The usability and feasibility of the Person Attuned Musical Interactions intervention – modified version (PAMI-M) for UK care home staff working with residents with dementia

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The usability and feasibility of the Person Attuned Musical Interactions intervention – modified version (PAMI-M) for UK care home staff working with residents with dementia

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ABSTRACT

Introduction: Research on music interventions in care homes to improve social interactions has shown inconsistent results, potentially due to insufficient guidelines and staff training. Person Attuned Musical Interactions (PAMI), an evidence-based music therapy skill-sharing training package, aims to integrate non-verbal and musical interactions into care routines with residents with dementia. A modified version (PAMI-M) was developed to make PAMI accessible to a wider UK care home population.

Method: Two studies evaluated PAMI-M to assess clinical appropriateness, usability, and readability. Study 1 assessed the feasibility of the study design and manual, and Study 2 evaluated the revised manual on feedback from Study 1. Care staff were trained in PAMI-M and applied the skills with a resident with dementia over 8 weeks in Study 1 and 18 weeks in Study 2, with fortnightly reflective sessions supervised by a music therapist. Data collection included reflective session transcripts and post-intervention staff interviews.

Results: Five dyads completed Study 1, and 10 completed Study 2. Staff demonstrated the tailoring of skills to meet their residents' needs. The intervention materials were readable and usable despite implementation barriers, such as time restraints, staff illness and COVID-19. Staff recommended shortening the manual, dividing the training into small sessions, and in-person observations for better usability.

Discussion: The studies highlighted the plausibility of delivering PAMI-M remotely, though staff would prefer a hybrid approach with observational elements for practical assessment and support. While this paper evaluated PAMI-M's usability and feasibility, findings could inform the development of other psychosocial interventions in care homes.

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Introduction

Music interventions in dementia care can be categorised as either music therapy delivered by qualified music therapists (Schneider, 2018) or music activities delivered by anyone, regardless of their music experience. Both can improve communication and social interactions in individuals with dementia (Waters et al., 2022). However, research on non-therapist-led care home music interventions reports inconsistent results (Hammar et al., 2012; Hsu et al., 2015; Waters et al., 2022), potentially due to insufficient guidelines and staff training (Krøier et al., 2021). Supervision and indirect skill-sharing by music therapists might address these issues (Krøier et al., 2021; McDermott et al., 2018).

The Person Attuned Musical Interaction (PAMI) intervention is an evidence-based music therapy skill-sharing training package to integrate attuned non-verbal and music interactions into care staff routines (Krøier, 2022; Ridder et al., 2023). Developed at Aalborg University, Denmark, the PAMI team train music therapists to become certified PAMI trainers to deliver in-person training to care staff (Krøier, 2022; Ridder et al., 2023). The staff training includes 8 hours of theory and action learning and 4 hours each of group and individual practical supervision (Ridder et al., 2023). Grounded in person-centred care and attunement, PAMI equips staff with specific skills and language to describe and implement attuned musical interactions with residents. A systematic review (Krøier et al., 2021) and a Lego Serious Play study informed the development of PAMI, which was evaluated through fieldwork and workshops with music therapists and care staff (Ridder et al., 2023).

It is estimated that only 5% of UK care homes provide high-quality arts and music interventions (Bamford & Bowell, 2018), potentially due to limited funds, resources, knowledge, and staff time (Batt-Rawden & Storlien, 2019; Garrido et al., 2019; Sung et al., 2011). To improve accessibility, reduce costs and address staff availability, a modified version of PAMI (PAMI-M) was developed, which trains staff directly rather than delivering training via PAMI-certified music therapists. Cultural adaptations were required when PAMI-M was introduced in a different country (Hutson et al., 2014). Differences between PAMI and PAMI-M are reported elsewhere (Waters et al., in review).

Due to COVID-19, PAMI-M became a remote version, highlighting the plausibility and potential benefits of remote training for geographically isolated care homes.

PAMI-M's development included a systematic review (Waters et al., 2022), expert consultations, and the review of the original PAMI resources (Waters et al., in review). This paper reports on the evaluation of two studies conducted with care staff to determine the tool's usability and feasibility. The development and evaluation of PAMI-M were part of the first author's PhD thesis (Waters, 2023).

Aims

(1) To assess the clinical appropriateness, usability, and readability of the PAMI-M training materials for UK care staff.
(2) To investigate the barriers and facilitators for implementing PAMI-M in UK care homes.

Methods

Study overview

A two-stage process evaluated the intervention's usability and clinical appropriateness, consisting of two studies following the Medical Research Council (MRC) guidelines for complex interventions (Craig et al., 2008). Two studies were needed to refine the intervention resources, guided by The Formative Method for Adapting Psychotherapy (FMAP) (Hwang, 2009) and the Barrera and Castro (2006) for cultural adaptation.

