

# Providing music therapy for people with dementia in an acute mental health setting

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## Abstract

As global figures of dementia are set to rise significantly, non-pharmacological interventions are a research focus to improve the quality of life for individuals with dementia. However, research into music therapy interventions are limited in acute inpatient settings. This service evaluation aimed to explore whether group music therapy was effective in acute inpatient settings for individuals with dementia. Open music therapy groups were facilitated weekly across two inpatient acute wards, with social and behavioural outcomes rated pre and post participation. Data collected ( $n=59$ ) indicated that music therapy significantly improved outcomes post participation in the group ( $t(58)=-17.932$ ,  $p<.001$ ,  $d=1.57$ ). The outcome measure used in this service evaluation was also found to be a reliable tool in measuring the effectiveness of music therapy on patient outcomes ( $\alpha=0.946$ ). These findings suggest that music therapy is an effective intervention for individuals with dementia in acute inpatient settings. Future research and limitations are discussed.

## Background

Dementia is a global problem, with an estimated 50 million people having dementia worldwide (Alzheimer's Disease International 2019). The World Health Organisation (2018) defines dementia as an acquired syndrome causing global deterioration in cognitive abilities and functioning, usually chronic and progressive in nature, beyond that normally expected with ageing. Alongside a decline in functioning, affected domains may include memory, language, comprehension, motivation, orientation, and some executive skills (e.g. planning; World Health Organisation 2018). Behaviour may also be affected, with changes in interpersonal interactions, withdrawal, dysregulation, personality, and agitation. Dementia symptoms can result from a number of different conditions and the term covers a number of forms including Alzheimer's-type, vascular dementia, frontotemporal dementia and dementia with Lewy bodies (Alzheimer's Disease International 2019).

Whilst the long-term care of individuals with dementia takes place at home, or in a care home, it is sometimes necessary for a period of care in an acute setting. The National Health Service (NHS) Confederation (2012) defines acute inpatient wards as hospital settings providing intensive medical and/or nursing support from a multidisciplinary team. The definition covers both informal (in hospital of their own choice) and sectioned (compelled via the Mental Health Act) patients (NHS Confederation 2012). The purpose of acute settings in dementia is to provide short-term interventions (usually for challenging behaviours) to discharge the individual back to the community (a family home or a care home; Hirshon et al 2013). It is therefore crucial that interventions for dementia, especially those that offer improvements in mood and behaviour, are reflective of the needs of the individuals in the environment they are being cared for.

## Overview of the literature

Pharmacological approaches, including neuroleptic and sedative medications, are often used as first-line interventions in dementia (Ballard and Howard 2006). However, it has been suggested that medication can be too readily prescribed in response to behavioural and psychological symptoms of dementia (Banerjee 2009). This is a concern given the modest evidence-base for efficiency and significant adverse effects of some medications (Douglas et al 2004). Douglas et al (2004) were amongst the first to explore the efficacy of a range of non-pharmacological interventions for dementia including reminiscence therapy, art therapy and music therapy. It was concluded that such interventions were effective and a need to move towards more person-centred care was proposed; since then the interest in non-pharmacological interventions has been growing (Cooper et al 2012).

In particular, the use of music therapy in dementia has received a lot of attention. There is no universal definition, however the American Music Therapy Association (AMTA) states music therapy is the “clinical and evidence-based use of music interventions to accomplish individualised goals within a therapeutic relationship” by a qualified music therapist (AMTA, n.d. para. 1). This definition has also been used in other research exploring music therapy in dementia (Wall and Duffy 2010; van der Steen et al 2018). The scope for what may be considered music therapy is varied and tends to include both receptive (also called passive e.g., listening) and interactive (also called active e.g., vocalising or/and playing instruments) interventions.

Whilst there is evidence that music therapy is effective for individuals with dementia, research has predominately focused on non-acute settings such as care homes and day centres (Ueda et al 2013; Ray and Mittelman 2017). Bruer et al (2007) were amongst the first to employ a Randomised Control Trial (RCT) to explore music therapy in acute settings. Cognition was

assessed three times a week (before, immediately following, and the morning after intervention) using the Mini-Mental State Exam (MMSE). Significant improvements in cognition were reported immediately following and the morning after the intervention for seventeen participants in the music therapy condition compared to the control condition (Bruer et al 2007).

