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**Connecting Alzheimer's Patients and Caregivers Through Music and Support
Programs Designed into the Built Environment**

Carly Board

Sheridan College

DESN47900 Design Research 2

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Abstract

Alzheimer's disease is an incurable neurological disorder that not only affects the individual diagnosed with this disease but their family members and caregivers as well. This research study examines how the relationship between Alzheimer's patients and their caregivers can be improved through various types of therapy and design. More specifically, how music therapy, support programs and familiar spaces can better connect individuals with Alzheimer's disease to their family or caregivers when properly designed into the built environment. To determine if the built environment can better connect individuals with Alzheimer's disease and their families or caregivers, a survey was conducted. The survey was administered to six individuals who provide care to people who suffer from Alzheimer's disease. The survey consisted of a range of questions on the living environment of Alzheimer's patients and how they engage with these specific spaces. The survey also asked questions on music therapy and support programs for Alzheimer's patients. The survey found that specific environments impact the way patients participate in support programs with their caregivers. The survey also found that the environment has a major impact on patients' personal relationships with their caregivers. The results strongly suggest that music therapy, support programs and familiar design elements should be incorporated into the built environment to allow for a better connection to be formed between Alzheimer's patients and caregivers.

Introduction

Alzheimer's disease is an incurable neurological disorder (Bright Focus Foundation, 2019) that affects an individual's ability to function independently in society. This disease causes irreversible damage to a person's memory, cognition, personality and other functions controlled by the brain (Bright Focus Foundation, 2019). Through this disease, many family members and caregivers are devastated as they are forgotten as the disease progresses. Family members and caregivers lose the connection they once shared with their loved one dealing with Alzheimer's. Many programs and strategies have been developed to deal with this disease, such as musical therapy, support programs and design considerations. However, the idea of incorporating these methods into a built environment in order to connect caregivers and the person with Alzheimer's, has not been further looked into. It's important to create environments that support these strategies in order to build relationships between caregivers and Alzheimer's patients. Research that will be discussed within this paper will aid in answering the following question: how can music therapy, support programs and familiar design elements be incorporated into the built environment in order to connect patients suffering from Alzheimer's disease with their family and caregivers?

The purpose of this study is to determine how music therapy, support programs and familiar spaces can better connect people with Alzheimer's to their family or caregivers when properly designed into a built environment. The key element to this research study is understanding how design choices can impact the success of these strategies. Creating spaces that support these methods, use familiar design elements and

involve caregivers, will show how the built environment can create better relationships in the lives of people with Alzheimer's.

My own experience of having a loved one diagnosed with Alzheimer's disease and the impact it's had on family members and myself, has motivated me to conduct this study. Seeing the affects Alzheimer's disease has on family members and caregivers has shown me how a connection can be lost and how a relationship can be damaged from this disease. Through observing my grandmother who had Alzheimer's disease and unfortunately passed away, it has become apparent to me how listening to music, attending support groups and how her environment affected the connection she shared with my family and her caregivers. These three areas allowed her to build stronger relationships and reflect on past memories she had with the ones she loved. Musical therapy, familiar design elements and support programs are shown to be relevant and will be observed throughout this study.

Overview of Literature

Alzheimer's disease is a growing concern as nearly 50 million people worldwide have been diagnosed with this incurable neurological disorder, (Bright Focus Foundation, 2019) devastating family members and caregivers as they are forgotten. Musical therapy, the built environment and support programs have been used to help the individual dealing with this disorder. These three strategies have been researched extensively and can provide important insight into how these methods can better connect people with Alzheimer's disease to their caregivers.

This literature review will examine 12 scholarly journals and news articles that focus on dealing with Alzheimer's disease. The findings are narrowed down to three key

areas: (1) Music therapy improving autobiographical memories of Alzheimer's patients, (2) The importance of familiar design environments for Alzheimer's patients, and (3) Intervention support programs that involve caregivers and Alzheimer's patients. These three themes will support the idea of how music therapy, support programs and familiar design choices should be considered in the built environment to connect patients suffering from Alzheimer's disease with their family and caregivers. The following section will look at the first theme of music therapy and its impact on people with Alzheimer's. This section will show the affect music therapy has on treating Alzheimer's disease and how it can be applied to strengthening the connection between caregivers and Alzheimer's patients.

Music Therapy Improving Autobiographical Memories of Alzheimer's Patients

As Alzheimer's disease (AD) grows throughout society, non-pharmacological treatments such as music therapy are playing a larger role to benefit the memory and emotions of these patients. Researchers have come to understand that music is a part of meaningful events throughout our life and becomes strongly associated with our past memories (Lioxeda,2021). With this understanding, several studies have been completed to further investigate the effect music has on Alzheimer's disease. This has been done to understand the role and development this treatment has on autobiographical memory and past emotions.

The authors of the article: *Music Enhances Autobiographical Memory in Mild Alzheimer's Disease* state "...that autobiographical recall of mild AD participants improved after listening to their own chosen materials" (Haj, Postal & Allain, 2012, pg.37). This therapy focuses on patients choosing their own music materials as this allows for recall and remembrance of autobiographical memories. Self-chosen music helps Alzheimer's

patients to recollect these autobiographical moments within their life. A compelling point that is covered within the Cuddy et al. study, is the focus on the outcomes this therapy can produce for Alzheimer's patients. It states that "practical implication for care and rehabilitation is that music may be beneficially employed to assist the person with AD to recall details of a personal past..." (Cuddy et al., 2017, pg.17). Through implementing this therapy in care and rehabilitation can assist people to recall details of their past. This shows how a patient with Alzheimer's disease can recall personal details of their life. This research can also be linked to connecting patients with AD to their caregivers. If music therapy can help people recall certain moments of their life, there is a better chance they will remember certain loved ones associated with these memories. Similar findings about the benefits of music for Alzheimer patients' autobiographical memories are found in the study done by Basaglia-Pappas et al. This research discusses how autobiographical memories can be improved within Alzheimer's disease (AD) through popular music. Basaglia-Pappas et al. has looked into how music can have a semantic association to Alzheimer patients' early stages of life as it states, "we found that AD patients were able to recall vivid memories, with several canonical dimensions: details of the event, when and where it occurred and the emotions experienced" (Basaglia-Pappas et al., 2013, pg.790). By playing music that is popular to the individual during their lifetime, they were able to recall events and the emotions they experienced by listening to popular music that related to them. By using popular songs, the research suggests that it could induce memories for Alzheimer patients and help recall certain parts of their life.

The common theme found in literature about music therapy and Alzheimer's disease is that music has the ability to improve autobiographical memories by helping

patients recall certain aspects of their life that are associated with music. Very little research has been done on how these recalls can benefit the relationship between the patient and their family and caregivers. Also, it has not been widely implemented into care and rehabilitation for Alzheimer's disease. The next theme that will be analyzed focuses on the designed environment of people living with Alzheimer's. This section is important in order to understand how specific design choices can alter the support and care of people with Alzheimer's.

Importance of Familiar Design Environments for Alzheimer's Patients

For Alzheimer's patients the design of their surrounding environment is an extremely important aspect of their quality of life. This is an important factor within their environment as transitioning to new spaces can cause stress and strain to the individual. As more people are suffering with this disease the design of elderly care homes and residences must adapt to these patients. Researchers and designers are using this gained knowledge as a tool to create spaces that allow patients to live more peacefully, more securely and more socially in an environment they can understand (Progressive AE,2016). In order to create a space that allows for this is must have a sense of familiarity to the patients past life in order for their well-being in this environment to be maintained. There are studies that show how community based and personalized design environments promote better living for the patients residing within these spaces. Within the article, *From Research to Application: Supportive and Therapeutic Environment for People Living with Dementia*, Calkins M.P. reviews knowledge of how the overall built environment of homes in the community, independent and assisted living residences and nursing homes support individuals living with dementia. Creating a sense of community

and familiarity is extremely important for an individual to allow them to feel a part of the overall space. Calkin M.P.'s article provides information about creating house-based rooms for patients in order to create a sense of familiarity and support individuals to recognize the space. It states, "...research that shows that designs that reflect these characteristics are associated with a broad range of positive outcomes such as less distress or agitation, greater social engagement, maintenance of functional abilities, and more individualized care (honouring resident's preferences),...(Calkin M.P.,2018,pg.119). This shows that people suffering with dementia or Alzheimer's disease need spaces designed to support their needs and make them feel more comfortable. Creating a space that is familiar to the patient allows for them to feel less stress and expand on social engagement. This concept of familiarity is also explored by Van Hoof & Kort as they explore the concept of a dwelling designed for older adults with dementia. Within this paper importance is placed upon creating a supportive space for someone suffering this disease as well to benefit their caregivers and family members. To create less cognition for the individual suffering with this disease it is stated that "...all features of the environment, including furniture, would have been familiar to persons with dementia in their early adulthood" (Van Hoof & Kort, 2009, pg.302). This statement shows how it is important that familiar aspects need to be placed within spaces to allow for comprehension of the environment the patient is in. Incorporating familiar items from the individual's early adulthood gives people with this disease a better understanding of the environment they are in. This concept was also looked upon through Brorsson et al. as they viewed how people with Alzheimer's disease dealt with accessibility in a public space such as streets, libraries, museums and grocery shops. Through the research it was

found that “Consequently a barrier to finding one’s way in public space was the constant change in places and landmarks that they used for finding their way”. This happened when the built environment changed due to reconstruction of formerly well-known houses or roads. This often-created difficulties when the informant’s personal landmarks had disappeared” (Brorsson, Ohamn, Lundber & Nygård, 2011, pg.595). This study supports how individuals diagnosed with Alzheimer’s rely on the importance of familiarity within a space, and even small changes can make the space very unfamiliar to the person. The literature discussed in this section shows the importance of a familiar environment. With this information, it can be said that a person living with AD would have better experiences and interactions with people in a space that they are comfortable in. The space must create a sense of familiarity that represents the patients past life and creating a sense of clarity. This shows that the built environment within a space can play a significant role in connecting people with AD and their caregivers.