Study 1, a small qualitative field-test, explored the adapted intervention's content and format with stakeholders. Results from Study 1 informed manual revisions, which were reassessed with new stakeholders in Study 2.

Study 2 was a mixed-methods evaluation study that evaluated the refined intervention and explored its impact on staff and residents. Differences between the studies are presented in a table in the online supplemental data. Figure 1, as presented in the previously published protocol paper (Waters et al., 2023), demonstrates the study overview. The qualitative findings are reported in the current paper, while the quantitative data are reported in a separate paper (Waters et al., unpublished). Both Study 1 and Study 2 were conducted during COVID-19, with varying levels of restrictions. Recruitment and data collection were conducted remotely, considering the care homes' needs during the pandemic.

Ethical considerations

Ethical approval was obtained from the London-Harrow Research Ethics Committee in June 2021 (REC reference- 21/LO/0283). Written informed consent was collected from all participants at the start and was continuously
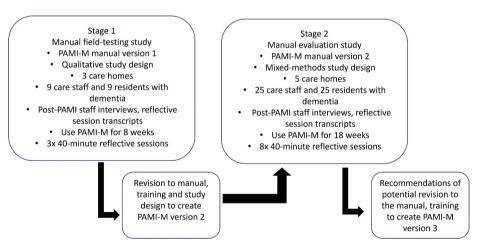

Figure 1. The study overview consists of two stages and two revisions, as presented (Waters et al., 2023). This figure has been published (and can be reproduced under the terms of the creative commons attribution 4.0 license).

monitored throughout the study. For residents lacking the capacity to consent, a personal consultee (family member, friend, or power of attorney) was appointed. The researchers worked with care homes to select appropriate consultees, who were initially contacted by the care homes. Residents' assent was obtained alongside their consultee's declaration, allowing them to stay involved in the decision-making process. All residents maintained their assent throughout the study.

Recruitment for studies 1 and 2

Care homes from the Enabling Research in Care Homes (ENRICH) network were recruited through the Lincolnshire Partnership NHS Foundation Trust In-Reach scheme in the United Kingdom. Eligible care homes needed a "good" or "needs improvement" CQC rating. The in-reach practitioner (RF) introduced the study to care home managers, who then informed staff and residents. Residents and staff were paired into dyads after recruitment.

Participants

Staff were eligible to participate if they: (a) were aged 18+, (b) had been permanently employed at the participating care home for at least six months, (c) worked a minimum of two shifts a week, (d) had the ability to read, write and communicate fluently in English, (e) assisted residents with activities of daily living or leisure activities, and (f) were not participating in any other psychosocial intervention research.

Residents were eligible to participate if they: (a) had a diagnosis of dementia per the ICD-10 criteria, (b) were aged 18+ (no upper limit), (c) had the capacity to consent or had a consultee if deemed to lack capacity to sign consent, (d) had lived at the participating care home for at least six months, (e) had sufficient hearing with or without hearing aids, (f) had regular interactions with a participating staff member, and (g) were not participating in any other psychosocial intervention research.

PAMI-M intervention

PAMI-M is a collaborative skill-sharing staff training tool that facilitates the embedding of attuned musical interactions into existing routines. It adopts a flexible framework, equipping staff with essential skills and guidance on implementation without providing explicit step-by-step instructions. Instead, staff personalise the approach based on residents' needs, abilities, and preferences. The development process is described in Waters et al. (in Review). The intervention includes a paper manual, interactive training webinar, and fortnightly reflective sessions. All participating staff completed the training, and all resident participants received the intervention. The core PAMI-M elements outlined in Table 1 include The Voice, Framing, Balancing and Connecting.

The 3-hour interactive training webinar was delivered to staff via Microsoft Teams in one or two sessions. BW facilitated the webinar with assistance from BS. BW has a background in psychology with experience as a care home well-being therapist. BS is a music therapist and researcher. Staff at each care home were encouraged to complete the training together to facilitate group discussions, but multiple sessions were offered

Table 1. The PAMI-M elements with details of content

PAMI-M elements	
The Voice	Focuses on the musical elements that contribute to our voice, e.g. Tone, Pitch, Volume, Tempo
Framing	Focuses on assessing and altering the environment to create security and predictability Cueing – using music to cue a time, task, or person Sound Environment – assessing and altering the sound environment
Balancing	Focus on recognising and regulating resident's arousal levels Focuses on teaching staff to recognise their arousal levels and how their emotions can impact interactions
Connecting	Focuses on using music to create meaningful interactions to connect Attunement – being present to and with another person's experience and emotions Validation – the recognition, understanding and acceptance of a person's beliefs, thoughts, emotions, and behaviours PAMI-M music care plan involves creating a person-centred music care plan highlighting residents' preferred music, when to use music, and how they like to listen to music

if needed. PAMI's central principles are person-centred and person-attuned (Ridder et al., 2023), allowing staff to use the skills based on residents' needs, impairments and preferences, with the recommendation to use PAMI-M regularly on each shift.