Such findings have also been replicated cross-culturally. Sakamoto et al (2013) employed an RCT in Japan which indicated that music therapy, in particular interactive interventions, was associated with greater reductions in behavioural and psychological symptoms compared with receptive and control groups. More recently, attention has focused on ward outcomes and patient quality of life whilst in inpatient settings. Daykin et al (2018) found a reduction in prescription of antipsychotic medication, number of falls and average length of stay for participants following a music therapy intervention. Daykin et al (2018) also captured staff feedback and concluded that music therapy is a useful intervention for enhancing both patient and staff experiences.

Although there is an increased interest in music therapy in inpatient settings for individuals with dementia, the evidence-base remains limited, which makes generalisability to other acute settings challenging. There is no standardised outcome measure to explore the effectiveness of music therapy, this is evidenced by research utilising a variety of outcome measures (cognition, Bruer et al 2007; behavioural and psychological symptoms, Sakamoto et al 2013; ward outcomes and staff feedback, Daykin et al 2018). Further, cognitive functioning fluctuates significantly in dementia and is therefore not deemed to be a reliable or sensitive measure to indicate improvements following participation in music therapy (Lee et al 2014). Additionally, the form of music intervention varies across studies, and information regarding specific activities (interactive or receptive) was limited. This makes direct comparison of studies

difficult. Finally, small sample sizes, especially for RCT's, is a concern and limits generalisability.

As global figures of dementia are set to rise significantly over the next decade (Alzheimer's Disease International 2019) there is a pressing need to explore effective non-pharmacological interventions to improve the quality life and wellbeing of individuals with dementia. This is particularly important in acute inpatient settings where the evidence-base is limited, especially when compared to non-acute settings (Ray and Mittelman 2017) Given the significant differences between acute inpatient and longer-term care settings and the impact the environment may have on individuals with dementia (Cerejeira et al 2012), it is imperative that the promising findings of the use of music therapy for dementia is extended and explored in acute settings. This is timely given the increased focused of the NHS delivering evidence-based care (NHS Long-Term Plan 2019).

## Aim

The study aims to investigate two questions:

- 1) Is a group music therapy intervention effective for improving patient outcomes in an acute inpatient setting?
- 2) Is the measure developed for this research reliable to measure the effectiveness of a group music therapy intervention?

To answer the first aim, the following hypothesis has been stated: There will not be significant differences in participants' outcomes post attendance in comparison with pre attendance at the group music therapy session on:

- a. Peer interaction
- b. Staff interaction
- c. Communication of feelings
- d. Behaviour
- e. Understanding of activities of living
- f. Motivation level
- g. Musical interaction
- h. Initiation level
- i. Total pre and post scores

## Method

### Design

A quantitative repeated-measures research design was employed for this service evaluation. Data on the same population was collected at two time points – before and after participation in a music therapy session facilitated in an acute inpatient setting.

### Participants

Convenience sampling was utilised. Everybody who participated in the group was included in the sample. Thus, thirty-six female and twenty-three male individuals participated giving a total sample of 59 participants. Participants were older adults (over the age of 65 years) who had been admitted to an acute inpatient setting. An acute inpatient ward provides intensive medical and nursing support for patients in periods of acute mental health illness (NHS Confederation 2012). In this instance, most participants had a primary diagnosis of Major Neurocognitive

Disorder which encompasses all dementia related cognitive decline conditions (Hugo and Ganguli 2014). No other demographic details were collected.

## Measures

A scale was developed specifically for the music therapy group. The music therapy outcome measures scale (Table 1) had nine constructs which were rated on a five-point Likert scale of: 1 - Very Poor, 2 – Poor, 3 – Average, 4 – Good and 5 – Very Good.

### Insert Table 1

Specifically, the scale measured the following eight constructs: peer interaction (initiation of interaction and communication with other peers in the group); staff interaction (level of interaction and communication with staff members); communication of feelings (ability to indicate emotion to others); behaviour (this term captures withdrawal, level of dysregulation and agitation); understanding of activities of living (ability to understand routine and own needs i.e., toileting); motivation level (the willingness and interest of a participant to engage in the session); musical interaction (amount of engagement using instruments and/or voices in the session) and initiation level (the ability of a participant to engage independently).

