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Article

Rhythm of Life: Music Composition Course for Older Individuals with Dementia

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Abstract: The number of individuals with dementia in Taiwan was estimated to be around 320,000 in 2022. Of the individuals, 96% were aged 65 and older, while dementia also affects younger individuals. Considering the aging population and the need for evidence-based measures to reduce or prevent dementia, an 8-week program that combined music and exercise was developed and implemented in this study. The course enabled older individuals to create songs and perform related physical and cognitive activities. Before implementing the program, the Golden Age Association in Sanmin District, Kaohsiung, Taiwan offered the course to older individuals without dementia. The result revealed that grouping older individuals to create lyrics and music was challenging. Subsequently, we collaborated with the Vision Shalom Long-Term Care Center to revise the course for a cohort of older individuals with mild cognitive impairment. The process and results were discussed with experts in geriatric education and music therapy. Based on the feedback, a "Music for Love" package was revised for instructors and social workers to use for older individuals with dementia. A questionnaire survey, interviews, and observation were conducted to collect data and feedback on the effectiveness of the Music for Love Teaching Materials and explore how the program fostered social interaction among older individuals with dementia. The data analysis results were validated by the participants in the program and experts in music therapy and geriatric education. Based on the results, the program needs to be modified to tailor the content to older individuals with cognitive functioning problems.

Keywords: Aging population, Dementia, Curriculum plan, Course design

1. Introduction

Taiwan's Ministry of the Interior stated that Taiwanese older individuals and 1 out of every 5 individuals 3,939,033 people aged 65 and older resided in Taiwan, and 300,842 of them (7.64%) had dementia in 2022 (MoI, 2022). That is, approximately 1 out of every 13 aged 80 and older had dementia. The Ministry also released statistics indicating that the number of individuals with dementia exceeded 300,000 in 2022, with 96% aged 65 and older, and many younger individuals had dementia, too. By 2030, the number of Taiwanese individuals with dementia is projected to increase to 500,000. With the increasing population of dementia in Taiwan, it is urgent to prevent and delay the onset of dementia.

Preventing dementia necessitates a multifaceted approach encompassing the management of vascular risk factors, engagement in cognitive and physical activities, maintenance of social connections, adoption of a healthy diet, and recognition and treatment of depression. It is essential to address these problems to tackle the growing global challenge of dementia (Middleton & Yaffe, 2009). Dementia prevention must not be limited to interventions for older individuals. An individual's physical and mental health in later life reflects their lifelong habits and activities. Therefore, effective preventive measures must be implemented across the entire lifespan. In adulthood, actively controlling vascular factors and diseases is vital to maintain cognitive and physical health. Furthermore, it is mandatory to maintain social engagement in middle and later age (Mangialasche *et al.*, 2012).

Physical exercise plays a significant role in reducing vascular risks and slowing cognitive decline. This is critical for the prevention and management of dementia (Ahlskog *et al.*, 2011). While medication is required for mitigating dementia risks, many older individuals prefer nonpharmacological approaches. As a nonpharmacological intervention, music therapy has demonstrated effectiveness in managing agitated behaviors in individuals with dementia (Cohen-Mansfield, 2001; Doody *et al.*, 2001). Especially, group music therapy fosters social interaction, reduces social isolation, and facilitates the exchange of feelings and ideas among

participants with dementia (Aldridge, 1996). When combined with exercise, music therapy further enhances an individual's speed, strength, and endurance (Gfeller, 1988).

Music therapy has the substantial benefits of for physical and mental well-being. Music therapy programs involve experiences such as listening, singing, playing instruments, rhythmic movement, and improvisation, fostering dynamic relationships between therapists and patients. Given their life experiences, older individuals particularly benefit from autonomous engagement in music creation, which supports their cognitive, physical, social, and emotional learning and rehabilitation. Therefore, an 8-week music therapy intervention program was developed in this study for older individuals. The program involved participants creating their songs and engaging in physical activities while listening to their self-created music. Initially implemented with older individuals without dementia, the intervention was iteratively refined based on outcomes, feedback, and consultations with experts to apply it to individuals with mild dementia. The program showed excellent outcomes, which provides a reference for further development of similar programs.

