Full-Length Article

Understanding the impact of the "Fountains of Uke" intergenerational music program on long-term care residents

Jenna Schlorff[1], Brandon Ruan[2], Tiffany Got[2] & Chelsea Mackinnon[3]

[1]*Northern Ontario School of Medicine University, Faculty of Medicine, Thunder Bay, Ontario, Canada*
[2]*University of Toronto, Temerty Faculty of Medicine, Toronto, Ontario, Canada*
[3]*McMaster University, Faculty of Health Sciences, Hamilton, Ontario, Canada*

Abstract

As the aging population reaches an all-time high, depression and social isolation among older adults are becoming significant concerns for public health. Music engagement and intergenerational programming may improve depressive symptoms and reduce social isolation in seniors by fostering relationships and engagement. Thus, the "Fountains of Uke Program" combines musical experiences with intergenerational interactions to combat these outcomes by creating a space where elementary students and Long-Term Care residents can engage in music and social interactions. This study aims to investigate the program's effects on residents in Long-Term Care homes. Behaviour, cognition, depression, and social isolation were measured before and after the intervention using validated scales and qualitative interviews. Quantitative measures did not show improvements in the outcomes of depression and social isolation. However, qualitative outcomes indicate the intergenerational music program had positive impacts on the Long-Term Care resident participants. Future studies should be implemented over a longer time period, in multiple Long-Term Care homes, and with a larger sample size to increase external validity. Future research should also consider the baseline health status of participants, as well as the normative mental and physical health decline among Long-Term Care residents over time when selecting outcome measures, analyzing data, and drawing conclusions.

Keywords: ***Intergenerational; music, older adults; depression; Long-Term Care***

Multilingual abstract | **mmd.iammonline.com**

Introduction

As the population ages, depression and social isolation among older adults have become significant public health concerns [1]. Social isolation is associated with negative health outcomes, including worsened self-rated physical health, depressive symptoms, cognitive decline, higher rates of rehospitalization, and increased risk of mortality [1].

Intergenerational programming, such as the "Fountains of Uke Program" (FUP), can assist in alleviating social isolation by providing a secure environment to develop relationships between Long-Term Care (LTC) residents and young children. Fostering and promoting intergenerational relationships enables the exchange of knowledge and experiences between generations [2]. These exchanges are beneficial to both parties: LTC residents are able to stay updated and aware of current social issues; children are able to develop a positive perception of adulthood [2]. The participatory arts such as music can be used as a vehicle to facilitate intergenerational engagement among residents in LTC settings [2]. Using music as a tool of engagement in LTC settings has demonstrated enhanced social interaction between LTC residents and strengthened relationships towards LTC staff.

The purpose of this study is to investigate the use of a structured intergenerational music program, the FUP, in a LTC setting. It is hypothesized that the FUP will decrease social isolation and increase cognitive and socially-appropriate behaviours of participating LTC residents.

Methods

This non-randomized, convenience cross-sectional study involved residents from one LTC facility located in Hamilton, Ontario, Canada. Behaviour, cognition, depression, and social isolation were measured before, during, and after the FUP intervention [3]. The staff at the LTC home identified residents

PRODUCTION NOTES: Address correspondence to:

Jenna Schlorff, E-mail: jschlorff@nosm.ca | COI statement: Chelsea Mackinnon reports receiving funding from McMaster University's Office of Community Engagement for this work via the 2018 Community Catalyst Grant. The authors have no conflict of interest to declare.

who met the eligibility criteria. Both male and female participants were included. Residents who had previously participated in the FUP were only included after a six-month washout period [4]. Individuals with dementia were eligible to participate in this study. The clinical judgment of the nursing and program staff was used to determine which residents were capable of providing consent to participate in the research project. For residents who were deemed not capable of providing informed consent, their Power of Attorney for Health Care was asked to provide consent on their behalf. Data was collected pre- and post-intervention using the Cornell Scale for Depression, the Hawthorne Friendship Scale, and four subscales of the Resident Assessment Instrument (RAI). Researchers also facilitated an open discussion with residents to obtain qualitative data and feedback about the program during post-intervention data collection. Questions regarding music and the FUP were asked to prompt discussion about past memories and to gather details regarding the residents' experiences during the program.