Through these findings within the literature the common understanding is that Alzheimer’s patients need familiarity of past life such as aspects of their adult home which they have previously lived to be incorporated within the built environments. This promotes better overall living for the individual and this aspect must be considered when designing homes and residences where people with this disease live. This topic is a growing attribute to create positive outcomes for bettering environments and surroundings for individuals with Alzheimer’s disease. The last theme of this literature review looks at support programs for people with Alzheimer’s disease. This section shows great insights into how these types of programs not only benefit the individual dealing with Alzheimer’s, but also caregivers supporting these people.

Intervention Support Programs that Connect Caregivers and Alzheimer's Patients

Alzheimer's disease not only affects the person suffering with this disorder but also has a major impact on the individual or individuals that provide care for this person (Zarit & Leitsch, 2001, pg.85). Many caregivers experience a wide variety of emotional distress when caring for a family member suffering from Alzheimer's disease, such as psychological burden and stress, depression, anger, etc. With this increase in emotional distress, intervention programs such as group therapy with other individuals dealing with someone who has Alzheimer's disease have been developed to support and lower the emotional strains on individuals who are providing care for a person with this disease. Studies have been done to understand the benefits these programs have for caregivers. Research shows that when caregivers are better supported, they are able to have a better connection with their loved ones dealing with Alzheimer's disease.

The authors of the article: *Effectiveness of Interventions for Caregivers of People with Alzheimer's Disease and Related Major Neurocognitive Disorders: A Systematic Review*, discuss intervention programs for caregivers of people with AD and NCD. Their research shows overall benefits to both the caregiver and the person dealing with AD. Intervention programs for caregivers allow people with similar experiences to learn from one another and relieve stress. The following quote supports the benefits associated with caregiver intervention programs; "...in-person caregiver support groups led by professionals improved caregiver well-being and reduced depression, burden and stress:" (Piersol et al., 2017). This study shows that these support groups allow for caregivers to improve their overall well-being and understand people are going through the same thing. Professional leadership increased the caregiver's confidence in

managing the memory loss that their family member was dealing with. Not only do these interventions benefit the caregivers, but they also positively impact Alzheimer's patients. Researchers have further investigated how caregivers involved in interventions improve their care and connection with their loved ones dealing with AD. In the article by Griffin et al. they examine how caregiver interventions improve outcomes for patients with dementia or Alzheimer's disease. It states that, "one good quality trial shows significant improvements in patient outcomes for caregivers who received support and training to reduce environmental stressors at home compared with those who received psychoeducation only over the telephone" (Griffin et al.,2015, pg. 12). Intervention groups that provide support and training to reduce stress within the home environment were shown as most effective. This supports the overall idea that support programs can benefit caregivers and ultimately the patients dealing with AD. The importance of including both patients and caregivers in these support groups are also examined in the study done by Zarit & Leitsch. This study focuses on the idea of developing and evaluating community-based intervention programs for both Alzheimer's patients and their caregivers. Further examination is done to understand the design and process of these programs and their benefits to the patient and caregiver. It is stated that, "...the well-being and function of the person with dementia and caregiver are closely intertwined with one another and the surrounding of the environment and both must be thought of as the impact on one's well-being and functioning will affect the other" (Zarit & Leitsch,2001, pg.85). This shows it's important to consider both the caregiver and patient when developing an intervention program, as both groups can be positively impacted by these programs.

The main understanding in the literature on intervention programs for caregivers who support AD patients, is that these support groups not only help improve the well-being of caregivers, but positively impact patients with AD. The intervention programs help caregivers deal with stress and burden, which ultimately allows them to provide better care to those dealing with AD. Also, the programs that involve both the patient and caregiver, allow for a better connection between the two parties, improving their interactions and experiences together. It is important that intervention support programs take these aspects into consideration when developing and implementing these strategies.

In summary, the literature that was examined in this review discuss several different issues and topics regarding Alzheimer's disease. Three major themes were prominent throughout this literature review. Many of the articles agreed that music therapy is important for patients suffering with Alzheimer's disease, as it allows them to regain and recall autobiographical memories. This connects people with AD to memories of people and places that are familiar to them. Another key aspect of this literature review focused on designing an environmental space for Alzheimer's patients that gives them a sense of familiarity. By adapting this aspect of design will allow for the patient to live more peacefully, more securely and more socially with their caregiver. Researchers also agreed upon the fact that support programs benefit the caregiver and patients, as both parties experience a better connection and quality of life. The caregivers emotional state plays a major role in regard to the care they provide for the patient, showing how these programs are extremely important. These three themes can all be used to understand how important the connection between caregivers and people with AD is. Although the

research done on these three topics is thorough, there is a lack of insight into how these strategies can be combined with strategic design choices. It's important to explore this gap to see if this is a concern within the Alzheimer's community. This will lead to creating better methods for supporting and connecting all people involved with this disease. Through music therapy programs, effective support programs and familiar design choices that are designed into the built environment, people dealing with this disease will be better supported. This is why my thesis statement is, "residents or homes that incorporate music therapy, support programs and specific design elements, can better connect those suffering from Alzheimer's disease to their caregivers, ultimately improving the quality of life for both parties.

Hypothesis

Through the research presented, we can see how important music therapy, support programs and the built environment are for Alzheimer's patients and their family or caregivers. However, it's still undetermined how beneficial these strategies can be when used for the purpose of strengthening and building relationships. By carrying out my own study, I hope to determine what kind of impact designed environments can have when music therapy, support programs and familiar design elements are incorporated. Additionally, it will be interesting to see how these centralized spaces will allow for these programs to further mend relationships that have been damaged by this disease, overall creating better connection and relationships for both groups.

Methodology

Objective

The objective of this research is to gain insight on how the built environment that incorporates musical therapy, support programs and familiar design aspects can connect Alzheimer's patients and family members or caregivers. The research shows that music has positive outcomes on Alzheimer's patient's autobiographical memory, allowing for further connection to family and caregivers. Support programs allow for an improvement of connection between the individual suffering from Alzheimer's and their loved one. It has also been shown how familiar design choices play a huge role in the well-being of the individual suffering with Alzheimer's disease and must be considered to improve their mood and memory. In order to understand how a built environment that utilizes these three strategies connects patients and caregivers, in person interviews and survey questionnaires will be used to gather data. While individuals may consider the benefits for the Alzheimer's patients, they may not consider the connection that is being restored. I will be able to survey family members and caregivers to further understand and see the connection being restored and rebuilt through this specific type of built environment. This type of research will provide valuable insight into how music therapy, support programs and familiar design choices are strengthening the relationship between Alzheimer's patients and caregivers, when incorporated into a built environment.

Process

The main process in which qualitative data will be collected will be surveying family members and caregivers involved in support programs and musical therapy. There will also be a survey focusing on how certain design choices impact the relationship and

interactions of caregivers and Alzheimer's patients. My study will require these participants to respond to a questionnaire. This questionnaire will be provided to each participant to further gain understanding of these support programs, music therapy program as well as the built environment. During this questionnaire, several statements will be asked to gain an understanding of the connection that is being developed. Questions will be asked to see if family members or caregivers feel a sense of a better connection while being involved in a specific built environment. They be asked what support programs they feel have further developed their connection, such as group therapy interventions or patient and family interventions. The questionnaire will ask these participants if their family member or patient is involved within musical therapy programs and what outcomes they have noticed from their involvement throughout this therapy. Has there been improvement to this individual within this therapy? Has this therapy allowed you to participate and build a connection to your loved one or patients? Do certain songs allow for your connection to be restored as their autobiographical memory can allow them to recall certain aspects from their past life? In what ways do you feel your involvement within this therapy can be improved to further gain a connection to your family member or patients? The built environment will also be posed as a question to family members and caregivers as this has a major role on the patient suffering from Alzheimer's. Questions will be asked as to how the individual suffering from this disease is affected by the environment they are in, if certain aspects such as familiarity are needed to be considered to improve their well-being and involvement through these programs. Commonalities between answers and outcome's will be noted and considerations will be taken into account.

If these survey questionnaires provide insignificant data, interviews may be necessary in order to provide further information. Conducting interviews with various therapists involved with music therapy and support programs for Alzheimer's patients will provide answers pertaining to the physical environment and the connection they observe from family member/caregivers and patients. The feedback will allow for further understanding as they are observing both groups daily. In this area of the research, I will conduct interviews with two individuals, both a musical therapy and support program therapist to gain insight from both programs and the outcomes that each provide.

