *Journal of Health and Nursing Research (Journal of Boromarajonani College of Nursing, Bangkok)* 33, no. 1 (2017): 91. (in Thai)

[6] Martina de Witte et al., "Music Therapy for Stress Reduction: A Systematic Review and Meta-Analysis," *Health Psychology Review* 16, no. 1 (2020): 135; Shantala Hegde, "Music-Based Cognitive Remediation Therapy for Patients with Traumatic Brain Injury," *Frontiers in Neurology* 34, no. 5 (2014): 2.

[7] Tuomas Eerola and Jonna K. Vuoskoski, "A Review of Music and Emotion Studies: Approaches, Emotion Models, and Stimuli," *Music Perception* 30, no. 3 (2012): 319-20; Emery Schubert, "Measuring Emotion Continuously: Validity and Reliability of the Two-Dimensional Emotion-Space," *Australian Journal of Psychology* 51, no. 3 (1999): 160-63.

[8] Andrea Creech et al., "Active Music Making: A Route to Enhanced Subjective Well-Being among Older People," *Perspectives in Public Health* 133, no. 1 (2013): 39-42; Terrence Hays and Victor Minichiello, "The Meaning of Music in the Lives of Older People: A Qualitative Study," *Psychology of Music* 33, no. 4 (2005): 443; Petri Laukka, "Uses of Music and Psychological Well-Being among the Elderly," *Journal of Happiness Studies* 8, no. 2 (2006): 230; Rosie Perkins and Aaron Williamon, "Learning to Make Music in Older Adulthood: A Mixed-Methods Exploration of Impacts on Wellbeing," *Psychology of Music* 42, no. 4 (2013): 563.

[9] Kimberly S. Moore, "A Systematic Review on the Neural Effects of Music on Emotion Regulation: Implications for Music Therapy Practice," *Journal of Music Therapy* 50, no. 3 (2013): 201.

[10] Shantala Hegde, "Music-Based Cognitive Remediation Therapy for Patients with Traumatic Brain Injury," *Frontiers in Neurology* 5, (2014): 3.

[11] Anne J. Blood et al., "Emotional Responses to Pleasant and Unpleasant Music Correlate with Activity in Paralimbic Brain Regions," *Nature Neuroscience* 2, no. 4 (1999): 384-86; Lauren Stewart et al., "Music and the Brain: Disorders of Musical Listening," *Brain* 129, no. 10 (2006): 2535.

were decreased more than individuals who did not listen to the music.[12]

Many studies have shown the positive effects of music; however, music can turn into negative consequences when misleading. Appropriate use of music by qualified music therapists is very important, especially, when using it with fragile individuals with stress conditions, including caregivers of dementia patients. Several previous studies found that music therapists employed various types of music interventions to relieve stress of the clients, such as music listening,[13] music playing,[14] and songwriting.[15] Klein and Silverman described that when using songwriting intervention, both the caregivers and their dementia patients had a better positive emotion including enjoyment and good impression.[16] The exploratory study of Hanser et al. revealed that music therapy can relief distress and enhance satisfaction of dementia patients and their caregivers.[17]

Although, there is not *many academic papers directly mentioning* music therapy for relieving stress in dementia caregivers. However, there were related research studies that showed the effectiveness of music therapy on reducing stress and promoting positive mood of caregivers for other patients including parents of children with special needs[18] and

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[12] Robert J. Ellis and Julian F. Thayer, "Music and Autonomic Nervous System (Dys)Function," *Music Perception* 27, no. 4 (2010): 317; Rohit S. Loomba et al., "Effects of Music on Systolic Blood Pressure, Diastolic Blood Pressure, and Heart Rate: A Meta-Analysis," *Indian Heart Journal* 64, no. 3 (2012): 310; HJ Trappe, "Musik Und Gesundheit," *DMW - Deutsche Medizinische Wochenschrift* 134, no. 51/52 (2009). 2601-6.

[13] Martina de Witte et al., "Effects of Music Interventions on Stress-Related Outcomes: A Systematic Review and Two Meta-Analyses," *Health Psychology Review* 14, no. 2 (2019): 296; Myriam V. Thoma et al., "The Effect of Music on the Human Stress Response," *PLOS ONE* 8, no. 8 (2013).