The reflective sessions, facilitated by BS with assistance from BW, ran for 40 minutes fortnightly via Microsoft Teams. Guided by a session prompt outline and the care staff's experience, the music therapist supported staff in developing verbal descriptions of their interactions.

Study 1 data collection

The study ran between September 2021 and January 2022. Each care home was involved for ten weeks, with PAMI-M implemented for eight weeks. Staff received a PAMI-M paper manual version 1, and the data collection questionnaires via post at the start of the study. The staff and resident demographic questionnaires and the Dementia Severity Rating Scale (DSRS) were completed by staff before the training. The DSRS (Clarke & Ewbank, 1996) is a validated informant-based multiple assessment questionnaire for measuring functions impaired by dementia. All three homes completed the training in a single block, with all staff members attending the same session.

After completing the training, staff implemented PAMI-M into their routines, documenting their experience in daily diary logs and were expected to attend three reflective sessions. The paper diary logs, developed by the first author, recorded interaction details, including time, date, length, PAMI-M elements, resident relations and impact. The data collected aimed to provide insight into when PAMI-M was used, the optimal number of usages, and the elements most understood or used. Reflective sessions were recorded for data collection. After eight weeks, staff individually participated in an online post-intervention semi-structured interview facilitated by BW and BS using a pre-defined topic guide, developed by BW from the manual development, literature, and discussions with OM and MO.

Study 2 data collection

Study 2 ran between March and November 2022, following the same procedure as Study 1. Results from Study 1 led to minor adjustments to the PAMI-M manual and study documents for Study 2. The study ran for 20 weeks, with PAMI-M implemented for 18 weeks. Staff received a PAMI-M manual version 2 at the start of the study. Three care homes completed the training webinar in one session, while one completed it in two sessions. Due to scheduling conflicts, colleagues completed the training separately in three care homes. After training, staff implemented PAMI-M, documenting their experience in daily diary logs. Fortnightly reflective prompt sheets were completed prior to the reflective sessions. Staff were expected to attend eight reflective sessions. After 18 weeks, staff individually attended an online post-intervention semi-structured interview facilitated by BW using a pre-defined topic guide.

Data analysis

Means were generated for demographic questionnaires and residents' DSRS. Audio recordings from the reflective sessions and interviews were transcribed using The University of Nottingham Automatic Transcribing Service before being independently reviewed for accuracy by two researchers. During the transcribing stage, names and identifiable information were removed, and participants were anonymised using coded initials. Care home staff were coded as C and then a letter, and residents were coded as R with the corresponding letter to their staff member. The researchers conducted a thematic analysis using Braun and Clarke's (2006) six steps.

Step 1: Familiarising yourself with the data: In Study 1, BW & BS conducted the thematic analysis. In Study 2, BW and OM performed this task. Initially, the researchers read through the transcripts, noting initial thoughts.

Step 2: Generating initial codes: The researchers independently generated codes before discussing them and assessing the inter-reviewer reliability. Any discrepancies were discussed.

Step 3: Searching for themes: BW identified themes by clustering codes visually using sticky notes.

Step 4: Reviewing themes: The themes created in step 3 were discussed with a second researcher and adjusted as needed.

Steps 5 and 6: Defining and naming themes and producing the report: BW and OM generated the final themes' and subthemes' names through discussions, ensuring they reflected the data and addressed the research questions.

Results

Care home and participant demographics

Eight dyads from three care homes were recruited in Study 1, with five completing all study elements. In Study 2, 19 dyads from four care homes were recruited, with 10 completing all study elements. Staff dropouts were due to research anxiety ($n = 1$), long-term sickness ($n = 1$), resigning from their job ($n = 4$), time commitments ($n = 1$), personal circumstances ($n = 1$), and no reason given ($n = 4$). Demographic questionnaires were returned for

Table 2. Staff and resident demographics for participants in the field-testing study (Study 1) and the evaluation study (Study 2)

Variable	Study One	Study Two
N	Staff: 4	Staff: 8
	Residents: 4	Residents: 8
	Range (Mean)	Range (Mean)
Staff Age	28–50 years old	22–65 years old
	(39.50 years old)	(46.22 years old)
Staff Time Spent in Dementia Care	5 years – 32 years	8 months – 15 years
	(13.7 years)	(5.96 years)
Staff Time at Participating Care Home	5 years – 32 years	6 months – 15 years
	(13.7 years)	(3.28 years)
Resident Age	78–94 years old	61–96 years old
	(85.25 years old)	(83.78 years old)
Resident Time Living at the Care Home	1 year 8 months – 13 years	6 months – 3 years
	(6.70 years)	(1.61 years)
Resident DSRS Score	19–51	29–47
	(35.50)	(38.63)

four dyads in Study 1 and eight in Study 2. Of the staff who responded, 12 were female and one male, aged 22–65. Twelve staff members were British or English, and one was German. Of the residents' questionnaires returned, 12 were female, and one was male, aged 61–96. Twelve residents were British, and one was Belgian. All residents were reported to have moderate to severe dementia. Table 2 displays the individual demographics for each study.