Ethics

Ethics approval was obtained from the Hamilton Integrated Research Ethics Board (HiREB-3119).

Description of Fountains of Uke Program Sessions

The Fountains of Uke Program (FUP) was utilized to facilitate relationship formation between elementary school children and LTC residents through engagement with music. The paper by Pieris [5], and Justin et al. [3], explains the theory and structure of the FUP. The program aims to promote self-confidence, happiness, and well-being to residents, along with a sense of connection and the opportunity to form relationships [3, 5]. The program facilitators were upper year McMaster Students who were enrolled in a course that explored the importance of intergenerational relationships and music. The course instructor was not a music therapist but has significant experience working in the field of music, with young students and older adults.

The study period was twelve consecutive weeks, with alternating settings and activities each week (Week A and Week B). Each session was 45 minutes in length and music was played intermittently throughout the session. The purpose of the program was to form intergenerational relationships, using music as a catalyst for these connections. During Week A visits, undergraduate university students led music engagement activities at LTC homes and elementary schools separately. During Week A at the LTC homes, university students would engage in music with the older adults that was familiar to them and promoted reminiscence. For example, popular Elvis Presley songs were used, as they were familiar to LTC and retirement residents who have lived in a Canadian context for most of their lives. Depending on music exposure, the university students would play live music on ukuleles, pianos, and guitars, or pre-recorded music would be used to sing along to with the residents. When appropriate, the residents were also encouraged to use percussion instruments. There was also time for sharing and talking with the group. The music selections were driven by the purpose of forming intergenerational relationships, and varied between groups, as it was the university students' responsibility to select the music.

In the elementary school classroom component of Week A, the university students focused on relationship building through "senior sensitivity" training where they taught the elementary school students about pro-social behaviors (e.g., introducing themselves, shaking hands, etc.) while also encouraging them to critically think about what it would be like to live like a senior to promote empathy [5]. They also worked on ukulele skill building through rhythm games, practicing songs the students were learning on their ukuleles in class, and learning new songs on their ukuleles to share with the LTC residents (e.g., Skip To My Lou).

Week B visits consisted of combined visits in which the elementary school students and residents gathered at the LTC home and participated in facilitated activities. Some of the activities included singing songs and playing musical instruments together while also engaging in social activities that encouraged all participants to share and form deeper connections. The music was selected to promote connections between generations and consisted of the music the students were learning in class and music that both generations would be familiar with. The program concluded with the song "You are my Sunshine" performed by the students on ukuleles while the LTC residents helped the students through the song by holding the sheet music and singing along with them [5].

Outcome Measures

1. The Cornell Scale for Depression in Dementia is a 19-item clinician-administered screening tool for major depressive disorder that is validated for use with older adults living with dementia and LTC settings [6]. This scale involves two semi-structured interviews: one with a nursing staff member or social worker and one with the resident. Each item is rated from 0-2 to determine the summed score. The scale has high internal consistency (coefficient alpha: 0.84) and interrater reliability (kw = 0.67).

2. The Friendship Scale is a Likert scale self-assessment tool that contains 6 items that measures perceived social isolation [7]. The scale has high internal consistency, reliability (Cronbach alpha: 0.81), discrimination, and has been validated in the LTC resident population [7].

3. The Resident Assessment Instrument - Minimum Data Set (RAI) is a standardized measurement tool that evaluates each residents' strengths, needs, and risks to be detected, which then informs individualized care planning and monitoring. Data are collected at admission, then quarterly, and at discharge. Four sub-scales were used: behaviour, cognition, depression, and the index of social engagement [8].