2. Methods

2.1. Initial Program for Older Individuals Without Dementia

We first tested the intervention program on older individuals without dementia to confirm its effectiveness for the target age group. This initial phase, conducted in partnership with the Golden Age Association in Sanmin District, Kaohsiung, Taiwan, involved 12 participants with an average age of 71 years (Table 1). The initial two weeks of the program focused on building rapport with participants through games and lessons. This period also enabled an understanding of their musical preferences and identifying physical limitations, preparing them for the subsequent lyric and music composition sessions. From weeks three to four, structured instruction in lyric writing and music composition was provided to help the participants become familiar with the creative process. In the latter half of the course, we designed health exercises with students from the Occupational Therapy Department at Kaohsiung Medical University. During weeks five and six, we arranged the songs composed in the first three weeks to ensure their usability for exercises. A single-tone version song was created to help the participants acclimate to the movements. The seventh and eighth weeks were dedicated to integrating the completed songs with the practiced movements, culminating in the program's outcomes.

The pilot test result revealed that collaborative lyric and music creation posed a challenge for older individuals. However, the participants showed enthusiasm to proceed with the program smoothly. Given the cognitive impairment often present in older individuals, group discussions were not feasible. Therefore, a music therapist and the director of the Vision Shalom Long-Term Care Center in Qianzhen, Kaohsiung, were invited to refine the program. The revised program was designed to help older individuals with dementia write lyrics following step-by-step instructions.

Table 1. Courses for Individuals without dementia.

Weeks 1 and 2 Playing Games and Teaching	Weeks 3 and 4 Lyrics and Composition	Weeks 5 and 6 Aerobic Exercises	Weeks 7 and 8 Final Exercises
			

2.2. Participants

Six participants with mild cognitive impairment participated in the program, They were aged 65 years or older. They could manage their daily lives but were less inclined to interact with others, and their cognitive abilities were declining. Their personality including behavior and emotion, had been changed and they felt depressed or agitated from time to time. However, their self-care and memory abilities were less severely impaired than those of older individuals with moderate to severe dementia. The music creation process involved group collaboration with multiple individuals. Several participants with severe cognitive impairment were able and available to participate in the intervention. Therefore, we selected those with mild cognitive impairment for the study (Tables 2 and 3).

Table 2. Respondent Data.

Code	Physical Condition	Performance in the Course
A	The body can move freely	She is not very enthusiastic in class and does not like to answer questions.
B	Use a wheelchair to assist with mobility	It is very inconvenient for her to move, but she will try her best to participate in whatever she can do.
C	Use a wheelchair to assist with mobility	She is shy and introverted. When she hears familiar songs, she will sing loudly, and her body will sway along with it. Although she does not speak Chinese at all, she still tries her best to use Taiwanese to participate in the course with teacher.
D	Use crutches to assist mobility	The language organization is weak and requires long thinking, but she is not afraid to answer questions.
E	The body can move freely	Respond positively and enjoy chatting with teachers.
F	The body can move freely	Shy and like to express opinions (but must be encouraged)

Table 3. Courses for Individuals with Dementia.

Weeks 1 and 2 Playing Games and Teaching	Weeks 3 and 4 Lyrics and Composition	Weeks 5 and 6 Aerobic Exercises	Weeks 7 and 8 Final Exercises
			

We collaborated with the Vision Shalom Long-Term Care Center in Qianzhen, Kaohsiung in this study. The center offers a range of services including daycare, home care, respite care, community long-term care, intergenerational programs, and training for long-term care personnel. The staff at the center regularly organize training courses and activities to move different parts of the body to help older individuals with dementia improve their health and prevent further cognitive decline. These services align perfectly with the needs of the target group of this study.

2.3. Program Design

After developing the program for older individuals without dementia, we modified the creative process with the center's music therapist to tailor it to the needs of older individuals with dementia. We initially planned a step-by-step approach to lyric writing, starting with using a lyric template before moving to entirely new compositions. However, several participants focused too much on the existing lyrics, which hindered them from creating new ones. To address this, we adopted a storytelling method to help them develop their storytelling skills and associative thinking. We modified the method for lyric writing by using visual aids to guide them to craft lyrics based on their stories instead of filling in missing words in lyrics. For the physical activity, we replaced the aerobic exercises of the pilot program with musical instrument play based on the physical limitations. We also incorporated visual memory cues, requiring the participants to simultaneously recall lyrics and play instruments. As a result, physical and cognitive tasks were integrated successfully.

3. Music for Love

Through such modification, we designed a preliminary version of the “Music for Love” package as follows (Fig. 1).

The first week focused on ice-breaking games to foster rapport and assess participants' physical capabilities. In week two, we continued with games and introduced the concept of lyric writing. From weeks three to five, the difficulty level of lyric writing was progressively adjusted based on the participant’s progress. In week six, the participants learned how to sing the lyrics they had created. Finally, in weeks seven and eight, musical instruments were incorporated and the participants performed in small groups. If the participants' physical abilities were permitted, aerobic exercises were included as stretches. The program provided a structured

yet flexible method, adapted to different participants' skill levels and physical abilities, regardless of the level of mild cognitive impairment.

