

## **Encouraging movement through music: Exploring the use of Joyvest® with persons living with dementia**

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### **Background**

Dementia is a common disease, with about 50 million persons living with different forms of dementia world-wide. This number is expected to increase to over 150 million by the year 2050 (1). Dementia conditions have severe effect on all aspects of life, including social relationships, well-being, mental health and physical functioning (2). They typically result in cognitive deficits that have a negative impact on language and memory (3), which may lead to isolation and loneliness (2), poor quality of life and overall health (4). Persons living with dementia have also been found to participate in fewer physical activities, and be more sedentary than their cognitively healthy peers (5), and they frequently experience symptoms of depression (6). Moreover, dementia often leads to neuropsychiatric symptoms such as emotional distress, anxiety, wandering and emotional distress (7). These symptoms may also have a negative effect on engagement in meaningful activities, and may lead to high dependence on other people (8, 9).

Many symptoms of dementia are treated with psychotropic medications (10), but there might be negative side effects of such treatments (11). Non-pharmacological treatments have therefore been suggested, for instance to manage neuropsychiatric symptoms by environmental modifications (12) and by introducing a sense of familiarity into the environment (13, 14). Other non-pharmacological treatments that have been tested are music, representing a familiar aspect of everyday life that may modify unpleasant and external stimuli and prevent anxiety. People with dementia usually have a preserved ability to respond to music (15) and music has for a long time been acknowledged as a health promoting aspect of everyday life (16). In combination with rhythm and movement, music can be used as a therapeutic tool (17), and music has been shown to be a viable and effective way of reducing anxiety (18), neuropsychiatric symptoms (19, 20) and depression, and to improve quality of life (21) among people living with dementia. However, even if music has been used and evaluated as interventions for people living with dementia, there is limited knowledge of whether music could be used to encourage movement for this group (22).

Dance movement therapy has been described to have the potential to contribute to reduced behavioural symptoms (23), and stimulation of mental processes (24) among people living with dementia. Moreover, research on best practice nursing home care puts focus on meaningful activities to promote thriving and support a good quality of life (25-27), and there is evidence to suggest that quality of life is improved by participating in personally meaningful activities (28) such as dancing to music that one enjoys (29). Joyvest is a wearable product that was developed to help people in need of care to increase physical activity. Joyvest is a vest that plays music from the built-in speakers when its motion sensors detect motion. The purpose of connecting bodily

motion to music is to give the user an instant positive feedback to motion and help motivate and stimulate the user to activity.

## **Aim**

The aim with this study was to explore the use of music vests (Joyvest) with people living with dementia in nursing homes. The following research questions were used to guide the data collection and analysis:

- How do staff use Joyvest with people living with dementia?
- What does it mean for them to use Joyvest?
- How could the use of Joyvest be promoted?

## **Methods**

The study is an explorative interview study with a qualitative design.

### *Participants and data collection*

Six persons working in three different nursing homes, with experience of using Joyvest for about three months with people living with dementia were interviewed using Google software (n=4), or telephone (n=2). The participants were five women and one man, they had worked in nursing homes as assistant nurses (n=5) and personal carer (n=1) between three and 10 years, and were between 31 and 57 years of age. The interviews lasted between 21 and 38 minutes.

The participating staff members were introduced to the project by an employee of Joyvest in an introductory meeting at the nursing homes. In the introductory meeting, they got a demonstration of how Joyvest works and they got information about the purpose of the study as well as the purpose of using Joyvest.

The participants were informed to specifically focus the use of Joyvest with the older persons they were contact persons to. The older persons were selected by staff at the nursing homes, based on the selection criteria that they should be particularly sedentary and preferably had shown interest to music before.

### *Data analysis*

Audio-recordings were transcribed verbatim and analysed with qualitative content analysis according to the structure described by Graneheim and Lundman (30). This meant that the author first listened to the recordings and read all transcribed text to obtain a sense of the whole. Then, meaning units, i.e., statements that related to the same central meaning, were extracted and condensed into descriptions of the use of Joyvest with people living with dementia, i.e., the manifest content. Finally, the condensed descriptions were abstracted to categories describe the core components of the participants' experiences.

### *Ethical considerations*

The study did not involve any interventions with the aim to affect the participants' physical and/or psychological states, and there were no apparent risks involved in using Joyvest with the

older persons, or in participating in the interviews. Moreover, no personally sensitive information was collected and the study did thus not fall under the law on ethical review of research that concerns human beings (2003:460). However, the study conformed to the ethical principles stated in the Declaration of Helsinki (31), and all participants received information about the study and what was required of them before consenting to participate in the study (please see appendix).