Results

Below, are the results of a study conducted to understand how design choices within an environment can impact the success of strategies such as music therapy, support program and familiar spaces to better connect Alzheimer patients to their care providers. The purpose of this study is to determine how music therapy, support programs and familiar spaces can better connect people with Alzheimer's to their family or caregivers when properly designed into a built environment. The study involved surveying 6 participants who are/were care providers to Alzheimer patients. These care providers include nurses, long-term care providers and family members. The surveys were administrated varying times over a five-day period (Monday to Friday).

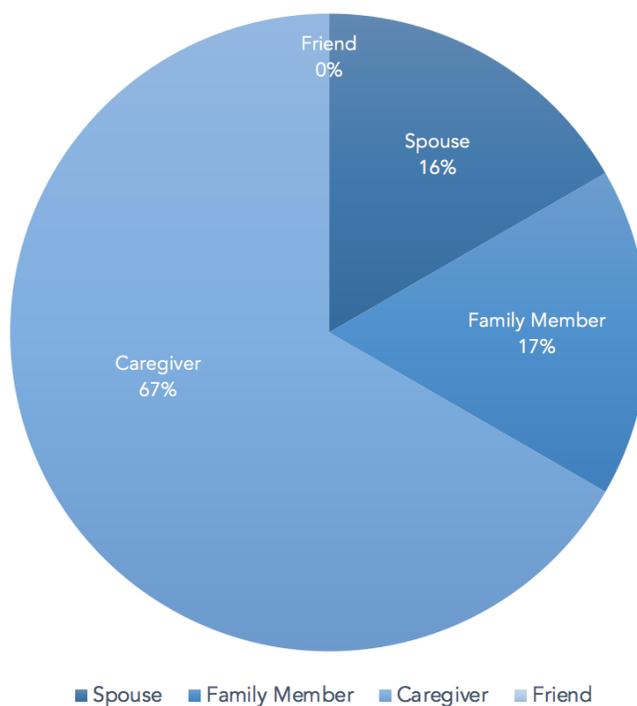
The questionnaire is comprised of 16 questions ranging in length. Each participant filled out the survey to their own time discretion. The first half of the survey questions were constructed to further understand the therapy programs in which the care providers participated in. The second half of the questions were established to understand the built

environment in which these therapies took place and specific elements that were featured within the spaces.

1. What is your relationship to the individual for whom you provide care?

Figure 1

Relationship to the Individual

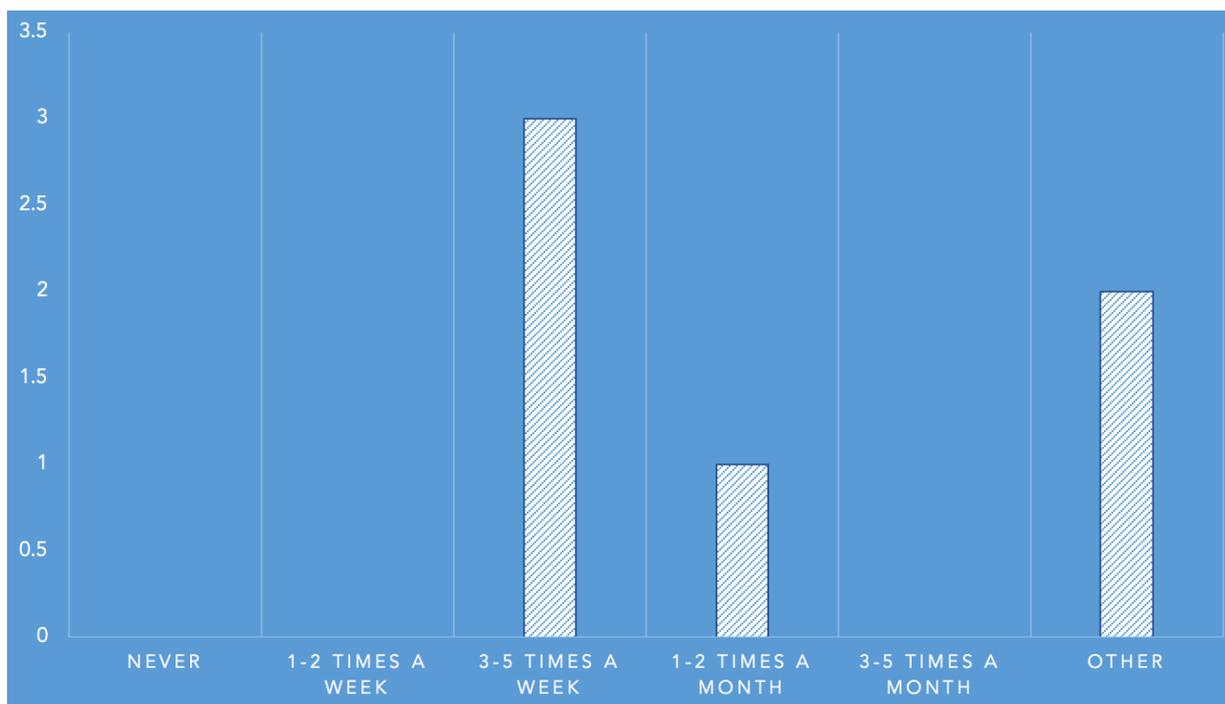


Note: This pie chart represents the relationship the interviewee has to the individual(s) in which they provide care.

2. How often do you utilize music therapy or other support programs when providing care for your patients?

Figure 2

Frequency of Music Therapy or Other Support Programs

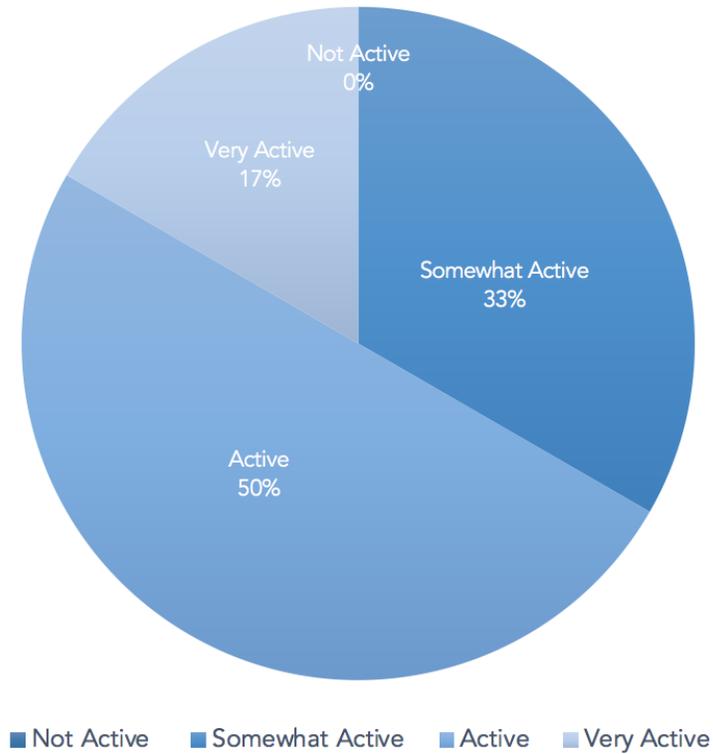


Note: This bar graph demonstrates how often the interview participants utilize music therapy or other support programs when providing care for their patients.

3. How active is your participation in support or therapy programs?

Figure 3

Participation Rate of Caregivers or Family Members

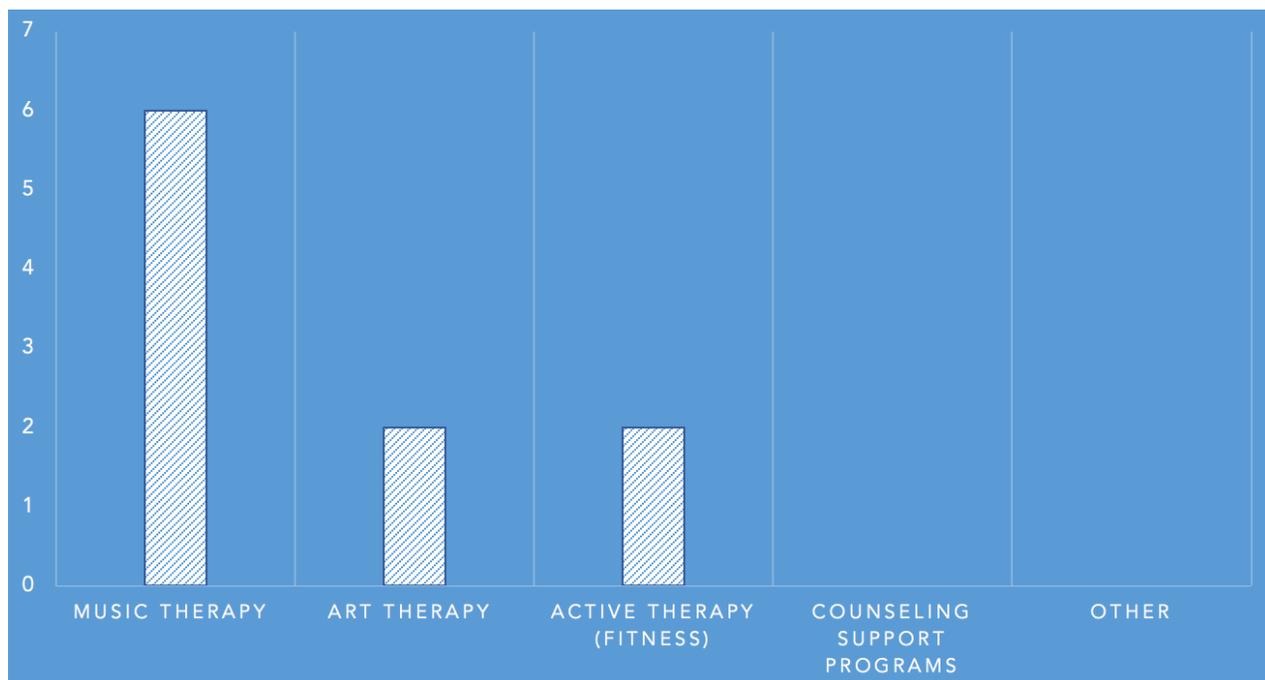


Note: This pie chart shows how often caregivers or family members participate in support or therapy programs with their patients.