[14] Yasmine A. Iliya, "Music Therapy as Grief Therapy for Adults with Mental Illness and Complicated Grief: A Pilot Study," *Death Studies* 39, no. 3 (2015): 177-78; Molly Warren, "The Impact of Music Therapy on Mental Health," National Alliance on Mental Illness, accessed December 19, 2016. https://www.nami.org/Blogs/NAMIBlog/December-2016/The-Impact-of-Music-Therapy- on-Mental-Health.

[15] Julian O'Kelly, "Saying It in Song: Music Therapy as a Carer Support Intervention," *International Journal of Palliative Nursing* 14, no. 6 (2008): 281; Tony Wigram and Felicity Baker, "Songwriting as Therapy," in *Songwriting: Methods, Techniques and Clinical Applications for Music Therapy Clinicians, Educators, and Students*, ed. Felicity Baker and Tony Wigram (London: Jessica Kingsley Publishers, 2005), 13.

[16] Claire M. Klein and Michael J. Silverman, "With Love from Me to Me: Using Songwriting to Teach Coping Skills to Caregivers of Those with Alzheimer's and Other Dementias," *Journal of Creativity in Mental Health* 7, no. 2 (2012): 159-60.

[17] Suzanne B. Hanser et al., "Home-Based Music Strategies with Individuals Who Have Dementia and Their Family Caregivers," *Journal of Music Therapy* 48, no. 1 (2011): 15.

[18] Stine L. Jacobsen, Cathy H. McKinney, and Ulla Holck, "Effects of a Dyadic Music Therapy Intervention on Parent-Child Interaction, Parent Stress, and Parent Child Relationship in Families with Emotionally Neglected Children: A Randomized Controlled Trial," *Journal of Music Therapy* 51, no. 4 (2014): 322-24; Abby Walters, "Caring for the Caregiver: A Case Study of the Effect of Music Therapy on Stress of a Parent of a Child with Disabilities" (Master's thesis, Saint Mary-of-the-Woods College, 2019), 18-26.

caregivers for cancer patients.[19]

In Thailand, research on music therapy for reducing stress in dementia caregivers has not been found. From the related literature above, dementia caregiving responsibilities are a huge task for their loved ones which should not be overlooked because those dementia caregivers can promote quality of life, minimize hospitalization rates, and reduce abuse rate or abandonment in patients with dementia. Therefore, the purpose of this study was to investigate the effectiveness of music therapy on reducing stress of dementia caregivers. The research question was the following: Can music therapy reduce stress level of the caregivers of patients with dementia? Under the coronavirus disease 2019 (COVID-19) pandemic circumstance, internet-delivered music therapy activities were employed for this study during social distancing restrictions. The result of this study will be one of evidence-based practices for music therapists and other health professionals in using music therapy via virtual online platform for reducing the stress of dementia patients' caregivers to increase the quality of care and lower hospital admission rates of dementia patients.

Methodology

This study received ethical approval from The Committee for Research Ethic (Social Sciences), Faculty of Social Sciences and Humanities, Mahidol University [MUSSIRB No. 2020/230 (B2)]. A quasi-experimental research, repeated-measure design, was employed in this study to examine the effectiveness of music therapy on stress of dementia caregivers.

Participants

The participants of this study were dementia patients' caregivers. The researcher published an announcement for recruiting participants on Facebook and contacted Alzheimer's disease and Related Disorders Association of Thailand for co-operation to spread the announcement to anyone who might be interested in participating in this study. There were 10 dementia patients' caregivers who were purposively selected according to the following criteria: 1) the participant must be the main caregiver and have a relationship with the patient as a family member, spouse, relative, or friend who were not from employment at least six months; 2) they had moderate stress levels (above 61 points) measured by Perceived Stress Questionnaire (PSQ) which was modified and translated in

[19] Abbey L. Dvorak, "Music Therapy Support Groups for Cancer Patients and Caregivers: A Mixed-Methods Approach," *Canadian Journal of Music Therapy* 21, no. 1 (2015): 83-87; Inmaculada Valero-Cantero et al., "Complementary Music Therapy for Cancer Patients in at-Home Palliative Care and Their Caregivers: Protocol for a Multicentre Randomised Controlled Trial," *BMC Palliative Care* 19, no. 61 (2020): 8-9.

Thai by Wachirawat[20] and 3) they consented to participate in this study by signing a consent form required by the Human Research Ethics Committee, Mahidol University.

Research Instruments

1. Participants' Background Questionnaire

The Participants' Background Questionnaire was developed by the researcher to collect the background data of participants. The questions of this questionnaire were divided in two parts. The first part was used to collect general background, including age, educational levels, career, duration of care per day, and frequency of care per week. For the second part, the participants were asked to answer their musical background, including music experiences, preferred music activities, favorite type of music, and preferred musicians or singers. The data from this questionnaire were used to design appropriate music therapy interventions to meet the needs of the participants.