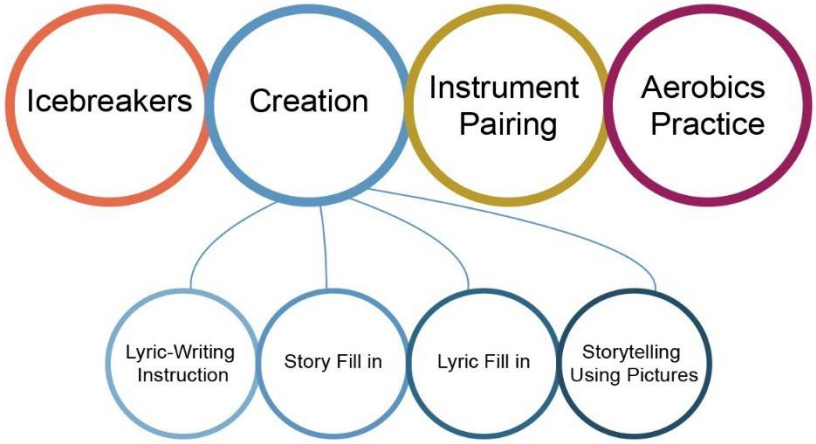

Fig. 1. "Music for Love" teaching material package.

3.1. Games

We created icebreaker games at the start of the program to establish trust with the participants, understand their musical preferences, and identify their physical limitations.

- Spot the difference to improve cognitive abilities and hand-eye coordination through a competitive game of identifying differences between two images.
- Big pick game to test the participants' grip strength and enhance motor skills by having them strum a large guitar pick.
- Hand grabs game to assess the participants' grasping ability when a familiar tune stops.
- Musical passing to stimulate cognitive functions and increase arm/hand dexterity by passing balls in a circle in time with familiar music.
- Bingo to practice fine motor skills for holding instruments and handwriting and stimulate the cognitive functions of counting numbers to fill in bingo cards.

3.2. Program Content

Since not all participants had prior creative writing experience, we introduced the basic creative process for lyrics and melody. The process was taught to help them draw inspiration from observation, reading, and listening to music. The games were played to familiarize them with the creative process. For example, we showed them images to associate thinking skills and observation to promote brain activities. The participants were encouraged to establish a positive environment, essential for creative inspiration. By providing foundational knowledge and creative exercises in a game-based manner, the participants could learn lyric and music composition.

We adopted a progressive approach to ensure all participants learned songwriting. Initially, we chose a familiar song and had everyone rewrite specific sections. As the class advanced, more lyrics were chosen for rewriting while retaining the original melody. This method allowed the participants to gradually become comfortable with the lyric-writing process and receive support when needed.

For percussion, we selected "lollipop drums," "egg shakers," and "grip shakers" for the songs. Lollipop drums are ideal for training large arm muscle groups as playing them requires two hands, making older individuals with limited arm mobility practice using their arms and hands. Egg shakers are used to train grip strength and wrist joint flexibility. Their small, hand-fitting design and the minimal effort to play helped the participants who could not perform large movements produce sound. Grip shakers are used to train hand grip and demand arm strength and wrist flexibility. The musical instruments were used to make a variety of sounds, depending on the user's mobility and creativity.

4. Results

4.1. Questionnaire Survey

We designed a questionnaire with 11 items and administered it to participants attending the program. The survey results are presented in Table 4. The average score for all items was 4.3. The scores of the 11 items were higher than 4, indicating high satisfaction with the program. The results revealed improvements in both physical activity and social interaction. The participants acknowledged remarkable progress in flexibility and motor control through instrument playing and recreational activities, in addition to increased engagement and confidence in social interaction.

Observations over the 8-week program also indicated that the relationships between the staff and the participants and among the participants became closer. In addition to responding to the questionnaire, the participants actively shared ideas during class. The participants indicated that interaction during brainstorming sessions and group games fostered acquaintance with others, underscoring the program's positive influence on their mental and physical well-being. The class activities benefitted older individuals with dementia in four areas: interaction, social interaction, physical movement, and instrument use. Notably, while the participants rarely responded to questions in the first session, they answered questions willingly in the final session, reflecting improved communication skills.

Table 4. Long Term Care Center Survey Results.