Six reflective sessions were attended in Study 1, with three sessions missed, and seventeen were attended in Study 2, with 14 sessions missed in total. Reasons for missing sessions included annual leave, care home responsibilities, family illness, forgetting the sessions, staff sickness, Covid-19, CQC inspections, shift patterns and broken internet. Figure 2 presents the themes from the thematic analysis. Figure 3 presents how the results connect and relate to the research aims.

Readability

Staff found the manual well-formatted and easy to understand and follow, allowing quick access to relevant information. "*I didn't have to go rooting about or think am I doing this right or wrong*" (CH01 CB).

While most staff found the manual readable, some struggled with unfamiliar terminology (e.g. balancing and regulating arousal), making comprehension challenging. Adding more information to the manual was suggested to improve readability and comprehension and ensure that it was consultable post-training.

Usability

All staff tailored the PAMI-M skills to their residents' needs and felt the training provided a good foundation for implementation. One participant thought, "*We were on … a good foot forward … We sort of knew where we were at with that*" (CH06 CN).

After the initial webinar, staff felt prepared with the appropriate knowledge to attempt the skills independently. However, staff felt that the combination of the
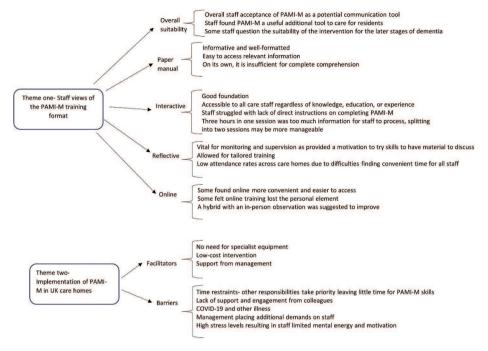
Figure 2. Presents the themes generated during the thematic analysis
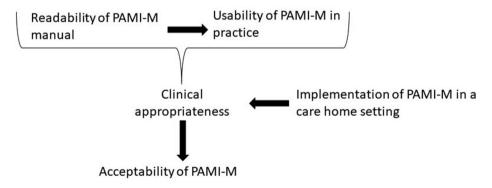

Figure 3. Presents how the results relate to the research aims and how they connect together. Readability – how easy or difficult it was to read and navigate PAMI-M. Usability – the effectiveness, efficiency and overall satisfaction of using PAMI-M. Clinical appropriateness – how appropriate PAMI-M was for the care staff's role, residents with dementia and the care home setting.

manual, interactive webinar, and reflective sessions was necessary for complete understanding, as no single element was sufficient. Before the webinar, some staff found it challenging to understand the different PAMI-M elements from the manual due to the unfamiliar terminology. One participant felt, "*It (the manual) needed explanation . . . You know where there were like different sections to it and what they actually meant*" (CH06 CQ).

The webinar and reflective sessions clarified terminology and improved familiarity, increasing comprehension and confidence, making PAMI-M more usable than the manual alone.

Manual usability

There were discrepancies between opinions on the manual length, affecting their perception of the training's usability. Some felt more clarity was needed on the different PAMI-M elements and suggested adding information, while others thought the manual needed shortening. One staff member suggested that the tool's usability depended on the staff's willingness and motivation to learn, "*It's user-friendly if they're motivated enough to want to learn and to do it*" (CH04 CH).

One suggestion was to split the manual into two books, one for theory and one for practical activities, to reduce the length and improve navigation without losing essential information.

Interactive webinar usability

During the interactive webinar, staff reported that videos and interactive elements helped maintain engagement and made the training accessible to different learning abilities. While the webinar elements maintained engagement, the training length impacted some staff's engagement and motivation.

> I think three hours was a bit in-depth of the manual . . . three hours on your first; it was like, wow . . . two sessions . . . it wouldn't have been so in your face. (CH02 CC)

Some individuals felt the training contained excessive, and sometimes unnecessary, information to process in one session, leading to disengagement.

> I just think it sort of took a long time to get the point across of what we were expected to do. And then I think people lost the will to live . . . I think it sort of put people off. (CH04 CH)

To improve the volume of information delivered, staff suggested either removing some sections for conciseness or splitting the training into two sessions with time in between to process information to prevent staff from becoming overwhelmed.

Reflective session usability

Some participants found the tool's usability was affected by one participant, who dominated group discussions, preventing others from gaining sufficient support.

> The other person that I did training with, I feel like she took control over it a little bit . . . and like I found it difficult to actually put my input into it. (CH04 CI)

Overall, staff found the group sessions beneficial. They created a sense of togetherness and mutual support in learning and implementing PAMI-M. However, in one care home, not all staff felt they received equal supervision support. Aiming the questions at specific participants could ensure that staff have equal opportunities to discuss, increasing the usability for all staff.