Statistical Analysis

The statistical program R (version 3.5.1, Lucent Technologies) was used to compare pre- and post-intervention data points for all outcome measures. Repeated measures t-tests with significance threshold of p=0.05 were used.

Qualitative Analysis

Interviews contextualized and informed the quantitative data collected in the study. Qualitative interviews were conducted with five residents who participated in the program. The discussions with the older adults were facilitated by research assistants. Interviewees were asked open-ended questions about their interest in music, experiences in the FUP, and feedback for the future. Interview recordings were analyzed using generic thematic analysis. The qualitative research team consisted of four members: 2 research assistants trained in qualitative analysis who have experience facilitating the FUP (JS and BR); a recreation therapist experienced in program delivery (BH); and the lead researcher who is knowledgeable and experienced in music and health literature and FUP program delivery (CM).

Results

Quantitative Results

A total of 23 residents (female, 16/23, 69.6%; male, 7/23, 30.4%) participated in the study, 16 remained after participant drop-out. The mean age was 88 and 76 for females and males, respectively. Overall significant declines were found in the Hawthorne Friendship and Cornell Depression Scales. Male Hawthorne Friendship score differences were found to be significant (t=-2.62,p=0.025), indicating higher feelings of isolation post-intervention. Furthermore, no significant differences were found in female Hawthorne Friendship scores (not shown in table 1). No statistical significance was found for all RAI outcomes between pre- and post-intervention periods. Additionally, statistical significance was not found between genders for all RAI outcomes and Cornell Depression scores. The statistical analyses for pre- and post- scores can be found in Table 1.

Table 1: *Pre-intervention and Post-intervention measures*

	Mean (SD)	T Score	Significance (Two-tailed)
Resident Assessment Index			
Pre RAI Behaviour	0.39 (0.722)	-1.21	0.234
Post RAI Behaviour	0.69 (0.793)		
Pre RAI Cognition	2.7 (1.43)	-0.242	0.810
Post RAI Cognition	2.8 (1.56)		
Pre RAI Depression	1.4 (1.37)	-0.204	0.840
Post RAI Depression	1.5 (1.97)		
Pre Social Engagement Score	4.7 (1.34)	0.682	0.500
Post Social Engagement Score	4.3 (1.78)		
Hawthorne Friendship Scale			
Pre Hawthorne	17.7 (3.45)	-0.234	0.025
Post Hawthorne	14.3 (5.54)		
Cornell Depression Scale			
Pre Cornell	4.7 (2.95)	-2.992	<0.01
Post Cornell	8.7 (4.67)		

Qualitative Results

Interviewed residents expressed decreased social isolation and a sense of joy and comfort when interacting with the elementary-school students. One resident during an activity "… befriended [a student]. You should see the beautiful card he made me." Engaging in music with the children also brought back many fond memories for the residents: "Music's always been in my life. I didn't start learning to play the piano until I was in my forties … [if] you come down to my room right now, I could play continuously." Interview responses were positive overall, indicating increased cognitive activity and engagement. Programming also promoted socially-appropriate behaviours; one resident could "see how many [residents] were sitting around, who usually hardly moved at all, keeping beat." Another older adult found "[one resident] was actually singing [even though] he doesn't usually sing. He'll say, 'how are you today?', and then tries to [engage] and make another sentence and he just stops." Themes and corresponding supporting quotes can be found in Table 2.

Table 2: *Themes from Qualitative Interviews from LTC Residents*

Themes	Representative Quotes
Children bring joy	"I befriended [a child participating in FUP]. You should see the beautiful card he made me. It was really beautiful, and no mistakes."
Intergenerational interactions strengthen over time	"First, they were kind of scared and shy, but not the last one...after they got to know us, then they came right away to you."
Children improve my life	"You could see how many people were sitting around, who usually hardly move at all, [engaging] and keeping beat."
Music promotes a space to share experiences	"When I was 11, my dad wanted me to play the organ, so my dad put it in the paper for the fun of it for... exchange for a bike, because it was more, and someone came who had a store with organs, and he came and fixed it up a little bit. It was probably second hand, but he made it that it was nice, and I learned to play organ on it. I played songs and church songs."
Promoting socially-appropriate behaviours	"Some of the residents on our floor are fairly non-responsive, they're in wheelchairs and they are just like this all day. Brian was actually singing, and he doesn't usually sing. He'll say "how are you today?", and then he tries to make another sentence and he just stops. But he was singing along there."
Feedback for future programming	"You might want to try a theme day. Like Beatles songs, so you wear something appropriate to that era."