The ninth construct was termed total score, this construct aimed to sum the total pre and total post score for the eight constructs. The scale was completed by two members of staff facilitating the group (a trainee music therapist and a psychology student volunteer) for each participant pre and post attendance of the music therapy group. The scale was therefore not empirically validated as it was developed solely to evaluate the effectiveness of a music therapy group in acute inpatient settings. The reason for developing this scale was a lack of research in this topic area and therefore lack of existing standardised outcome measures to evaluate the effectiveness of music therapy for older adults with dementia, in inpatient acute settings.

## Procedure



## Ethical considerations

Ethical approval was sought from Coventry University Ethics Committee (P1122375) for the secondary data to be analysed by a Trainee Clinical Psychologist. No identifiable information was collected as part of this research project. Participation in the music therapy group was voluntary and participants could opt in or opt out at any time. Data was therefore collected as part of a ward-based activity as per the local NHS trust policies and procedures. Further, data was collected from observation by two ward staff facilitating the group, and not directly from participants.

## Music therapy group

A group session delivering music therapy (an instrumental music-making group) was offered to all patients on a 12-bed male and all patients on a 12-bed female acute inpatient ward. The group was 45 minutes long and participation was voluntary. The group was offered once a week on each ward for seven consecutive weeks. Fourteen groups were facilitated across the two wards between January 2020 and February 2020. All sessions had two facilitators, a Trainee Music Therapist in their final year of training and a psychology student volunteer. Both facilitators remained consistent throughout the seven weeks when this group was offered. The Trainee Music Therapist led the sessions and, before the group was about to take place, invited patients residing on the ward to it with support from the nursing team on shift. Those patients who wanted to come to the group did so and therefore gave consent to their data to be used. Pre- and post- observations of those who came and stayed for the duration of the group were used for the analysis purposes only. For the ones who withdrew (i.e. came but then left the group during its duration), their data was not collected. Together, the facilitators rated each participant on all eight constructs of the scale before and again after each facilitated music therapy session. The score for each construct pre and post intervention for every participant was agreed by the facilitators.

A total score was then generated for each participant before and after their participation with a higher score indicating an improvement in each of the nine constructs.

## Data Analysis

Collected data was analysed using IBM SPSS version 26. The normality of data distribution was evaluated using the Shapiro-Wilk statistic (Ghasemi and Zahediasl 2012). For the data constructs which were normally distributed a parametric repeated measures t-test was used; when the data constructs were not normally distributed a non-parametric Wilcoxon Signed-Rank Test was used.

## Results

### Aim One

The first aim of this service evaluation was to evaluate whether group music therapy is effective in improving outcomes across nine constructs of the scale. In order to test the hypothesis that there will not be significant differences pre and post group attendance t-tests or a non-parametric equivalent were planned. To determine which test was appropriate, a Shapiro-Wilk test was conducted to determine whether the data was normally distributed. As shown in Table 2, the Shapiro-Wilk statistics indicated that the assumptions of normality were not satisfied for items one to eight, therefore non-parametric testing was required for these items. The remaining construct (total) did satisfy the assumptions of normality so parametric testing was required.

### Insert Table 2

Repeated measures t-tests and Wilcoxon's tests, with a significance level set at  $p < .05$  were used to evaluate whether there were significant differences between participants presentation before and after participating in a group music therapy intervention in an acute setting. As shown in Table 3, scores from each of the participants' increased post group on each construct

in comparison to the pre-group scores, suggesting an improvement in participants' presentations.

Insert Table 3

As indicated in Table 3, for all nine constructs there was a significant difference between pre and post outcome scores. Further, large effect sizes were observed for all constructs, except for behaviour which yielded a medium effect size. This suggests that the outcomes observed were clinically meaningful. Therefore, the hypothesis there will not be significant differences in participants' outcomes post attendance in comparison with pre attendance at the group music therapy session on all nine constructs can be rejected.

#### Aim Two

The second aim of this service evaluation was to explore whether the outcomes measure form was a reliable tool in order to evaluate the effectiveness of the group music therapy intervention. A reliability analysis was carried out on the group music therapy outcome measures form comprising the eight patient outcomes (Table 4).

Insert Table 4

Table 4 shows Cronbach's alpha for the questionnaire to reach acceptable reliability,  $\alpha=0.946$  (Cohen 1988). Further, as demonstrated above, each construct appeared worthy of retention, resulting in a decrease in reliability of the alpha if deleted. Therefore, these results suggest that the scale is a reliable tool in measuring the effectiveness of a group music therapy intervention.