Some staff initially struggled with the flexible structure of PAMI-M and were concerned about misinterpreting the researcher's expectations.

> The only thing I found hard at first was knowing … what was expected of me. (CH04 CJ)

> At first, I think we felt a little lost as we weren't quite sure because we wasn't given set instructions on what to try with residents. (CH04 CH)

Despite initially feeling lost, staff effectively applied tailored PAMI-M skills, demonstrating the necessary knowledge and abilities to adapt the intervention to residents. Additionally, the reflective sessions helped alleviate their initial confusion and fear by providing guidance and praise from a music therapist as staff practised and reflected on their interactions, increasing reassurance and confidence.

> I'd hate to be wrong, and it's feeling silly, isn't it if you're wrong. (CH01 CA)

> Just reiterating that we're actually doing thing okay … Gave us a bit more confidence that we were doing things how we should be doing them. (CH02 CC)

The increased staff confidence resulted in an increased willingness to experiment with skills, better tailoring the intervention to their resident's needs, and improved usability.

The reflective sessions were vital for monitoring and supervision, providing motivation and accountability for staff to continue implementing PAMI-M and practicing skills regularly to ensure they had examples to share.

Remote delivery

The usability of PAMI-M when delivered as remote training divided participants, with some preferring the online format due to its convenience and ease of access.

> I think it's easier to access sometimes … It's still face-to-face … just through a computer … What you're telling me now would be no different if you were sat in a room. (CH06 CN)

One staff member reported no difference between remote training via conference calls and in-person training. However, others disagreed and preferred in-person training as the interpersonal connection was lost in remote training.

> Probably face-to-face, to be fair, because it's- you lose that interpersonal thing when it's just a face on the screen, and it's even though you can get used to it, it's sort of not the same. (CH04 CG)

While many would have preferred in-person sessions, they understood that the webinar was the best substitution during COVID-19.

While staff felt that the current PAMI-M format was usable and provided sufficient knowledge for implementation, they believed offering an in-person demonstration session would improve usability, staff comprehension, and confidence.

> I think you could come in and you could see what we were doing and then you could give us pointers and show us because obviously the person who invented it and designed it and created it has great expectations, expectations of how it's meant to be. (CH04 CH)

Clinical appropriateness

While most staff found the manual usable and suitable for teaching the PAMI-M skills, some questioned the clinical appropriateness for care homes and the dementia population. One participant voiced concerns about the clinical appropriateness of PAMI-M for end-of-life care.

> We have people on end-of-life . . . you won't want to be going in there and humming things and singing things. Cause you need to be respectful. (CH02 CD)

In contrast, another participant adapted the PAMI-M skills to use with residents during end-of-life care, allowing her to continue to connect with the residents.

> He was not able to talk any more. But when I entered, and he felt my presence . . . Then he looked at me, and I . . . connected with the emotion. We- I know we both have that connection at that moment. (CH05 CK)

While staff found the manual useable, some questioned its suitability for their role, reporting its length as impractical for roles such as carers compared to other training materials.

> We're not used to having a lot of paper to do something . . . because a lot of stuff is electronic now, it tends to be smaller. . . it tends to be more concise. (CH06 CN)

A more concise electronic manual was suggested as a more suitable format, as staff could refer to the manual while working with residents. Alternatively, staff suggested offering a small reference book to enable staff to carry a portable version of the manual while on shift.

While the group sessions were seen as beneficial, the format was challenging to offer in care home settings. Managers and researchers found it challenging to find a convenient time for all staff to attend sessions together, especially with larger groups. Many staff members were reluctant to attend separate sessions, resulting in low attendance rates. Some staff attended on their day off; however, this was unsuitable for those with other responsibilities. Attendance rates varied, with some staff only attending one session. While some felt that the number of sessions attended was sufficient, others disagreed.

> I think we should have attended more because I think, towards the end I think we sort of lost our way. I seemed to lose hope a bit, sort of thinking that am I doing this right and, why am I doing this, and is it benefiting them. (CH04 CH)

One participant reported that the reflective sessions were vital for staff motivation, but her team missed multiple consecutive sessions due to care home logistics, leaving them feeling lost and doubting PAMI-M's benefits.

While some staff reported that the remote sessions were convenient and easy to access, others questioned their appropriateness within a care home. Many sessions were missed due to other care home responsibilities. One staff member believed in-person sessions might reduce interruptions and increase attendance.

Implementation of PAMI-M within a care home setting

Facilitators

PAMI-M does not require specialist equipment, enabling staff to use available resources. Most staff members used smartphones because they were the most convenient and accessible.

Care home managers were supportive and accommodating, providing staff extra time to attend sessions and plan implementation.