Discussion

This intergenerational music program did not significantly decrease isolation or loneliness in older adults, nor did it significantly increase cognitive activity according to the quantitative measures utilized. Quantitative analysis revealed an unexpected significant increase in isolation and depressive symptoms for male participants, and non-significant increases among females between pre- and post-time periods. The study design for this intergenerational music program consisted of 12 weeks of consecutive programming, which may not be a sufficient amount of time to induce changes in these outcomes, as measured by the quantitative tools employed in this study.

Another intergenerational programming study utilizing music therapy observed similar results for their 10-week program, attributing their lack of significant increase of psychosocial benefits to logistical barriers and program length [9]. On the other hand, the findings of increased isolation and negative decline in cognitive ability over the course of the study period may be indicative of the inherent aging process and associated decline in mental and physical health that occurs in the LTC context. Furthermore, individuals entering LTC have increasing complex healthcare needs, causing their functional status to decline [10]. Thus, a longer intervention period, combined with higher program frequency, may be necessary to further evaluate the impact of this intervention.

Differences in RAI scores were not statistically significant, which may be attributed to the mixed and inconclusive pooled evidence of its psychometric validity reported by Hutchison and colleagues [11]. Moderate to strong psychometric validity was reported in studies conducted in research-controlled environments. RAI-MDS psychometric assessment in observational studies were found to contain risk of bias due to under-reporting and over-reporting of specific RAI-MDS questionnaire items. Finally, the cognitive status of participating residents was 2.7 prior to the FUP intervention,

which is indicative of participants having moderate cognitive impairment. This may have played a role in the non-significance of quantitative outcomes in this study.

Overall themes from the qualitative interviews were positive and aligned with the study objectives. Qualitative findings indicated an increase in cognitive activity and engagement among participants and promoted socially-appropriate behaviours. Participants found that the children from the FUP brought joy and improvement to their mental well-being. Other themes of LTC residents being able to share their experiences and reminisce with children were also present. These experiences were also reported in another qualitative intergenerational study using music therapy [12], where residents expressed how intergenerational interactions with children reminded them that there was a world beyond the LTC environment.

LTC residents who participated in the FUP intervention also experienced an increase in quality intergenerational interactions over time, demonstrating that new relationships between these populations may be uncomfortable at first, but that they require time to manifest into quality and meaningful experiences. This may help to increase empathy, understanding, and appreciation among both groups. Utilizing music in this intergenerational context also enabled the promotion of socially-appropriate behaviours, meaning music can facilitate integrative behaviour among older adults, as evidenced by residents participating and singing along during programming. The results of the qualitative interviews will inform changes that need to be considered in future program delivery. They will also provide important information about the needs of the residents at the LTC home and the impact of the FUP.

Limitations were encountered during the study process that have the potential to impact the reported findings. The research assistants (see Acknowledgements) for pre- and post-intervention data collection were different due to logistical challenges which may have introduced skewed results between raters. A small sample size was also analyzed; 23 participants were enrolled and by the end of the study period, 16 participants remained. Enhanced coordination between the study personnel and LTC staff to promote sustained LTC resident participation is vital. This could take the form of utilizing FUP volunteers to escort the residents to the program room to strengthen attendance. These factors make it difficult to generalize the quantitative findings of this study.