2. Perceived Stress Questionnaires (PSQ)

This research employed Perceived Stress Questionnaires (PSQ) of Levenstein et al.[21] which was modified and translated into Thai by Wariya Wachirawat[22] to assess participants' stress. It is a four-point Likert scale ranging from 1 (almost never) to 4 (usually).[23] This questionnaire contains 30 multiple-choice questions divided into 22 positive items and 8 negative items. In terms of interpretation of stress levels, there are three levels[24] including low stress (30-60 points), moderate stress (61-90 points), and high stress (91-120 points). The Participants in this study were requested to answer all questions during recruitment process, pre-test, mid-test, and post-test.

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[20] Wariya Wachirawat, "Influences of Life-Style Factors, Hostility, Chronic Stressors, and H. pylori Infection on Peptic Ulcer Disease," (PhD thesis, Mahidol University, 2000). (in Thai)

[21] Susan Levenstein et al., "Development of the Perceived Stress Questionnaire: A New Tool for Psychosomatic Research," *Journal of Psychosomatic Research* 37, no. 1 (1993): 27.

[22] Wariya Wachirawat, "Influences of Life-Style Factors, Hostility, Chronic Stressors, and H. pylori Infection on Peptic Ulcer Disease," (PhD thesis, Mahidol University, 2000). (in Thai)

[23] Susan Levenstein et al., "Development of the Perceived Stress Questionnaire: A New Tool for Psychosomatic Research," *Journal of Psychosomatic Research* 37, no. 1 (1993): 27; Wariya Wachirawat, "Influences of Life-Style Factors, Hostility, Chronic Stressors, and H. pylori Infection on Peptic Ulcer Disease," (PhD thesis, Mahidol University, 2000). (in Thai)

[24] Wariya Wachirawat, "Influences of Life-Style Factors, Hostility, Chronic Stressors, and H. pylori Infection on Peptic Ulcer Disease," (PhD thesis, Mahidol University, 2000). (in Thai)

Music therapy interventions

The Music therapy interventions in this study were developed based on humanistic approach that emphasizes on nondirective and client-centered approaches of Carl Rogers. This approach focuses on a trusting client-therapist relationship. The therapist unconditionally accepts and respects the client as themselves and facilitates clients' change. The clients are free to have and express their feelings and learn on their own how to cope with their difficulties.[25] In this study, a typical 60-minute per session and almost activities use live music by singing and playing guitar except for music playlist activities which used recorded music. The session began with an introductory conversation to build rapport. Then, music therapy activities, chosen from participants' needs and evidence-based research, were provided to the participants which consisted of four main interventions including music listening, music and relaxation, music playlist, and songwriting. The session was ended with an encouragement song. The participants had an opportunity to freely choose songs, music styles, and topics for sharing during the music sessions based on their preferences. The four main music therapy interventions were shown as follows:

1) Music listening activities: Listening to music can diminish amygdala activity which is related to emotional control and can reduce the emotional intensity that cause stress.[26] Listening activities in this study, the researcher allowed the participants to choose familiar songs themselves to trigger their impressive memory, feeling, and life experience to make them feel relaxed and enjoy the music.[27]

2) Music and relaxation: Music therapy with relaxation techniques can reduce stress and improve stress management.[28] Various kinds of music elements such as chords and

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[25] Angel A. Park, "Theoretical Orientations Applied by Music Therapists Working in Adult Psychiatric Inpatient Settings," (Master's thesis, Molloy College, 2011), 36; Barbara Wheeler, "The Relationship between Music Therapy and Theories of Psychotherapy," *Music Therapy* 1, no. 1 (1981): 12.

[26] Anne J. Blood et al., "Emotional Responses to Pleasant and Unpleasant Music Correlate with Activity in Paralimbic Brain Regions," *Nature Neuroscience* 2, no. 4 (1999): 386; Kimberly S. Moore, "A Systematic Review on the Neural Effects of Music on Emotion Regulation: Implications for Music Therapy Practice," *Journal of Music Therapy* 50, no. 3 (2013): 233; Lauren Stewart et al., "Music and the Brain: Disorders of Musical Listening," *Brain* 129, no. 10 (2006): 2536.