> Our manager was- was really up for us doing this, gave us time to think about it more and to maybe do a bit more planning than, umm, maybe would have been able to if we didn't have such a supportive management team. (CH06 CQ)

PAMI-M skills can be incorporated into interactions during other care tasks, enabling staff to incorporate the intervention into their limited time schedule without additional burden.

> It takes a couple of seconds or minutes to sing to someone that might change their mood or encourage them to take their tablets. It's not something that's a long process that you've got to do. I think it's quite simple to fit in. (CH01 CA)

Barriers

Though PAMI-M was developed to be embedded into routines, time restrictions remained. Some staff felt "*You don't always get the chance to do it throughout the day*" (CH02 CC). Other responsibilities took priority, leaving no time during shifts for PAMI-M. Busy schedules with limited available time increased staff stress and reduced motivation. One participant suggested that the barrier is "*finding the right time, not the time*" (CH02 CD). Additionally, attending training required additional time despite skills being incorporated into routines.

Due to the small number of recruited participants, staff experienced resistance or a lack of understanding from non-participating staff, complicating implementation.

> Well, it's a lot harder on my floor to have the change because it's literally just me by myself that's doing the PAMI. (CH04 CI)

Implementation was easier on floors where multiple staff participated and could collaborate to use the skills.

Staff mobility between different units and residents was common, resulting in days where dyads were split.

> We don't always work in the same section of the building . . . Then, I had to find the time to go and see my resident rather than being on shift in her area. (CH06 CQ)

When management observed staff implementing PAMI-M, they placed additional responsibilities on staff, which resulted in them being overworked and stressed, hindering PAMI-M interactions.

> She's observing everybody in the home, and she saw that I and CL (Staff participant)-were . . . we are the best for activities for now before they could get any activities lady to employ. (CH05 CK)

COVID-19 was a significant barrier, with care homes experiencing multiple lock-downs. Staff shortages due to illness increased the workload for the remaining staff, further limiting time for PAMI-M.

> We don't always have the staff we should have . . . I'm meant to have four carers and a senior . . . we're not having that, so then you haven't got the time. (CH04 CH)

Two carers caught COVID-19 and norovirus multiple times, leaving their residents without PAMI-M interactions. The extent of sickness made the practicality of imple-menting PAMI-M challenging.

Although phones facilitated PAMI-M, "no-phones-on-shift" policies can prevent them from being used or create additional stress when staff initially ask managers for permission to use their phones. Using personal phones also made it difficult for other staff to access the same playlist.

> I don't always get the chance to do the personal thing in the morning, so I had to sort of get your phone organised to give it to somebody else to sort of put it on. (CH04 CH)

The staff member lent her phone to other individuals to maintain consistency; how-ever, this required planning and was limited to certain shifts.

Although implementing PAMI-M with one resident was manageable, there were concerns about upscaling to include all residents, "*It's a shame I haven't got time to do it with all 43 of them*" (CH07 CT).

Staff found time to offer in-depth, meaningful interactions with one resident but worried about offering equal time to all residents.

Acceptance

Based on its usability and clinical appropriateness, PAMI-M was generally accepted by staff as a potential communication tool, appreciating that it provided them with an additional tool to manage challenging situations.

> It is very stressful sometimes working with dementia patients; you know they can be very unpredictable, so it's- I just think that any tools . . . helps you. Whatever it is, it's got to be a good thing . . . Thank you for . . . giving us a chance to use it because . . . it's turned out to be fun, and I think it's given us . . . that extra tool that we needed to just maybe make their lives and our lives a little bit easier (CH06 CQ).

Regular meetings with the PAMI-M team, even remotely rather than pre-recorded training, fostered relationships and increased staff confidence and trust in implement-ing the researcher's ideas.

Discussion

Staff demonstrated attempting all skills and determining the most appropriate for their residents' needs. The intervention resources were clear, accessible and easy to use and reference, supporting continued use post-training and increasing the likelihood of sustained implementation. Reflective sessions with the music thera-pist provided guidance, addressed barriers, and offered ongoing support, which increased staff motivation and incentivised staff to practice PAMI-M for later discussions. Interactive elements kept staff engaged and motivated and helped translate theory into practice (Rapaport et al., 2017; Surr et al., 2019, 2020).

While developing PAMI-M to be practical for UK care homes, the researchers ensured it preserved the original PAMI's core elements and principles (e.g. Attunement, Person-centred and collaboration). Studies (Waters, 2023) found that PAMI-M produced similar outcomes to PAMI (Krøier, 2022; Ridder et al., 2023), suggesting that PAMI-M maintained PAMI principles while ensuring practicality for UK settings. Key modifications included shortened training, directly training staff instead of PAMI-certified music therapists and altering terminology (Waters et al., in Review). Opinions on the training length varied, with some finding it suitable and others considering it lengthy, especially when completed in one session. Staff initially struggled with the manual's terminology, but training and reflective sessions helped clarify the concepts, boosting their confidence and acceptance in using the PAMI-M terminology.