4. Which type of support and therapy programs result in the most engagement from your patients? (Please select all that apply)

Figure 4

Support and Therapy Program Relation to Engagement

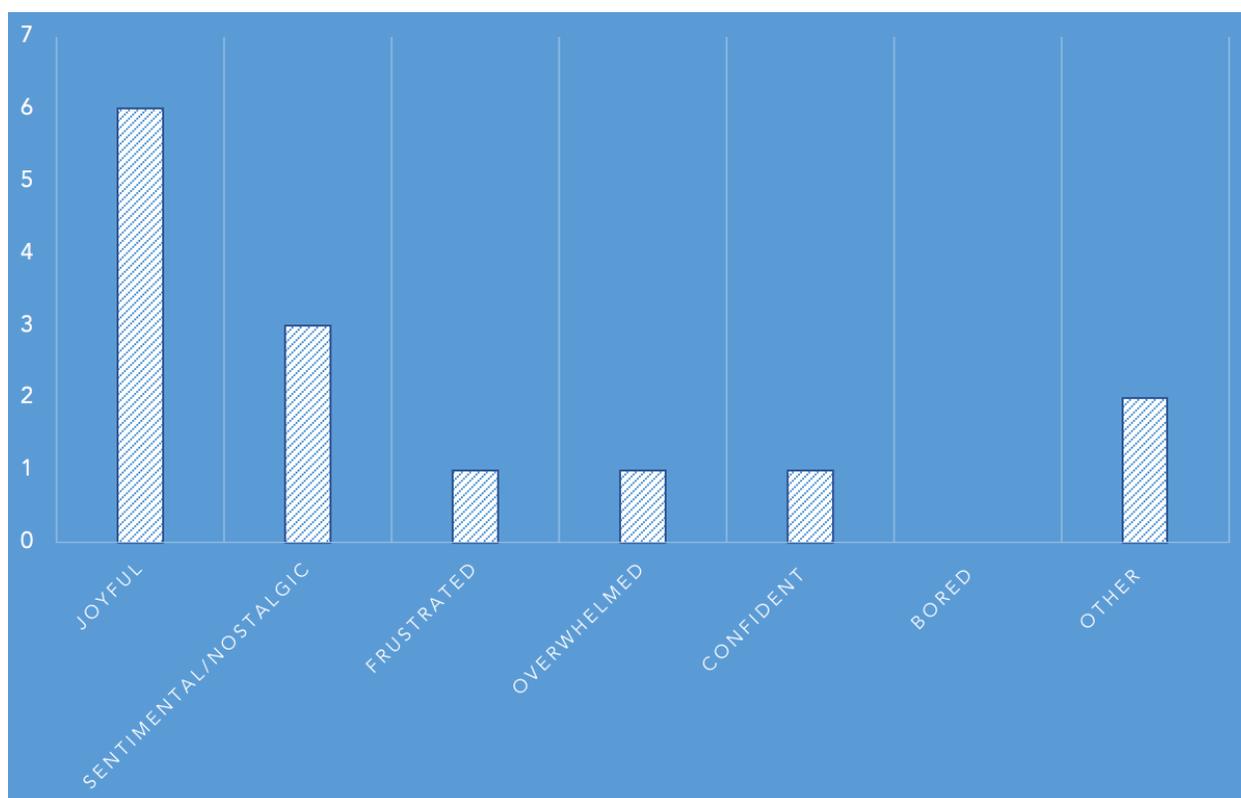


Note: This bar graph represents the type of support and therapy programs in which patients are most engaged.

5. Describe your patients’ emotions after participating in therapy or support programs. Please state which type of support program they experience these emotions.

Figure 5

Patients Emotions After Participating in Therapy or Support Programs



Note: This bar graph highlights the emotions patients experienced after participating in therapy or support programs.

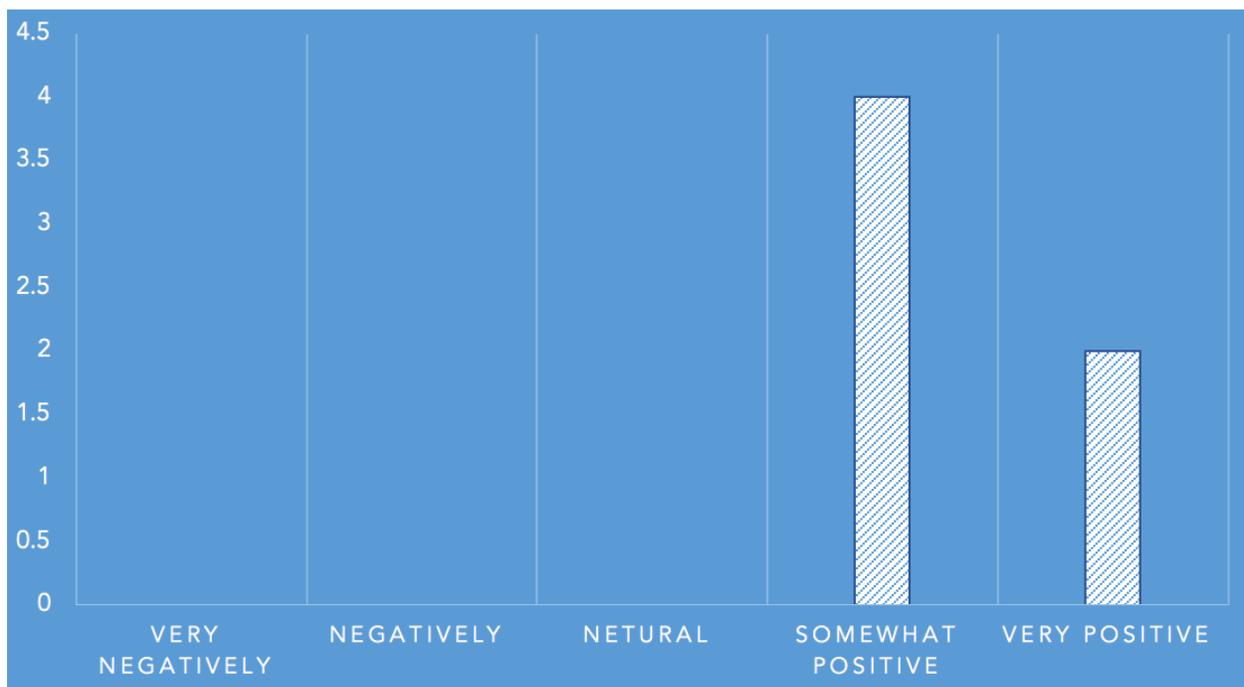
All 6 participants stated the emotions listed in the graph were experienced while participating in music therapy, art therapy and active therapy (fitness). “Participant 3” who

selected other, stated that their patient had a feeling of calmness while participating in music therapy. “Participant 2” who also selected other, explained how their patient felt happy and calm while participating in music therapy. “Participant 2” explained that if the therapy went on for too long it would frustrate and confuse patients and stated that many of the emotions that are experienced are very individualized.

6. How have support or therapy programs affected your relationship with your patients?

Figure 6

Support or Therapy Program Impacts on Relationships



Note: This bar graph establishes how support or therapy programs have affected interviewees relationship with their patient(s).

7. Describe your personal relationship with your patients before beginning support or therapy programs.

In this question participants were to provide information about their personal relationship with their patient before beginning support therapy programs. "Participant 1" stated that their relationship before therapy was close as they were family members but mentioned that the patient was being bored and distress more regularly as their illness progressed. "Participant 2" expressed they had a very close relationship to their patients prior to participating in music therapy, treating them as a member of their own family, showing them compassion, which created a stronger bond upon therapy programs. "Participant 3" expressed they were very agitated, tired and frustrated with their patient as this illness made them very anxious and sitting still was not something they would often do. It was mentioned that the patient would often wander off, causing more stress to "Participant 3". "Participant 4" stated that their patients were quiet, distant and were distressed, upset or unmotivated most of the time. "Participant 5" voiced that before participating in support or therapy programs, there was a level of mistrust and minimal communication. Daily tasks and activities would be completed in silence and the patient would be unhappy. "Participant 6" stated that prior to these programs, despite knowing them well, there was a slight push-back to open communication from their patients. Many were unsure as to what was going on and how to feel.