[27] Donald Collins, "Can Listening to Music Reduce Stress? Research, Benefits, and Genres," accessed August 18, 2021. https://psychcentral.com/stress/the-power-of-music-to-reduce-stress; Genevieve A. Dingle et al., "The Influence of Music on Emotions and Cravings in Clients in Addiction Treatment: A Study of Two Clinical Samples," *The Arts in Psychotherapy* 45, (2015): 20.

[28] Francisca N. Ogba et al., "Effectiveness of Music Therapy with Relaxation Technique on Stress Management as Measured by Perceived Stress Scale: Retraction," *Medicine* 98, no. 15 (2019): 5; Cori L. Pelletier, "The Effect of Music on Decreasing Arousal Due to Stress: A Meta Analysis," *Journal of Music Therapy* 41, no. 3 (2004): 202.

melodies can be effectively used to promote breathing skills to feel more relaxed.[29] In this study, a new relaxing song was composed to support three relaxation techniques which were progressive muscle relaxation[30], deep breathing[31], and visualization[32]. The lyrics of this song guided the participants to practice relaxation by focusing on deep breathing, slowly tensing and releasing muscles, and thinking about calming places. The participants can comfortably sit or lay down with the song throughout the activities.

3) Music playlist activities: Listening to music on the playlist can help clients for more relaxation and improve emotional health.[33] Using ISO-Principle technique during music listening by selecting music that would best match clients' mood and desired mood state can support mood management.[34] In music playlist activities, for the first period of the session, each participant selected 2-3 pieces of preferred songs from any moment related to their experiences in caring dementia patient. Contents of Lyrics included tiredness, hopelessness, and downheartedness which were mostly remarked in this period. Then, the session was ended up with a list of 2-3 songs that boosted up energy, encouragement, and satisfaction with life.

4) Songwriting activities: Klein and Silverman[35] found that songwriting activities can help with stress management of caregivers of patients with Alzheimer's and other dementias. Therapeutic songwriting is one of music therapy interventions which can promote and

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[29] Yinglan He, "The Impact of Music Relaxation on Affect and Relaxation of Stressed Female College Students," (Master's thesis, College of Fine Arts of Ohio University, 2018): 41-42.

[30] Karin Chellew et al., "The Effect of Progressive Muscle Relaxation on Daily Cortisol Secretion," *Stress* 18, no. 5 (2015): 539-41.

[31] Loren Toussaint et al., "Effectiveness of Progressive Muscle Relaxation, Deep Breathing, and Guided Imagery in Promoting Psychological and Physiological States of Relaxation," *Evidence-Based Complementary and Alternative Medicine* 2021, (2021): 2.

[32] "Home," MindTools, MTCT, accessed December 1, 2021. https://www.mindtools.com/aul3lwx/guided-imagery.

[33] Mary Parkinson, "Playlist Building for Mental Wellness," accessed January 26, 2021. https:// wellingtonmusictherapyservices.com/playlist-buildingfor-mental-wellness/; Suzanne B. Hanser et al., "Home-Based Music Strategies with Individuals Who Have Dementia and Their Family Caregivers," *Journal of Music Therapy* 48, no. 1 (2011): 15.

[34] Annie Heiderscheit and Amy Madson, "Use of the ISO Principle as a Central Method in Mood Management: A Music Psychotherapy Clinical Case Study," *Music Therapy Perspectives* 33, no. 1 (2015): 50-51; Tony Wigram, Inge N. Pedersen, and Lars O. Bonde, *A Comprehensive Guide to Music Therapy* (London: Jessica Kingsley Publishers, 2002), 110.

[35] Claire M. Klein and Michael J. Silverman, "With Love from Me to Me: Using Songwriting to Teach Coping Skills to Caregivers of Those with Alzheimer's and Other Dementias," *Journal of Creativity in Mental Health* 7, no. 2 (2012): 157-58.

support sense of participants' psychological, emotional, social or communication needs.[36] In this study, popular songs were selected by assessment of participants. The participants were instructed to change their songs by filling in one or two words that presented a positive and enjoyable experiences. Then, each group of participants were allowed to select their own familiar songs and rewrite the new lyrics related to their experiences caring dementia patient. They were facilitated how to write the song by the music therapist.

Data Collection

10 dementia patients' caregivers were assigned to participate in both the large group and small group sessions. All participants were assigned to the large group sessions together in 1st, 5th, and 10th session and they were divided into four groups (two or three persons per group) to participate in small session including 2nd, 3rd, 4th, 6th, 7th, 8th, and 9th sessions. Each session spent 60 minutes in total of 16 days. The participants were required to assess their stress before receiving music therapy (pre-test), after receiving music therapy in session 5 (Middle test) and session 10 (Post-test).