No.	Item	Mean
1	Playing games helps with physical activity.	4.7
2	After repeated practice, I feel more skillful in using the instruments.	4.5
3	Even without looking at the prompt, I know when to sound the percussion instrument.	4
4	Using visual aids helps me determine when I should make a sound with the percussion instrument.	4.3
5	This course has helped me build closer relationships with my peers.	4.2
6	I am willing to express my opinions in class, and the environment is supportive.	4.3
7	Playing games helps promote social interactions.	4.5
8	With the instructor's encouragement, I am more willing to speak up in class.	4.5
9	The instructor's creative course content is easy to understand.	4.2
10	The instructor's creative course content is helpful for songwriting.	4.3
11	After taking the course, I have learned how to use everyday thingsaround me for songwriting.	4.2

4.2. Expert Consultation

We interviewed music therapists and senior education scholars to assess the validation of the program. The music therapists provided suggestions and positive feedback to create subsequent instructional materials. The senior education scholars recommended setting goals for weekly improvements and including physical activities for the participants' physical abilities. They also suggested that establishing relationships with students before instruction began would make the intervention more effective. Managers from the Golden Age Association and Vision Shalom Long-Term Care Center believed the teaching materials were appropriate for care facilities or community centers. They suggested extending the course to 10 to 12 weeks and developing materials tailored to individuals with varying skill levels. For participants with more advanced capabilities, more autonomous, creative approaches need to be used in advanced courses. Conversely, lower-level courses need to be led by an instructor for those with mild dementia or weaker abilities. Following these expert discussions, we revised the "Music for Love" program. We divided weekly progress into smaller segments and extended the course length to 10 weeks, concluding with a graduation ceremony. The final version of the program was produced after the revised teaching materials were discussed and validated by music therapists and geriatric education experts.

5. Discussion and Conclusions

For older individuals with dementia, a music program was designed and implemented in this study. During sessions, the participants collaborated effectively on lyric creation, leading to a high rate of song completion. When the program was implemented with the participants with dementia, challenges had to be addressed, particularly in creating new phrases or modifying existing lyrics. Consequently, we modified the session format, from direct lyric filling in a template to storytelling based on images. The participants narrated a simple story after looking at small images and wrote lyrics.

In this, study, we developed a program for individuals with dementia to overcome the limitations of conventional methods that involve passive or one-directional activities, such as music listening or simple rhythmic movements, which require limited

engagement and creativity. By incorporating storytelling and structured teaching material into the music creation activity, the developed program in this study enhanced interaction, engagement, emotional memory recall, and social interaction. Group brainstorming and collaborative lyric creation stimulated participants' creativity, fostering deeper emotional connections and ultimately improving their quality of life.

A challenge in the program was the diverse range of participants' musical backgrounds, writing skills, and comprehension abilities. This variability necessitated tailoring each session to individual capacities, as a single approach proved impractical. In the initial two weeks of the program, the participants played games to build relationships. In this period, the participants' challenges and skill levels were observed to refine the program to better suit the abilities and physical capacities of the participants with mild cognitive impairment.

Based on the results of this study, the following recommendations were proposed to design similar courses for older individuals with dementia. Before the course begins, it is necessary to interview family members to understand the participants. In the first one to two weeks, it is important to understand their preferences and backgrounds. Establishing personal connections is crucial to help them engage in the program. Learning the dialect is indispensable for effective communication with older individuals. Staff, volunteers, or participants' caregivers need to join the program as they can assist in solving communication challenges. It is necessary to consider the participant's diminished hearing and cognitive ability. It is needed to avoid using contemporary jargon unfamiliar to them. Additionally, each participant's preferences and favorite expressions need to be understood to foster a comfortable and personalized learning environment. The materials used must be flexible to tailor each course to the abilities of the participants.

It was found that music creation helps slow the progression of dementia and empowers older individuals to cultivate a healthy, vibrant lifestyle. Therefore, to further enhance the effectiveness of similar programs, long-term and large-scale follow-up is required. By exploring cognitive and emotional changes for several months or years, the participants' progress can be validated. It is necessary to enhance social and cognitive engagement through teamwork. The participants with mild dementia require additional patience and guidance, and in larger groups, their opportunities for self-expression and instructional skill improvement can be limited. Therefore, customized sessions with smaller groups (two to four participants) need to be developed. Cultural differences lead to different musical preferences, styles, rhythms, and perceptions, which are also influenced by family background and societal context. Therefore, the program needs to be globalized to apply it to diverse cultural contexts. Advances in society and technology enable online tools to be used. While older individuals might find it difficult to attend in-person sessions, online sessions can help them participate.

In this study, a music program was used to address challenges for older individuals with dementia. By using the "Music for Love" program, older individuals with mild dementia can promote social interaction through group activities. The program can be effectively implemented in activities for older individuals with caregivers and family members in the music co-creation process. The musical works created can then be shared among them. The program can be an official program for geriatric care or dementia therapy. Policy support and resources are necessary to adopt similar programs more widely.

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