Conclusion

The qualitative outputs of this study suggest that intergenerational music programming, such as the FUP, has the ability to create meaningful relationships and decrease feelings of isolation. Future research should consider using alternative outcome measures, increasing the length of program duration, and utilizing stronger coordination between program coordinators and LTC staff

Acknowledgements

The authors wish to thank the research assistants who assisted in pre- and post-intervention data collection and facilitated the Fountains of Uke program: Esai Bishop, Robert Fowlie, Brad Haalboom, Charmaine Holland, Matthew MacArthur, Cimon Song, and Jordana Satok.

References

1. American Association of Retired Persons. AARP-Framework of Isolation in Adults Over 50. https://www.aarp.org/content/dam/aarp/aarp_foundation/2012_PDFs/AARP-Foundation-Isolation-Framework-Report.pdf. Published May 30, 2012. Accessed November 19, 2021.
2. Galbraith B, Larkin H, Moorhouse A, Oomen T. Intergenerational Programs for Persons With Dementia: A Scoping Review. J Gerontol Soc Work. 2015;58(4):357-378. doi: 10.1080/01634372.2015.1008166.
3. David J, Yeung M, Vu J, Got T, Mackinnon C. Connecting the young and the young at heart: an intergenerational music program. *Journal of Intergenerational Relationships*. 2018;16(3):330-338. doi:10.1080/15350770.2018.1477436
4. Gold C, Solli HP, Kruger V, Lie SA. Dose-response relationship in music therapy for people with serious mental disorders: Systematic review and meta-analysis. Clin Psychol Rev. 2009 Apr 30; 29(3): 193-207. doi: 10.1016/j.cpr.2009.01.001
5. Pieris D. Understanding Empathic and Cooperative Intergenerational Relationships: A New Theoretical Framework. J Intergener Relatsh. 2020 Oct 1;18(4):451-64.
6. Alexopoulos GS. The Cornell Scale for Depression in Dementia. Biol Psychiatry. 1988;23(3):271-284. https://doi.org/10.1016/0006-3223(88)90038-8
7. Hawthorne G. Measuring Social Isolation in Older Adults: Development and Initial Validation of the Friendship Scale. Soc Indic Res. 2006;77(3):521-548. doi:10.1007/s11205-005-7746-y.
8. Fries BE, Hawes C, Morris JN, Bernabei R. Resident Assessment Instrument/Minimum Data Set. In: Principles and Practice of Geriatric Medicine. Hoboken, New Jersey. John Wiley & Sons, Ltd; 2005:1855-1865. doi:10.1002/047009057X.ch156. Accessed November 20, 2021.
9. Belgrave M. The Effect of a Music Therapy Intergenerational Program on Children and Older Adults' Intergenerational Interactions, Cross-Age Attitudes, and Older Adults' Psychosocial Well-Being. Journal of Music Therapy. 2011;48(4):486-508. doi:10.1093/jmt/48.4.486
10. Nikolova R, Demers L, Béland F. Trajectories of cognitive decline and functional status in the frail older adults. Arch Gerontol Geriatr. 2009;48(1):28-34. doi:10.1016/j.archger.2007.09.007
11. Hutchinson AM, Milke DL, Maisey S, et al. The Resident Assessment Instrument-Minimum Data Set 2.0 quality indicators: a systematic review. BMC Health Serv Res. 2010;10(1):166. doi:10.1186/1472-

6963-10-166
12. Detmer MR, Kern P, Jacobi-Vessels J, King KM. Intergenerational Music Therapy: Effects on Literacy, Physical Functioning, Self-Worth, and Interactions. J Intergener Relatsh. 2020;18(2):175-195. doi:10.1080/15350770.2019.1670318

Biographical Statements

Jenna Schlorff is a medical student (MD) enrolled at the Northern Ontario School of Medicine University, Canada.

Brandon Ruan is a medical student (MD) enrolled at the University of Toronto, Canada.

Tiffany Got is a medical student (MD) enrolled at the University of Toronto, Canada.

Chelsea Mackinnon is a sessional instructor in music and health at McMaster University