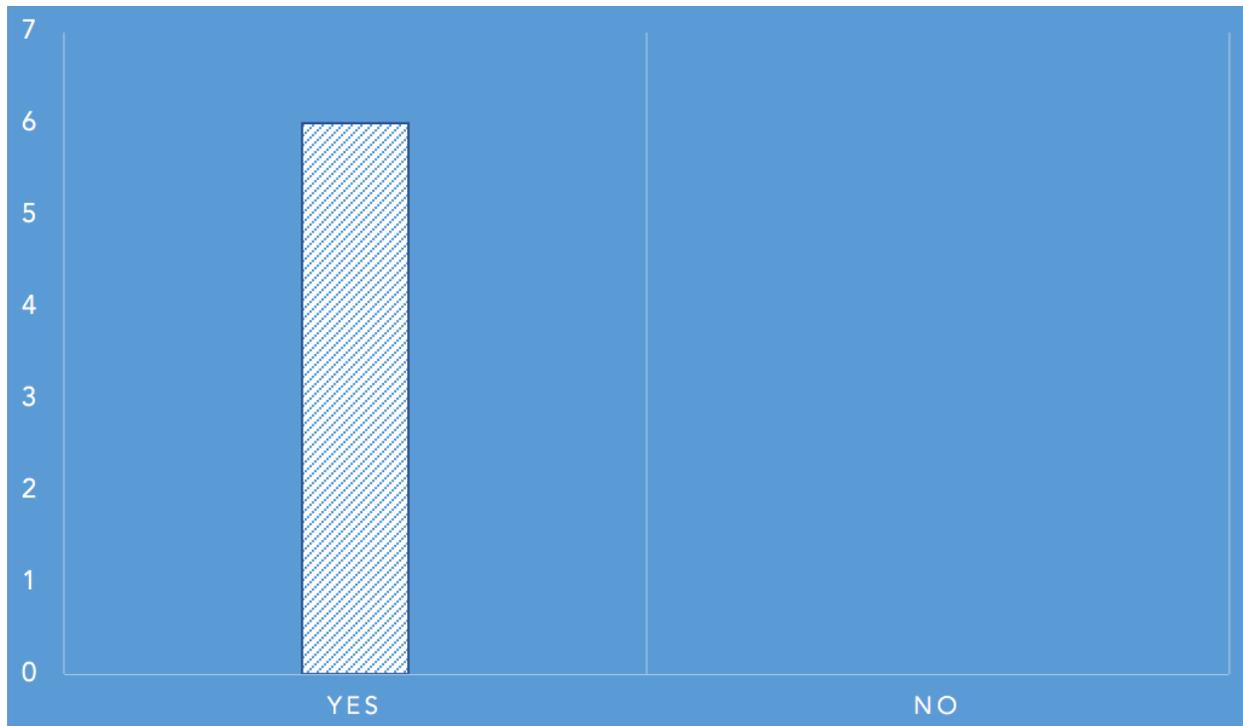
8. Describe your personal relationship with your patients after the support or therapy programs.

“Participant 1” expressed that the relationship was generally good after support or therapy programs until the disease progressed and the patient became more agitated, exhausted and confused. “Participant 2” expressed how they have a very close relationship with all their clients, and the music therapy allowed them to understand their needs and share intimate moments with them, something they truly love experiencing. “Participant 3” mentioned that it allowed them to gain back some time for themselves, making them feel much more happier and calmer which allowed them to connect further. “Participant 4” stated that the patients had a much more positive relationship with the caregivers where they would constantly find more activities to do with them while they provided care. “Participant 5” expressed that over time building a relationship with the patient resulted in the patient to enjoy the care they provided and even looked forward to it. The patient became much more talkative towards the participant and their level of comfort increased during the care they provided. “Participant 6” specified that they saw them light up. It was noted that the individuals that were quiet, did not participate or have an advanced cognitive impairment were seen singing along and become more engaged with the space around them. It was stated that they were often asked to continue with the music even after the program was finished. Patients became much warmer and more talkative towards the participant after completing therapy.

9. Do you have a better understanding of your patients' emotional needs after participating in therapy or support programs? If yes, please explain.

Figure 7

Understanding of Patient's Emotional Needs



Note: This bar graph represents the understanding the interviewees have of their patient's emotional needs after participating in therapy or support programs.

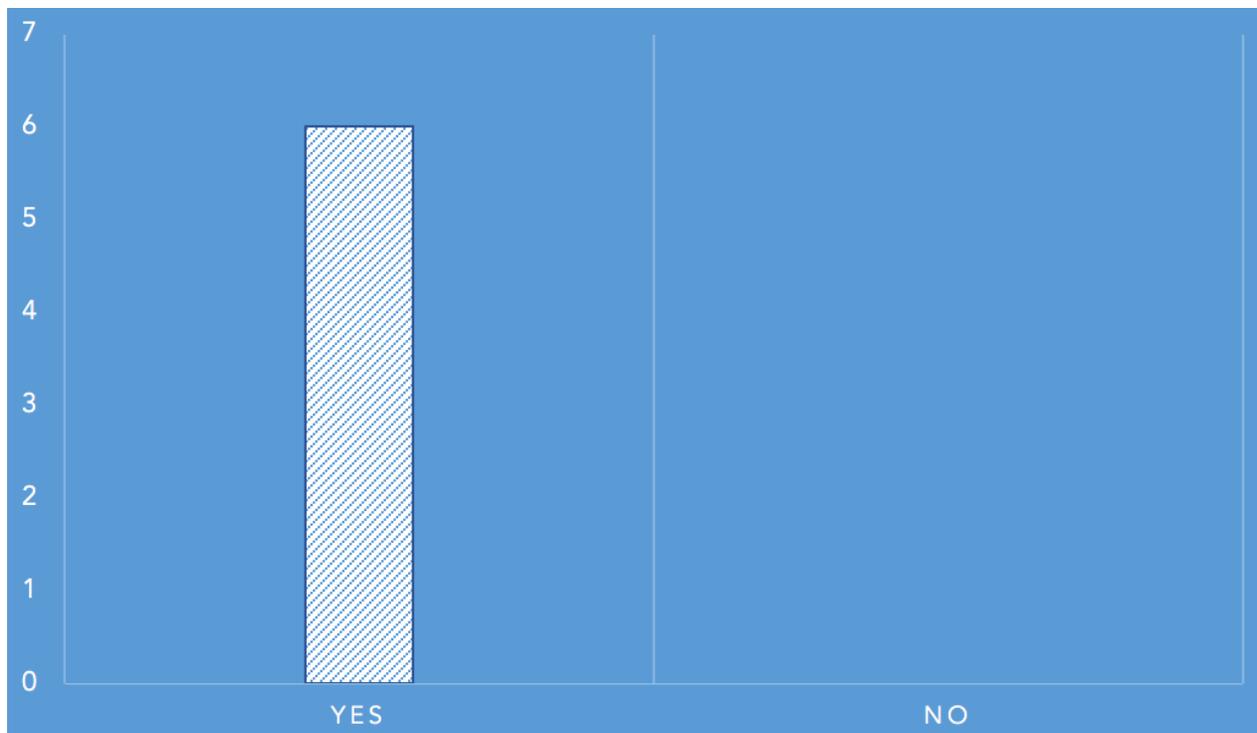
All participants stated yes to question 9. "Participant 1's" explanation described how support programs allowed them to understand that patient needs change daily. "Participant 2" stated that they were able to tell what support was needed based off the emotions the patient was displaying in support programs. "Participant 3" specified that

through staff support they were able to further understand the knowledge of the illness, the patient's emotions that were experience during therapy and the progression of this illness. "Participant 4" stated that through these therapies, trust was built which allowed the patient to communicate their emotions and needs to the participant. "Participant 5" expressed that they found that emotional patients need human interaction, someone to speak to and complete activities with. They stated that interaction is extremely important and even having someone to sit with. "Participant 6" stated that through these therapy and support programs they were able to understand how one-on-one time is very important and many become very emotional about the past.

10. Do you have a better understanding of your patients' physical needs after participating in therapy or support programs? If yes, please explain.

Figure 8

Understanding Patient's Physical Needs



Note: This bar graph represents the understanding the interviewees have of their patient's physical needs after participating in therapy or support programs.