COVID-19 led to unexpected adaptations, including converting PAMI-M to remote training. The researchers designed PAMI-M to be adaptable to both COVID-19 and post-COVID-19 care systems. Despite initial concerns about remote training affecting attunement and interaction elements (Waters, 2023), the studies demonstrated its feasibility. Staff reported that the changes did not hinder their ability to engage with PAMI-M. While most staff responded positively to the remote format, those preferring in-person training acknowledged its necessity during the pandemic and felt it did not negatively impact their experience.

While overall, staff found the intervention appropriate, some questioned the suitability for end-of-life care. Although the researchers did not specifically study end-of-life care, some staff used PAMI-M with residents in the late stage of dementia to bring comfort to both the residents and themselves. Extensive research supports the use of music in palliative and end-of-life care for a range of conditions, including dementia (Baroni, 2020; Black & Penrose-Thompson, 2012; Graham-Wisener et al., 2018; Johnston et al., 2022; Tao, 2019). Perceptions around the unsuitability of PAMI-M for end-of-life may lie in insufficient guidance for adapting the intervention for different dementia stages rather than inherent unsuitability for end-of-life care. Future research could address this by developing a dedicated version of PAMI-M for end-of-life care or adding end-of-life guidance to the existing training, enhancing its application in these contexts.

To ensure PAMI-M's clinical appropriateness for a wide heterogenous care home population, flexibility was vital in adapting to the needs of different care homes, staff, and residents (Lawrence et al., 2012; Smith et al., 2019). The training must be altered to align with care homes and individual staff members' personalities, learning styles, experiences, and current policies (Groot Kormelinck et al., 2021). Despite differences in experience and knowledge, all staff reported gaining new skills and knowledge. While flexibility was essential, structure ensured that staff delivered high-quality music skills. The original PAMI team addressed the paradox challenge of creating a manual that is "fixed and inflexible" and "flexible and adaptable" (Anderson-Ingstrup, 2020) through a framework that allowed for tailoring skills to individual needs while providing sufficient information for successful practical implementation.

Initially, staff struggled with the lack of step-by-step instructions but adapted over time to PAMI's person-centred, flexible approach, which is central to PAMI-M's ethos. Staff successfully tailored PAMI-M to their residents' needs, demonstrating both competence and comprehension. The results suggest that the initial staff concerns were due to a fear of misusing PAMI-M rather than

a lack of competence or comprehension, which was overcome through reflective sessions. Unlike fixed manuals that impose singular goals for all residents, PAMI-M's flexible framework enables individualised goals, avoiding the limitations noted in traditional music interventions (Hackett et al., 2021). Concerns were raised about PAMI-M's usability being dependent on staff's motivation to learn, implying that specific attributes may be required to engage appropriately. Söderlund et al. (2012) similarly noted that attributes such as attentive listening, maturity, and patience could influence staff members' abilities to use care interventions. If care homes have an insufficient learning climate, staff may be less open to change and less likely to engage in new interventions (Groot Kormelinck et al., 2021).

Barriers and facilitators to implementation

Both studies highlighted barriers and facilitators similar to other psychosocial interventions (Luff et al., 2015; Surr et al., 2019, 2020). Staff faced challenges due to time, resources, and finances but found PAMI-M easier to implement than structured activities, as skills could be embedded into existing tasks. However, some barriers remained, with many exacerbated due to COVID-19 (Ritchie et al., 2023).

While staff could use care home-owned music devices, availability and condition varied, with many homes' equipment being inadequate or mistreated (Garrido et al., 2020). Many staff used their personal mobiles to overcome resource limitations. However, no-phone policies sometimes prevent accessibility (Foster et al., 2021) and expecting staff to use personal devices for work was also problematic.

While integrating skills into current practices substantially reduced barriers, staff still struggled to find time, consistent with previous research (Groot Kormelinck et al., 2021; Law & Ashworth, 2022; Surr et al., 2019; Windle et al., 2019). Staff shortages and COVID-19 further limited availability, significantly impacting implementation (Von der Warth et al., 2021).

Consistent with previous research, management support was vital for providing staff with the time, space and encouragement needed to implement PAMI-M (Garrido et al., 2020; Lawrence et al., 2012, 2016; Surr et al., 2020). Scheduling training for multiple staff members posed challenges, leading to some attending on their days off, which can reduce feasibility and motivation.

Consistency across shifts was essential to ensure uniform interactions, as progress by one staff member was futile without broader implementation. Trained staff attempted to share strategies with non-trained staff, but they experienced resistance.

Expanding PAMI-M care-home-wide presented feasibility concerns due to the difficulty of maintaining consistent effort across multiple residents. Training all staff could improve consistency, reduce individual workloads, and address barriers, increasing the likelihood of sustained practices and the intervention's usability and clinical appropriateness (Garrido et al., 2020; Rapaport et al., 2017).