#### Limitations

The music therapy group was an open group offered weekly across two wards. Due to the nature of acute settings, it was difficult to control a number of confounding variables which

may have indirectly influenced outcome ratings such as ward capacity, changes in medication, staff attitudes and the ward environment. For example, improvements in patient outcomes may have been observed as it was a patient's first time in a group since admission to the ward. This is especially relevant as it has been consistently reported that factors such as group cohesiveness and dynamics are key factors in shaping patient outcomes (Van Noppen et al 1998; Oei and Browne 2006). It is therefore difficult to ascertain whether it was the music therapy intervention, the dynamics of the group or both factors which caused improvements in patients' presentations.

Interactive music therapy is an effective intervention on patient outcomes in acute settings. Sakamoto et al (2013) found interactive interventions to be more effective compared to receptive and control conditions, the specific factors i.e. auditory (listening to music), vocal (singing) or tactile (playing instruments) associated with improvements remains unknown. This is especially relevant as the ability to understand the sensory environment is decreased in dementia, along with a heightened noise sensitivity which is associated with an increased risk of falls (Social Care Institute for Excellence 2020).

It is also important to note that whilst this research relied on facilitator observation ratings pre and post attendance, the focus of the research was on the immediate impact on the individual. The length of the effect was therefore not captured. This is also notable across the literature, as there are little to no research studies which explore the length of effect of music therapy, especially in acute settings. Where length of effect has been considered in research designs this remains time limited, i.e. the morning after the intervention (Bruer et al 2007).

Given the nature of this service evaluation it is important to consider ethical practices. Informed consent was not sought from participants as it is well documented that gaining consent in dementia research is challenging due to the nature of symptoms which may cause an

individual's mental capacity to fluctuate (Hegde and Ellajosyula 2016). Whilst this often deters researchers from conducting research with individuals with dementia, especially in inpatient acute settings (Dewing and Dijk 2016), it is important to consider such barriers and adapt research designs accordingly. Therefore, completion of the outcome measures from staff observations and open groups were utilised to ensure participants could participate or withdraw at any time point and no psychological harm was caused to participants.

## Discussion

The first aim of this study was to investigate whether a group music therapy intervention is effective for improving patient outcomes in an acute inpatient setting. This study also aimed to determine if the measure developed for this service evaluation was a reliable measure to evaluate the effectiveness of a group music therapy intervention. From analysing the pre and post outcome measures, significant differences were observed in all nine areas of interest: peer interaction, staff interaction, communication of feeling, behaviour, understanding of activities of living, motivation level, musical interaction, initiation level and total pre and post scores. This suggests that participants presentation significantly improved over the course of the music therapy intervention. Additionally, the outcome measure used to capture pre and post ratings was found to be a reliable tool for measuring the effectiveness of music therapy in individuals with dementia.

In line with the current literature, these findings add to the evidence-base for the effectiveness of music therapy in acute settings. Although this service evaluation research design was not a RCT, which is considered to be the 'gold standard' in research (Hariton and Locascio 2018), it had an adequate sample size which is deemed to have enough statistical power to draw reliable conclusions from the data (Brysbaert 2019). This is in stark contrast to some previous RCTs which only had 17 participants per condition (Bruer et al 2007). Further,

along with Daykin et al (2018), this research was conducted in acute settings in the UK, as opposed to drawing samples from mixed settings (Sakamoto et al 2013). This not only provides support for Daykin et al (2018) findings but it increases the reliability of generalising research findings to other NHS acute settings.

This service evaluation provided a greater insight into how music therapy may be effective for an individual with dementia in acute setting. Previous literature has focused on specific outcome measures such as improvements in cognition (Bruer et al 2007), reduction in behavioural and psychological symptoms (Sakamoto et al 2013) and data on ward outcomes (Daykin et al 2018), but not taking into consideration all eight domains included in this evaluation. Lack of validated outcome measures, and differences in outcomes collected, have caused challenges in providing a robust and reliable evidence-base for the effectiveness of music therapy in acute settings. The finding that the outcome measures form was a reliable tool in measuring the effectiveness of group music therapy on patient outcomes is suggestive that this is a measure which would benefit from being validated, so research findings can be generalised and add to the evidence-base.

## Conclusion

Overall, music therapy in acute settings for individuals with dementia was found to be effective in improving patient outcomes. Specifically, ratings improved across a number of domains including social and musical interaction, communication and understanding, behaviour, motivation and initiation. Therefore, music therapy as an intervention appears to be beneficial and effective in improving patient outcomes following attending these group sessions in acute settings.