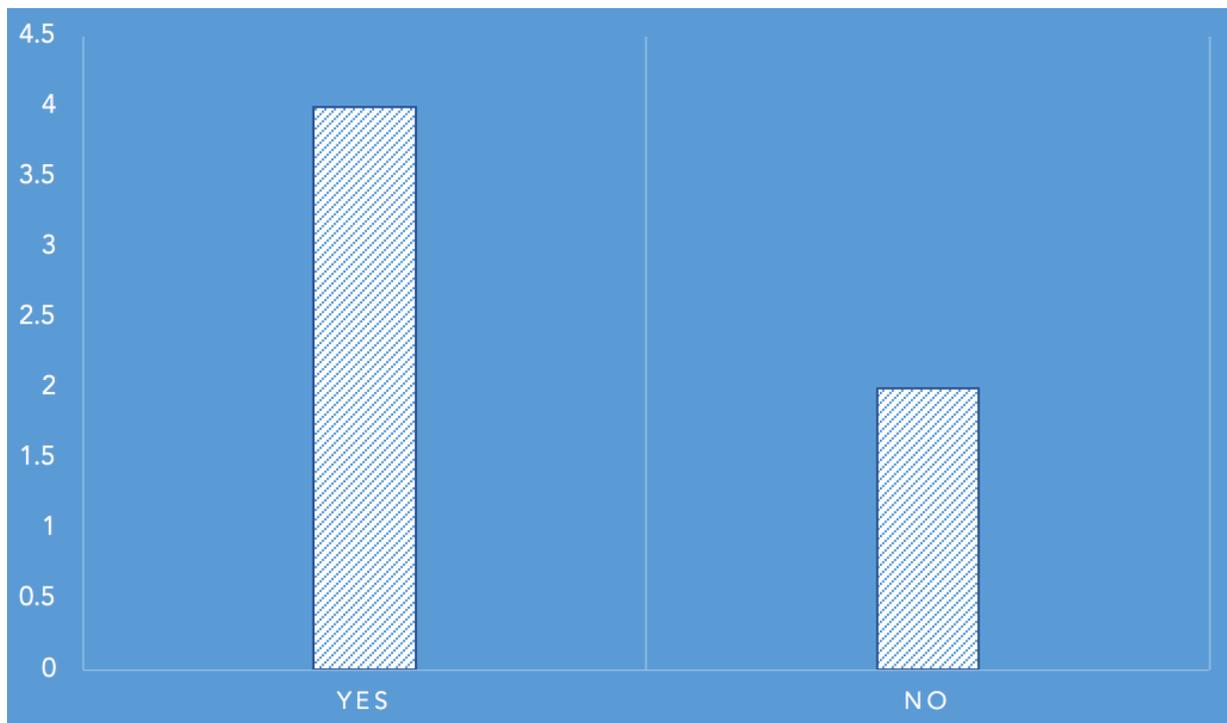
All participants stated yes. "Participant 1" noted that once the program was finished the patient would need a space for quiet time and rest. "Participant 2" explained that while observing the patient they can tell if they've had enough physical activity through the body language that is displayed. They stated that tiredness and agitation are expressed when they are physically tired. "Participant 3" learned that their patient needed to be constantly

stimulated in order to reduce boredom, frustration and agitation. "Participant 4" stated that through these therapies it allowed them to create a bond between the patient and them which allowed them to have a better understanding of the patient physical needs, such as when they were tired or had enough of participating. "Participant 5" expressed that through specific therapies that involved physical activities were important to avoid muscle atrophy. "Participant 6" expressed that through therapies that involved physical activity they were able to tell if patients were able to participate fully and if modifications need to be made for specific patients.

11. In your opinion, does the environment in which you provide care impact the interactions you have with your patients? If yes, please explain.

Figure 9

Environmental Impacts on Patient Interactions



Note: This bar graph represents the impact on the interactions that the interviewee has with their patient(s) regarding the environment in which care is provided.

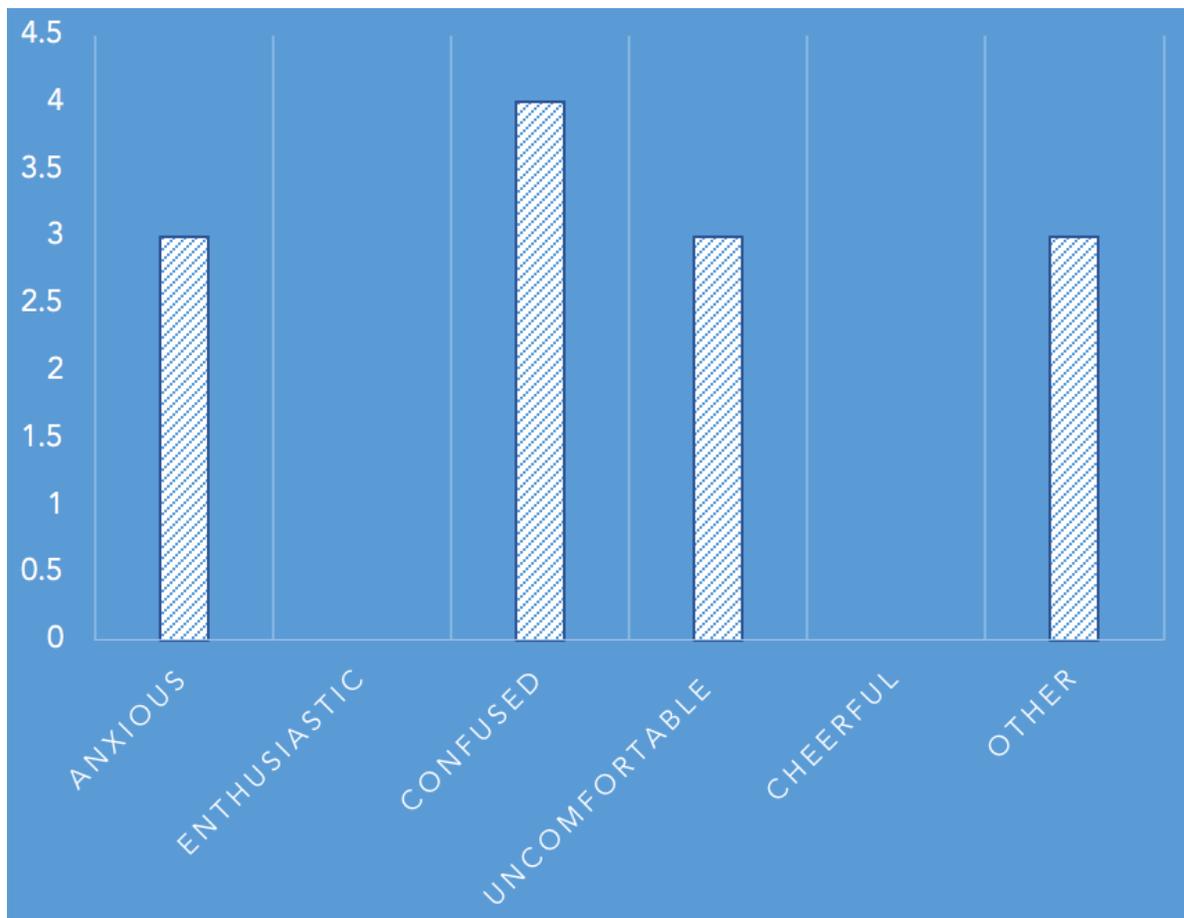
Concerning question 11, 4 participants stated yes, the environment impacts the interactions they have with their patient. “Participant 1” stated that within the environment, other distractions such as noise would cause confusion and agitation upon patients. “Participant 2” stated that within the environment it is best to change what the patient knows and is important to keep everything the same if possible. Slight changes can cause

anger and can create decline in the progress that is made between patient and caregiver. "Participant 5" stated that the environment needs to be active and positive and cannot feel mundane, stagnant, or unfamiliar to the patients. "Participant 6" explained that loud, busy rooms are nearly impossible to hold a program in. They also stated that familiar spaces are key for patients to limit distractions as much as possible.

12. What emotions has your patient exhibited when being introduced into a new environment ? Select all that apply.

Figure 10

Emotions Exhibited by Patient in New Environment



Note: This bar graph demonstrates the emotions patients exhibit when being introduced into a new environment.

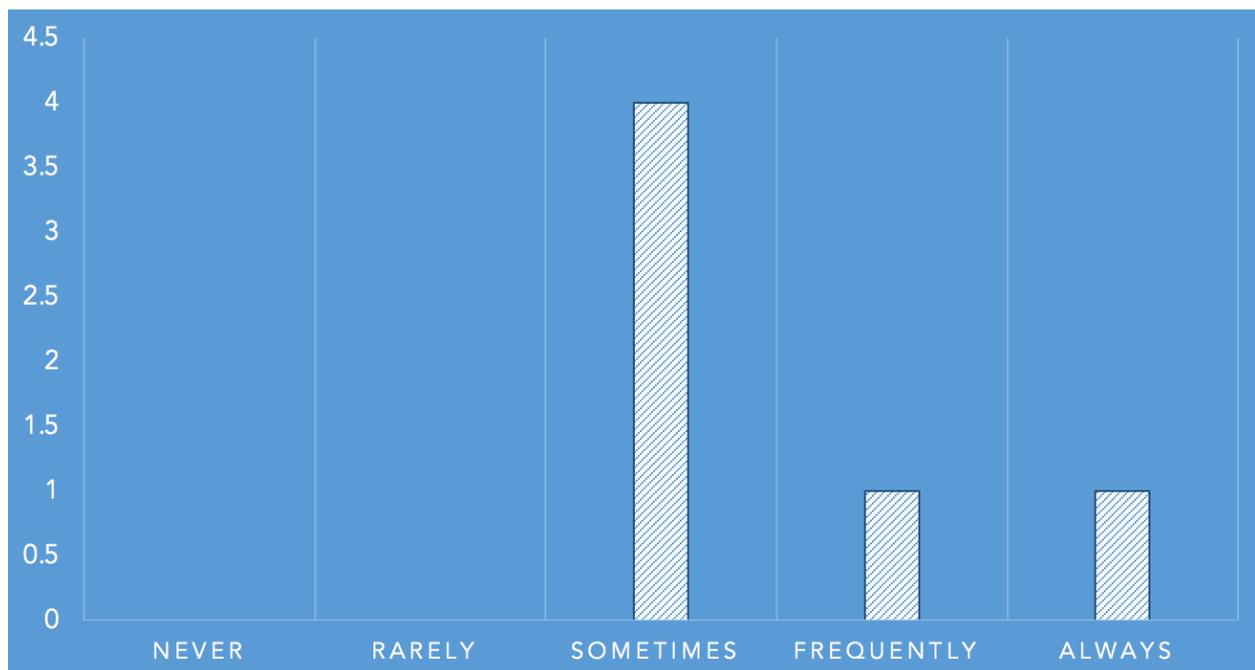
3 of the participants selected other for emotions that the patient exhibited when being introduced into a new environment. “Participant 2” indicated that patients exhibit emotions

of anger and the feeling of being unsafe within a new environment. "Participant 3" stated that their patient felt very frightened when entering a new environment and would often see tears in their eyes from being so confused. "Participant 6" stated that the patient would feel excited within a new environment depending on what was happening within the space and what they were doing within the environment.