Revisions to PAMI-M intervention after Study 1

Study 1's results informed the researchers to revise the PAMI-M intervention for Study 2. During the reflective sessions, staff discussed other music activities as separate from

PAMI-M, diverting time from PAMI-M skills. Additionally, staff found it challenging to use PAMI-M with participating residents while simultaneously caring for non-participating residents. Based on staff discussions, the manual was updated to include information on PAMI-M for group activities to support staff using musical interactions in pre-existing activities and information on social interactions between residents to highlight PAMI-M's potential to facilitate resident--resident interactions. The length of the manual made it difficult for staff to locate information during busy shifts. Therefore, a recap sheet was created for quick access to essential information that was easier to display in staff areas. Based on staff's suggestions, blank pages for notetaking were added to PAMI-M version 2.

The lack of in-person observation made it challenging to determine accurately how PAMI-M was used. In Study 1, staff mentioned a limited number of PAMI-M interactions despite the 8-week study length. To address this, a reflective session prompt sheet was created to document detailed written experience descriptions in Study 2. Staff were expected to report one interaction in detail each fortnight to increase the number of interactions discussed. As part of the prompt sheet, staff set fortnightly goals, making the intervention more person-centred and providing clear guidance for practical implementation (Hackett et al., 2021).

Future recommendations for PAMI-M development

While overall, staff found PAMI-M suitable for its intended audience and setting, further improvements were suggested in Study 2. To address PAMI-M's lengthiness compared to other staff training, a concise online manual with a linked table of contents could improve usability for carers by making information more accessible. Given that the paper format was based on stakeholder consultations (Waters et al., in Review), future consultations would be needed for a technology-based version. Despite a recap sheet in Study 2, staff suggested a reference sheet that clearly defined categories and a small portable book that can be carried during shifts, suggesting the current resource may be unsuitable.

It was recommended that the webinar be provided in two shorter sessions. Both studies offered a two-session option, though only one manager chose it. Although this single-session format might better accommodate management schedules, many staff found the volume of information overwhelming. Therefore, offering training in only two parts may be more suitable. The reflective sessions' length was too short for larger groups. Offering additional individualised sessions could ensure adequate supervision for all participants.

Some felt the personal aspect of in-person training was lost but understood that remote training was necessary due to COVID-19. The two studies highlighted the plausibility of remote training, which is potentially beneficial for geographically isolated care homes. However, it also made it more difficult for facilitators to assess staff comprehension and the application of the material. While the initial online training could continue, potentially to multiple care homes together, adding in-person shadowing would provide additional guidance and ensure correct implementation. This shadowing would involve facilitators and staff observing each other using PAMI-M with residents.

Both studies were facilitated by the same two researchers, ensuring consistency and adaptability to unexpected scenarios across sessions. However, creating facilitator guidelines could help maintain training quality and equip multiple facilitators to handle issues like disproportional contributions, as observed in this study.

Methodological limitations

The self-reported findings made it difficult to determine the correct PAMI-M implementation. Incorrect implementation could impact staff opinions on the intervention's suitability and usability. In-person monitoring sessions, initially planned but cancelled due to COVID-19, could improve implementation accuracy, attendance rates and retention as facilitators could better support staff.

The participating care homes belonged to ENRICH, who supports care homes in participating in research. Therefore, participating staff and managers may have had higher motivation and management support than other care homes, potentially influencing perception of clinical appropriateness and usability. As a result, the findings may not accurately represent the wider care home population, making it challenging to determine PAMI-M's clinical appropriateness and usability for all care staff and UK care homes.

Conclusion

Overall, staff found PAMI-M readable, useable, and clinically appropriate. Staff demonstrated implementing and altering skills to align with residents' needs, preferences, and abilities, suggesting a comprehensive understanding. The manual was deemed easy to follow, well-informed and complemented training sessions well. Minor alterations were recommended to improve suitability, leading to updates to Study 2, such as a recap sheet and a PAMI-M version 2. Future research should address the recommendations highlighted, potentially by developing an online version that is clinically appropriate, readable, and usable for UK care homes. The studies highlighted the plausibility of remote training when necessary, such as COVID-19 or geographically isolated care home settings. However, the findings suggest some elements were lost, like observing skills in practice. Therefore, a hybrid of in-person and remote training may improve usability, especially if the in-person elements allow staff to observe the skills implemented in practice by the facilitators. Future research should consider incorporating in-person elements and evaluate the usability of PAMI-M when formal reflective sessions end to evaluate PAMI-M's long-term implementation. While this paper evaluated the usability and feasibility of the PAMI-M tool in UK care homes, the results presented could inform the development of other care home training or the development of PAMI-M in other countries to ensure usability and clinical appropriateness.

Disclosure statement

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