## Recommendations and Future research

If patient outcomes are to be maximised and evidence-based interventions are delivered in line with the NHS Long-Term Plan (2019), it will be important for future research to determine which type of music therapy is associated with better patient outcomes (Sakamoto et al 2013). Additionally, solely exploring the length of effect music therapy has on individual and ward outcomes would be beneficial. Future research would benefit from gaining self-reported ratings and qualitative feedback from participants to gain a greater insight into individual outcomes and experiences following music therapy sessions. In such instances, impaired capacity should not be assumed, and brief capacity assessments would be required (Hegde and Ellajosyula 2016). Other factors such as measuring staff attitudes and seeking qualitative feedback from staff on the ward would also be recommendations for future research and would strengthen the evidence-base for the effectiveness of music therapy.

#### Implications for practice

1. Increased evidence-base for non-pharmacological approaches in the treatment and management of dementia in acute patient settings
2. Demonstrating music therapy is associated with improved social, emotional and behavioural outcomes for patients with dementia in acute inpatient settings
3. Building a business case for music therapists to be included in multi-disciplinary teams in acute inpatient settings
4. Demonstrating importance of having a qualified music therapist to facilitate music therapy groups in acute inpatient settings for individuals with dementia
5. The music therapy outcomes scale can be utilised in other acute settings to evaluate the effectiveness of the group as well as adding to the evidence-base

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## Conflict of Interest

The authors of this research are not aware of any conflict of interest, financial or otherwise.

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**Table 1.**

*Outcome measures scale*

	<b>Before</b>	<b>After</b>
<b>Interaction with Peers</b>		
<b>Interaction with staff</b>		
<b>Communication of feelings</b>		
<b>Behaviour</b>		
<b>Understanding of daily activities</b>		
<b>Level of motivation</b>		
<b>Musical interaction</b>		
<b>Level of initiation</b>		
<b>Total</b>		

**Table 2.**

*Shapiro-Wilk test result*

<b>Construct</b>	<b>Shapiro-Wilk statistic</b>
1. Peer interaction	$W(59)=.77, p=.01$
2. Staff interaction	$W(59)=.83, p=.01$
3. Communication of feeling	$W(59)=.85, p=.01$
4. Behaviour	$W(59)=.59, p=.01$
5. Understanding of activities of living	$W(59)=.78, p=.01$
6. Motivation level	$W(59)=.83, p=.01$
7. Musical interaction	$W(59)=.89, p=.01$
8. Initiation level	$W(59)=.85, p=.01$
9. Total pre and post scores	$W(59)=.97, p=.11$

**Table 3.**

*Mean and standard deviation, statistical significance and effect size pre and post music therapy group on each participant outcome*

<b>Construct</b>	<b>Pre-Group Mean (SD)</b>	<b>Post Group Mean (SD)</b>	<b>Statistical significance</b>	<b>Effect Size</b>
1. Peer interaction	1.6 (.71)	2.8 (.99)	Z=-6.561***	r=0.9
2. Staff interaction	1.7 (.77)	3.3 (.95)	Z=-6.716***	r=0.9
3. Communication of feeling	1.9 (.75)	3.1 (.97)	Z=-6.238***	r=0.8
4. Behaviour	3.5 (.68)	3.7 (.71)	Z=-3.207***	r=0.4
5. Understanding of activities of living	2.0 (.87)	3.2 (1.1)	Z=-6.664***	r=0.9
6. Motivation level	1.7 (.72)	2.9 (1.0)	Z=-6.386***	r=0.8
7. Musical interaction	1.8 (.77)	3.3 (1.2)	Z=-6.403***	r=0.8
8. Initiation level	1.7 (.70)	3.0 (1.1)	Z=-6.467***	r=0.8
9. Total pre and post scores	16.2 (5.1)	25.5 (6.8)	t(58) = -17.932***	d=1.57

Level of significance indicated: \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

**Table 4.**

*Reliability scores for the outcome measure used in the service evaluation*

<b>Construct</b>	<b>Cronbach's Alpha</b>
Outcome measures form (n=8)	.946
	<b>Cronbach's Alpha if item deleted</b>
Peer interaction	.937
Staff interaction	.933
Communication of feeling	.940
Behaviour	.942
Understanding of activities of daily living	.938
Motivation level	.938
Musical interaction	.936
Initiation level	.943