13. When patients recall memories of their past, how often do they use physical spaces to describe their memory?

Figure 11

Physical Spaces Used to Recall Memory



Note: This bar graph indicates how often patients use physical spaces when recalling memories of their past.

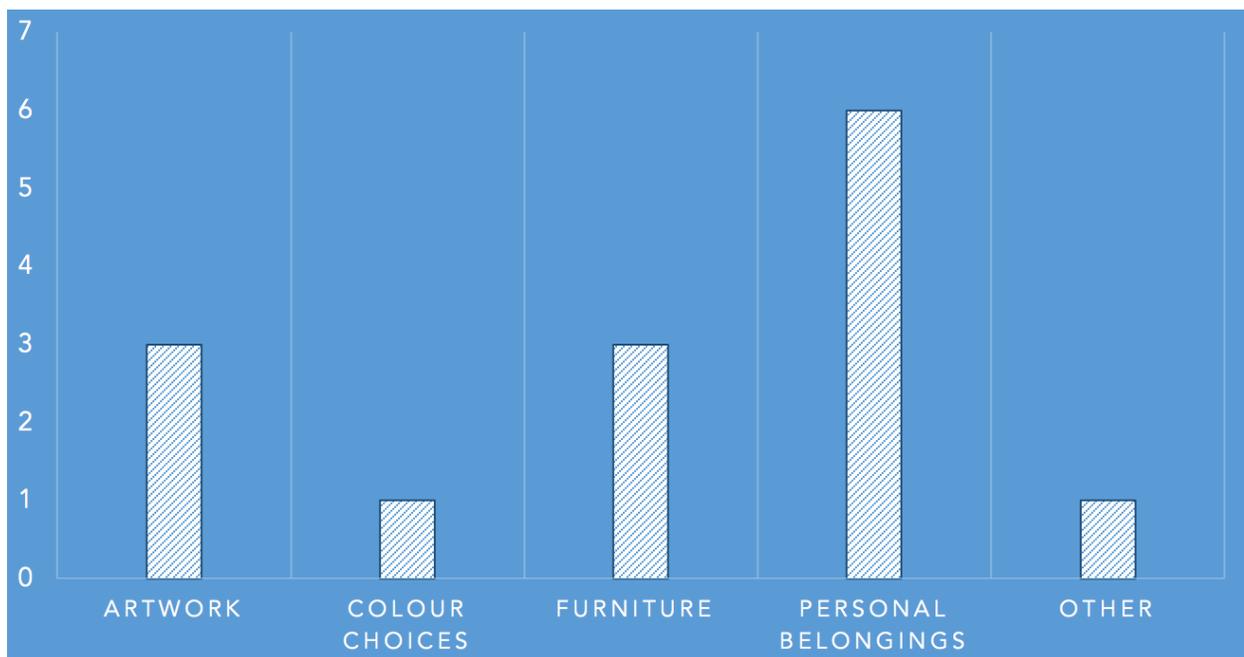
14. Describe the physical space in which you and your patients enjoy spending time together.

Participants were asked to reflect and describe the space their patient and them enjoy spending time together. "Participant 1" stated that a library setting was where their patient and them enjoyed spending quality time together. "Participant 2" expressed that the television room (living area) was where they spent time together, as this was a space both individuals felt calm and enjoyed each other's company. "Participant 2" stated that playing music within this environment helped their patients, as well as putting on the television allowed the patient to focus, providing them down time. "Participant 3" expressed that they enjoyed watching movies and listening to music in the living area. They also mentioned that spending time outdoors has been an enjoyable space. "Participant 4" specified that the physical space where they enjoyed spending time with their patients was outdoors, as 95% of the time was spent inside. The access to the fresh air and sunshine put them in a good mood, which allowed for this participant to create a positive relationship with their patients. "Participant 5" expressed that the art room was the space in which their patients and them enjoyed spending time, where access to natural light and music was available. The participant stated that though patients never stated they were happy, their overall body language and visible smiles showed they were comfortable and happy in this physical space. "Participant 6" specified that that their patient and them enjoyed spending time in the comfort of their personal suite or the activity room where lounge chairs, activities and music was provided. The participant stated this space has a comfortable Montessori familiar setting which is displayed throughout.

15. What physical items within your patients' living environment do you think are most important to their emotional stability and why? Please select all that apply.

Figure 12

Physical Items Important for Emotional Stability



Note: This bar graph exhibits physical items that are located in patient's living environment that are important to their emotional stability.

One participant selected other for physical items within a patient's living environment that are important to their emotional stability. "Participant 2" expressed that having photos of family, blankets, pillows, books, or a photo of a spouse who has passed is very therapeutic to the patient, creating a sense of familiar surroundings. This participant

explained how even a special room can bring a sense of emotional stability to the patient as this provides a familiar setting to them.

16. What has been the greatest contributing factor in developing the personal relationship with your patients? Please explain.

In this final question, participants were asked to provide information on what the greatest factor was in developing a personal relationship with their patients. "Participant 1" stated that being able to further develop and mend their relationship by listening to past music and activities allowed them to have special moments before this disease progressed further. "Participant 2" expressed how gratification was the greatest contributing factor for allowing patients to deal with this disease in their own homes and familiar surroundings. By being in a space that is familiar, the patients are much happier and comfortable, which the participant stated allowed them to develop a more personal relationship. "Participant 3" stated that since the patient was their spouse, they had a personal relationship before this individual got ill. "Participant 4" expressed that it allowed them to build a personal connection with the patients. Spending time with the individual does not feel like work this participant stated, and at the end of the day the moments you spend with them allow for your personal relationship to grow. "Participant 5" specified that through the activities the patient would start to remember the caregiver more and more. This allowed them to build a stronger bond through activities and the patient would often share stories of the past, though the participant stated that sometimes they would be repetitive. "Participant 6" stated that the greatest contributing factor was getting to know

their past. Through personal conversations, they can describe family members and stories allowing for a stronger bond to be built.

The results of this research study show valuable information about how music therapy and other support programs can be designed into a built environment to better connect Alzheimer's patients to their caregivers. The first 10 survey questions revealed important data about music therapy and support programs for Alzheimer's patients. These findings are significant because they provide insight into how both patients and caregivers are impacted by these support programs. It's important to fully understand support programs before you design a space for them so that you understand the needs of the people you are designing the space for. The last 6 questions showed insight into how caregivers view the environment in which they provide care and how their patients engage with these spaces. This information is significant because it reveals which physical factors are most important when designing spaces for Alzheimer's patients. These results can be analyzed to understand how to design spaces that strategically incorporate music therapy and support programs that enhance the connection between Alzheimer's patients and caregivers.

Data Analysis

Findings and Interpretation

The hypothesis for this study was: what kind of positive impact designed environments can have on Alzheimer's patients and their caregiver, when music therapy, support programs and familiar design elements are incorporated into these spaces. The results of the study support the hypothesis, while also providing other

valuable findings that are crucial to the interior design profession and Alzheimer's research. The study found that specific environmental factors allowed patients to better engage with support programs and have better interactions with caregivers. The participants of the survey stated that living areas such as television rooms, were an area their patients enjoyed being and showed signs of calmness and joy in these environments. The findings also suggest that having access to the outdoors or views of nature was important for the connection between Alzheimer's patients and caregivers. This access to the outdoors allowed for patients to experience calmness and emotional stability. Another significant finding was that physical items within the patient's living environment were important for keeping patients calm. Alzheimer's patients needing personal items was a common theme that came out of the study. Items like photos of family, blankets, pillows, books or even photos of spouses who have passed away were very therapeutic to the patient, creating a sense of familiarity to the space. These familiar elements allow for the patient to engage with support programs in stronger ways. Caregivers stated that when patients react well to their environment, they are more open to support and caregiving strategies. When Alzheimer's patients maintain emotional stability, it allows for caregivers to connect further to their patients. The common theme around the patient's living environment, is that familiarity is extremely important for support programs and the overall connection with caregivers. "An environment with other distractions such as noise can cause confusion and agitation upon patients." The study showed that feelings of confusion were common when patients were introduced into a new environment. Again, showing the correlation between familiar elements and emotional stability.

Another major theme that came out of the study came from the final open-ended question: **“Describe the physical space in which you and your patients enjoy spending time together.”** Participants stated that the best environments display elements of comfort and quietness; reading rooms, art rooms, living areas, walking areas and spaces that provided natural light. The 6 participants stated that these environments allowed patients to feel at ease and allowed them to be more social with their care provider. Though some patients would remain quiet, the body language that was displayed showed the enjoyment and calmness that was felt within these specific environments.

These results suggest that the environment a patient is placed in will have a major impact on participation and overall well-being, which can ultimately improve the relationship between both caregivers and patients. Overall, the findings show very useful information that can be applied to designing environments that incorporate music therapy, support programs and familiar design elements. More studies on this topic should be conducted to further develop methods on improving the relationship between caregiver and patients that is so often damaged due to this incurable disease.