Data Analysis

There were two types of statistics used to analyze the data of this study. Firstly, descriptive statistics, frequencies and percentages, were used to analyze participants' general and musical background. Secondly, repeated measures ANOVA was used to compare the average of stress scores among before, during, and after receiving music therapy interventions. All data of this study were analyzed by using Statistical Package for the Social Science for Windows (SPSS), version 27.

Results

Background of the participants

The results of 10 participants' general background revealed that most of the participants were adult children of dementia patients (60%). They mostly spent time of caring everyday (60%) with 6-11 hours of care per day (40%). Most of them were responsible for caring their patient more than 1 year (80%) and 60% of them had insufficient income for providing the care. In terms of musical background, most of the participants reported that they had

[36] Felicity Baker and Robert Krout, "Songwriting via Skype," *British Journal of Music Therapy* 23, no. 2 (2009): 10-12; Tony Wigram and Felicity Baker, "Songwriting as Therapy," in *Songwriting: Methods, Techniques and Clinical Applications for Music Therapy Clinicians, Educators, and Students*, ed. Felicity Baker and Tony Wigram (London: Jessica Kingsley Publishers, 2005), 14.

music experiences. Four participants had experiences in music learning and one participant was a musician. Other participants had experiences with music as leisure activities, including listening to preferred music and singing together with their friends. In terms of types of preferred music, most of them preferred Thai popular music, Thai country music, Look Krung music, and classical music.

The results of repeated measure ANOVA of the mean stress level scores among pre-, mid-, and post-music therapy interventions

The results revealed that there were significant differences of mean stress level scores among pre-, mid-, and post-music therapy interventions (F = 194.436, P < .05). The mean of post-test stress score decreased (M = 65.60, SD = 16.801) when compared with pre-music therapy interventions (M = 85.60, SD = 19.317) and mid-music therapy interventions (M = 71.10, SD = 19.122) as shown in Table 1.

Table 1 Repeated Measure ANOVA of the mean stress level scores among pre-, mid-, and post-music therapy interventions

Source: by author

Item	Time	*M*	*SD*	*F*	*P*
Stress level	Pre	85.60	19.317	194.436	0.000*
	Mid	71.10	19.122		
	Post	65.60	16.801		

*P < .05

In terms of the multiple comparisons of mean stress level scores in dementia caregivers among pre-, mid-, and post-music therapy interventions by using *Bonferroni* correction method. The results showed that there were significant differences of mean stress level scores in two pairs consisting of pre- and mid-music therapy interventions and pre- and post-music therapy interventions.

The results suggested that the mean stress level scores of mid-music therapy interventions (M = 71.10, SD = 19.122) was lower than the pre-music therapy interventions (M = 85.60, SD = 19.317) at 14.50 points and the mean score of stress in post-music therapy interventions (M = 65.60, SD = 16.801) was lower than the pre-music therapy interventions (M = 85.60, SD =19.317) at 20.00 points. However, there were no significant differences between mid-music therapy interventions (M = 71.10, SD = 19.122) and post-music therapy interventions (M = 65.60, SD = 16.801) as shown in Table 2.

Table 2 Mean difference of stress level among pre-, mid-, and post-music therapy interventions

Source: by author

Time	M	Mean Difference (MD)		
		Pre	*Mid*	*Post*
Pre	85.60	-	14.500*	20.000*
Mid	71.10		-	5.50
Post	65.60			-

*$P < .05$

Discussion

The results showed the effectiveness of music therapy interventions on stress level of dementia caregivers. The mean stress level scores among pre-, mid-, and post-music therapy interventions were significant difference at .05. The stress level of post-music therapy interventions was lower than pre-and mid-music therapy interventions. There were various evidence-based practices in music therapy that can support this finding categorized by music therapy activities as discussed below. In music listening activities, after finishing the session, the participants became noticeably more relaxed and felt free to share their common issues through similar experiences with each other. Some of them engaged the activities with smile and/or crying happy tear because they were glad that the situation of caring they suffered was understood by the group members as well as an encouragement from the group support. This finding is associated with Collins[37] and Dingle et al.[38] who described that music listening was one of the easy activities to get people engaged, as well as triggered memory, feeling, and experience in positive way. In terms of music and relaxation activity, it is one of the receptive music interventions which help reduce anxiety, increase relaxation, promote rest, and reduce feeling of physical or mental discomfort. It was clearly to see that before the activity started, most of participants had different negative facial and body expression such as stressed face and frowning with a bit shoulder shrug. After finishing the activity of music and relaxation, most of them had a smile on their

[37] Donald Collins, "Can Listening to Music Reduce Stress? Research, Benefits, and Genres," accessed August 18, 2021. https://psychcentral.com/stress/the-power-of-music-to-reduce-stress.