## Results

Answering to the aim and research questions, the analysis resulted in four categories, described in detail below. First, *Using Joyvest to overcome health issues* describe how the participants used Joyvest with people living with dementia. Second, *Getting a break from the daily grind* describes the meaning ascribed by staff to the use of Joyvest. Third, *Timing it right*, *Being creative*, and *Having knowledge and resources* describe how the use of Joyvest could be promoted in nursing homes with people living with dementia. Quotations are used to put the categories in context, and all names used are fictional.

### *Using Joyvest to overcome health issues*

Most of the persons living in the nursing homes lived with rapidly decreasing physical and cognitive functioning, and Joyvest was used to maintain a certain degree of functioning, as well as to make the older persons happy. The participants experienced Joyvest as easy to use, and when using the vests, they felt that the older persons got happy and relaxed, and that they could show their personality. Some persons' agitation decreased, whereas other persons who were in apathic states could suddenly narrate their desires and needs. Using Joyvest thus allowed for the older persons' personalities to shine through, overcoming health issues and expressing their feelings and interests through movement. This was described by Lina as:

*"The apathy, we can see that when we have music on, she feels better. And the depression also, she feels better. I got to experience that here. It was my contact person, so I found it very nice. She likes the music, and we had another lady who sat and danced next to her, so it became somewhat of a music moment if you understand what I mean."*

### *Getting a break from the daily grind*

Experienced as a welcome contribution to the staff's daily work, this sub-theme describes how using Joyvest meant that they got a break from the daily grind in terms of sharing a positive and meaningful activity with the older persons. When listening to music and moving about or dancing together, the older persons showed appreciation towards the staff by smiling, dancing and sharing stories, which meant that the staff also appreciated the activity. The participants also experienced appreciation of Joyvest among staff members who were not directly involved in the use of the vests. For instance, when someone was walking through the corridor with the vest playing, or when other staff members had the vest on and danced together with the older persons in a common area. Martin expressed this in the following way:

*"I have to say I personally found it very funny. You kind of get a soundtrack of my life [walking around the nursing home with music playing]"*

### *Timing it right*

To promote the use of Joyvest, the participants described the importance of taking each person's health condition into consideration, and timing the use according to their current state and the staff workload. It was not considered possible to set a specific time for when to use Joyvest, nor was it possible to say that a person would want to use the vest just because they had used it before. Interest in using the vest was all about timing and presenting it in the right way, preferably by a person who the older person knew well sensibly telling them that it was time to use the vest while being observant of signs that the older person did not want to use the vest right now. The most important facilitators for using Joyvest were thus the older persons' desire and wish to use it in the moment, their current shape and energy to keep on going. The convenience of having the vest accessible, close to the older persons' apartments, was also experienced as a facilitator for using it, making it easy to find the time and space to engage in the activity together. Frida described the importance of timing the use of Joyvest right like this:

*“There is no special time for us here, but it is when the situation appears. Because it is very up and down, which time that is good for different persons. That is why it is so convenient to just grab it, five minutes and you have it.”*

### *Having resources and knowledge*

Over the study period, the participants observed a gradually decreasing use of Joyvest, explained partly by the older persons' physical and cognitive deterioration, and partly by high turnover rates and sick-leave among staff. The participants were responsible for using Joyvests with their contact persons, but they were frustrated over that the vests were forgotten or dismissed as not applicable when they were not at work due to sick-leave or shifts. Even if the vests were experienced as easy to use, the participants described that a certain degree of knowledge about the older persons was needed to use the vests. Lack of time was also described as a barrier for using Joyvest since it could be difficult for staff to find the time to use the vests together with the older persons. Consequently, the participants felt a need for all staff members to receive information on how to use Joyvest, to make it less dependent on single staff members finding the time to use them. The participants also described a need for having vests available on a permanent basis, to be able to apply the experience of who would benefit the most of using them to daily practice. Some needed the vests to calm down, others to get their energy levels up, and it was only after a few weeks of using the vests that the participants came to realise how to use them with different people, and for what reasons. Lina described this in relation to one of the persons who had lived at the nursing home but not used Joyvest:

*“It is possible that the other lady who passed away with heart failure actually should have joined [and use Joyvest] now when you think about it. She understood a little more, and had very much anxiety and hallucinations. She maybe could have become calmer with music since she used to be out dancing and so. That are the things you learn with time, you learn with time the things that we did not think about that much when we started, when we did not know about this.”*

### *Being creative*

Since all older persons using the vests were living with dementia, there was a need for staff to be creative in using Joyvest in different ways, with different people, and in different situations. Sometimes, staff needed to find ways on how to spark interest in using Joyvest, and sometimes they needed to adapt the use of the vest to the older person's current state. The participants emphasised the need for staff to understand the reasons for the older persons not wanting to use the vests, in order to know how to motivate them, and they used their previous experience and knowledge about the older persons to find ways of how to use the vest. All older persons at the nursing home were experienced as having a need to be reminded and encouraged to move about, and they required assistance with the changing of songs and music volume on the vests since the controls were experienced a bit difficult to handle. Therefore, the participants used the vests together with the older persons at all times, and sometimes they put the vest and sensors on themselves instead of on the older person, to dance and take walks together to encourage movement. They also described how they put the vest on the older person's walker while taking walks for those who experienced the vest as too heavy. Maria described how she used the vest together with the older person like this:

*"I have the vest on. And then I move my hands and like gymnastics. They listen to music and is sort of a special moment. And when I move, them move with me. They dance on the spot."*

### **Discussion**

Describing how Joyvest could be used, what it means and what is required to be able to use it, the present findings provide important knowledge on how the product could be used to encourage movement through music among people living with dementia. Previous research that has suggested music as an accessible, relatively inexpensive and easy to use intervention with people living with dementia (19, 20, 32), but as visualised in this study, effective use of music with persons living in nursing homes requires knowledgeable staff. Sedentary lifestyles and depression have been shown to be more common among persons living with dementia in nursing homes than persons living in ordinary housing (5, 8). The present findings thus provide important knowledge, suggesting that Joyvest could have positive effects for both people living with dementia and for nursing home staff. Nevertheless, the findings also call for implementation programs to increase nursing home staff's knowledge of how to use Joyvest and why. In optimal conditions, Joyvest could contribute to better functioning among people with dementia and a positive break from daily tasks for nursing home staff. However, considering the facts that Joyvest is not previously known by nursing home staff, and that there might be little time for implementation of new interventions in nursing homes, more research is needed on how to effectively implement Joyvest in nursing homes. Questions that remain are 1) what could facilitate or hinder the use of Joyvest in nursing homes?, 2) how could effects of Joyvest on persons living with dementia be measured and evaluated?, and 3) how do older persons with dementia, and their relatives experience the use of Joyvest? Previous research has showed that the reward system is activated when people listen to music, which could contribute to a sense of well-being and satisfaction (33), as well as sensory and emotional responses (17) but how this could be evaluated is still not known (22). Another issue that needs further exploration is the

structural limitations of nursing home organisations, that may have a negative impact upon staff's possibilities to use Joyvest in an optimal way for them and the people they care for.

### **Conclusion**

The findings indicate that the use of Joyvest needs to be adjusted to each person's preferences and needs, as well as to external factors such as support from nursing home staff. Further research is needed to evaluate effects and meaning of Joyvest to older persons in nursing homes. A suggestion for future research is therefore to study the implementation of Joyvest in nursing homes from the perspective of both nursing home staff and people living with dementia.

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### **Participant information statement**

The aim with this study was to explore the use of music vests (Joyvest) with people living with dementia in nursing homes. Therefore, we turn to you who have experience of using Joyvest in such environments. Your participation in the study concern taking part in a digital conversation together with one or more of your colleagues, and a researcher, to discuss your experiences of using Joyvest according to the question areas specified below. The conversation is expected to take between 30 and 60 minutes and your participation is completely voluntary. You can choose to discontinue your participation at any stage, without having to explain why, and choosing not to participate in the study will not influence your working conditions in any way. The conversation will be digitally recorded and used for analysis in a report on Joyvest. The results will be presented in de-identified form, and it will not be possible to identify you or your colleagues in the report. If you wish, you will get the opportunity to review quotations from you before the report is printed.

#### *Question areas*

1. Experiences of working with frail older people
2. Experiences of using music and movement as an intervention with frail older people
3. Experiences of using Joyvest with different persons
4. Perceptions of Joyvest: facilitators and barriers
5. Final comments, recommendations or thoughts

### **Missivbrev**

Syftet med intervjun är att undersöka användbarhet och nytta av Joyvest på särskilda boenden för äldre personer. Därför vänder oss till dig som har erfarenhet av att använda Joyvest i sådana miljöer. Din insats består i att delta i ett digitalt samtal tillsammans med några av dina kollegor samt en forskare, för att diskutera dina erfarenheter av Joyvest enligt specificerade frågeområden nedan. Samtalet förväntas ta mellan 30 och 60 minuter. Ditt deltagande är frivilligt och du kan när som helst välja att avbryta ditt deltagande. Om du väljer att inte delta eller vill avbryta ditt deltagande behöver du inte uppge varför, och det kommer inte heller att påverka dig i ditt arbete. Samtalet kommer att spelas in digitalt och användas för analys till en rapport om Joyvest. Resultatet kommer att presenteras i oidentifierad form och du kommer inte att kunna bli igenkänd. Om du så önskar får du möjlighet att granska eventuella citat från dig innan rapporten trycks.

#### *Frågeområden*

1. Erfarenheter av att arbeta med sköra äldre personer
2. Erfarenheter av att använda musik och rörelse som insats för sköra äldre personer
3. Erfarenheter av att använda Joyvest med olika personer
4. Uppfattningar av Joyvest; hinder och möjligheter  
Slutgiltiga kommentarer, rekommendationer eller tankar