[38] Genevieve A. Dingle et al., "The Influence of Music on Emotions and Cravings in Clients in Addiction Treatment: A Study of Two Clinical Samples," *The Arts in Psychotherapy* 45, (2015): 18-19.

faces and no more frown on their faces. They also stated that they felt more relaxed during this activity which related to the research studies of Ogba et al.[39] and Pelletier[40] who noted that relaxation process with music could reduce arousal cause by stress and significantly improved stress management.

For music playlist activity, the music playlist had effective support, promote satisfaction in life, and enhance accepting the change of dementia. The participants may continue to utilize the playlist after the music therapy session has ended as it is simple to use. This finding was related to Wigram, Pedersen and Bonde[41] who described the ISO-principle process "Music must be selected that matches the mood of the client in the beginning, and then gradually induces the intended mood". This process promotes a progressive alteration in the clients' mood, which corresponds to a gradual shift in the musical elements in this procedure.[42] Heiderscheit and Madson[43] also reported that building a playlist based on the ISO-principle that helpful a mood management and simple to use everyday life. In terms of Songwriting activity, the participants were able to share their feelings, express thought, and emotion through the lyrics such as tiredness of caring, worrying about their loved one as well as self-support and toward other group members. This result matched up to a study of Klein and Silverman[44] who found that songwriting intervention focusing on self-care can promote participants' positive feeling, especially feeling of fun and appreciation.

Conclusion

The finding of this study showed the effectiveness of music therapy in reducing the stress level among the caregivers of patients with dementia. The comparison of the mean of stress level pre-, mid- and post-intervention had a statistically significant difference at .05. The music therapy sessions were conducted through Zoom by using various music therapy

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[39] Francisca N. Ogba et al., "Effectiveness of Music Therapy with Relaxation Technique on Stress Management as Measured by Perceived Stress Scale: Retraction," *Medicine* 98, no. 15 (2019): 5.

[40] Cori L. Pelletier, "The Effect of Music on Decreasing Arousal Due to Stress: A Meta Analysis," *Journal of Music Therapy* 41, no. 3 (2004): 206.

[41] Tony Wigram, Inge N. Pedersen, and Lars O. Bonde, *A Comprehensive Guide to Music Therapy* (London: Jessica Kingsley Publishers, 2002), 110.

[42] Chris Brewer and Don G. Champbell, *Rhythms of Learning: Creative Tools for Developing Lifelong Skills* (Tucson, Arizona: Zephyr Press, 1991), 216.

[43] Annie Heiderscheit and Amy Madson, "Use of the ISO Principle as a Central Method in Mood Management: A Music Psychotherapy Clinical Case Study," *Music Therapy Perspectives* 33, no. 1 (2015): 50-51.

[44] Claire M. Klein and Michael J. Silverman, "With Love from Me to Me: Using Songwriting to Teach Coping Skills to Caregivers of Those with Alzheimer's and Other Dementias," *Journal of Creativity in Mental Health* 7, no. 2 (2012): 159-60.

interventions, including music listening, music and relaxation, music playlist, and song writing. Music listening activities can enhance participants' impressive memory and positive feeling that can make them feel more relax and enjoy with music. Music and relaxation activities can reduce stress level with three relaxation techniques, including progressive muscle relaxation, breathing exercise, and imagination. Music playlist activity was designed for the participants to select their preferred songs that would best match their desired mood state and positive feeling used to support their mood management. Finally, the song writing activity can support the participants to share and understand their feelings, thought, and emotion through the lyrics that supported them to cope with their stress. The results of this study confirmed that the music therapy interventions can effectively reduce stress levels of dementia caregivers. In terms of implication for music therapist, due to limitation of online platform, the music therapist should concern how to build rapport and trust with clients. Also, there should be support them to feel that the music therapy activities were safe for them to express and share their thought, emotion, and feeling. Particularly in songwriting activities, the music therapists should tell them that there was no right or wrong for them to compose the song or lyrics.

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