Limitations

It is necessary to indicate some of the variables that may have impacted the overall results of this study. The first of which is the limited participants. Only 6 participants were involved in this study. A large group would provide more accurate data that would be applied to the analysis section of this study. The second variable was the personal

relationship that I had with a few participants. By removing this relationship could result in less bias and ultimately more accurate findings towards this study. The third variable was the inconsistency in which the survey was administered. Being unable to be physically with the participant limited my ability to have a more in-depth survey experience with the participants. Overall, the results were effective in determining the importance of the built environment and its impact on the connection between Alzheimer's patients and caregivers.

Recommendations

The results of this study can be applied to improving the interior environment for Alzheimer's patients. Designers can use the insights from this research to see which environmental factors impact Alzheimer's patients the most. Support programs such as musical therapy should also be considered when designing spaces, to ensure they are properly incorporated into the built environment. The overall goal should be to strengthen the relationship between caregivers and Alzheimer's patients through strategically designed spaces.

1. Acoustic Control

Add acoustic control throughout care facilities. Sound can be very triggering to Alzheimer's patients and consideration of this in a design environment is crucial to prevent confusion and agitation, which can often lead to stress and anger. A common theme that came out of the survey, was the importance of emotional

stability. Using acoustic control walls when designing spaces will help limit sound travel throughout the center.

2. Personal Elements

Offer elements of personalization into the facility. It's important that patients feel a sense of familiarity in their space. Allowing for patients to bring personal items such as photos, blankets, etc. Participating in music or support therapies in familiar environments will allow for them to feel more comfortable. Providing artwork and showcasing personal elements such as images that have a personal meaning to patients can allow for a sense of personalization to the facility.

3. Access to Nature & Daylight

Making access to daylight and nature a priority in common spaces and quiet/secluded environments. Place therapy, common areas such as lounge areas, dining, and quiet spaces along exterior walls with windows. Interior glazing can be used in areas without direct access to natural light to allow natural daylight to flow through these targeted areas.

4. Quiet Spaces

Provide areas where patients and caregivers can spend quality time and share intimate moments together. Areas such as reading, or art rooms will allow patients to collect their thoughts and spend time in an area where they feel at ease. This will strengthen their overall emotional stability while taking part in therapies and interacting with their caregiver.

5. Common & Familiar Spaces

Design spaces to feel familiar to patients, lowering the anxiety and confusion experienced when entering a new environment. It's important to create spaces that feel familiar. This can be done by recreating a home-like environment such as placing living room areas in the common area of the center, allowing for patients to feel comfortable and willing to participate in therapy programs.

Conclusion

As a result of this study, it is clear how important the built environment is when connecting Alzheimer's patients and caregivers, and how various support programs such as music therapy must be incorporated into these spaces. Designers must work to create spaces that further connect patients and caregivers, allowing for memories and relationships to be strengthened. Incorporating acoustic control, personal elements, access to nature & daylight, quiet spaces, and common/familiar spaces, are successful strategies that should be considered by designers. Further studies should continue research on this topic to strengthen the relationship between Alzheimer's patients and their caregivers through the built environment.

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<http://dx.doi.org.library.sheridanc.on.ca/10.1017/S1041610212002359>

This study notes the autobiographical memories that can be recalled by Alzheimer's patients when listening to popular songs. This source supports my claim that listening to popular songs can increase the patient's autobiographical memory and allowing them to recall important life events. This will be useful in my study as it can be applied to building a connection to family and caregivers as their family member or patient can recall past memories, overall building a stronger connection.

Bright Focus Foundation. (2019, March 5) *Alzheimer's Disease: Facts & Figures*.

<https://www.brightfocus.org/alzheimers/article/alzheimers-disease-facts-figures>

This source provided by Bright Focus Foundation gives further evidence and statistics of Alzheimer's Disease and the effects it has on the individual and family/caregivers. This source provides a description of what Alzheimer's disease is and its overall affects and will allow me to draw this information into my study.

Brorsson, A., Öhman, A., Lundberg, S., & Nygård, L. (2011). Accessibility in public space as perceived by people with Alzheimer's disease. *Dementia*, 10(4), 587-602. <https://doi-org.library.sheridanc.on.ca/10.1177/1471301211415314>

Within this source, focus is placed on how Alzheimer's patients experience accessibility within public spaces and how this can be used when providing support through community spaces and community living for Alzheimer's patients. This article provides an excellent clarification on how certain aspects can affect a patient and their overall mood and memory while navigating a space.

It also supports my claims in how familiarity within design is important in order to reduce confusion and allow for well-being.

Calkins, M.P. (2018). From Research to Application: Supportive and Therapeutic Environments for People Living with Dementia. *The Gerontologist*, 58(1), 114-128.
<https://doi-org.library.sheridanc.on.ca/10.1093/geront/gnx146>

Within this article, Calkins highlights the importance of how supportive and therapeutic environments for people with dementia can support functional abilities, meaningful relationships and a high quality of life. It is also discussed how aspects of familiarity must be brought and considered through the design process. This source helps explain why the built environment and familiarity are important aspects of consideration. This will support my claims of familiarity within the built environment for Alzheimer's patients and how it can further support the meaningful relationships in that individual's life.

Cuddy, L.L., Sikka, R., Silveira, K., Bai, S., & Vanstone, A. (2017). Music-evoked autobiographical memories (MEAMs) in Alzheimer disease: Evidence for a positivity effect. *Cogent Psychology*, 4(1), 1-18.
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Through this study focus is placed upon how memories can be retrieved through music. It was shown that through the use of music that people retained positive memories from their past. This source helps explain why music therapy is an important aspect for Alzheimer's patient's well-being and why music therapy can support the individual. It also shows insights into developing a better connection between caregivers and Alzheimer's patients.

El Haj, M., Postal, V., & Allain, P. (2012). Music Enhances Autobiographical Memory in Mild Alzheimer's Disease. *Educational Gerontology*, 38(1), 30-41. <http://doi-org.library.sheridanc.on.ca/10.1080/03601277.2012.515897>

This study notes that selected music by the person with Alzheimer's disease experiences regained autobiographical memories related to the patient's past life experiences. This source supports my claims as to how music therapy can be used to connect family members and caregivers to the individual suffering with this disease. This will allow me to use this information to create built environments that supports this type of therapy.

Griffin, J. M., Meis, L. A., Greer, N., MacDonald, R., Jensen, A., Rutks, I., Carlyle, M., & Wilt, T. J. (2015). Effectiveness of Caregiver Interventions on Patient Outcomes in Adults With Dementia or Alzheimer's Disease: A Systematic Review. *Gerontology and Geriatric Medicine*. 1, 1-17. <https://doi.org/10.1177/2333721415595789>

Within this study the researcher conducted trials to better understand that if caregivers-involved in interventions improved patients suffering with dementia or Alzheimer's. This

source helps demonstrate the importance of considering both patients and caregivers when creating support programs. It shows aspects of how support programs are beneficial to both individuals but need to be combined to fit all individuals needs.

Lloreda, C. L. (2021, March 7). *A music therapist seeks to tap into long-lost memories.*

The Washington Post. https://www.washingtonpost.com/health/a-music-therapist-seeks-to-tap-into-long-lost-memories/2021/03/05/c2e3c25e-7b98-11eb-a976-c028a4215c78_story.html

Within this article written by Claudia Lloreda, she discusses the importance of music and its effects on an individual's well-being and how music could influence the emotions of individuals with dementia in a positive aspect. It is found that through this study music can have a lasting emotional response and specific music can evoke happy memories. But the music selected must be considered as there can be negative aspects in what songs are chosen, as they may evoke negative and sad memories for the individual suffering with this disease. This source supports my claim that when Alzheimer's patients listen to music, they can in fact recall memories of past life experiences. It shows how certain songs can affect the well-being of this individual and how this can be useful for family members or caregivers as well as therapist who conducts this type of therapy.

Piersol, C. V., Canton, K., Connor, S. E., Giller, I., Lipman, S., & Sager, S. (2017).

Effectiveness of Interventions for Caregivers of People With Alzheimer's Disease and Related Major Neurocognitive Disorders: A Systematic Review. *AJOT*:

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<http://dx.doi.org.library.sheridanc.on.ca/10.5014/ajot.2017.027581>

The goal of this study was to find evidence if caregivers involved with intervention support programs were more integrated into the lives of their patients. Results showed improvement to the quality of life for caregivers involved within these support programs. This supports my claims that intervention support programs can connect these caregivers to the individual suffering from Alzheimer's disease. It allows for caregivers to feel closer to their loved ones or patients, overall creating a better relationship and well-being for both.

Progressive AE. (2016, April 12). *Designing Interiors that work for Memory Care*

Residents. <https://www.progressiveae.com/interiors-for-memory-care/>

Through this source information is provided on how to design an environment that will benefit dementia patients, as it is important for these individuals to live in an environment they can easily understand and navigate. This source provides a useful description of how design must be considered in any built environment for an Alzheimer's patient and how every detail must be closely thought through. Creating a familiar space will allow for patients to understand the overall environment allowing for better relationships to be built and overall better quality of life.

Van Hoof, J.V., Kort, H. S.M. (2009). Supportive living environments: A first concept of a dwelling designed for older adults with dementia. *Dementia*, 8(2), 293-316.

<https://doi.org/10.1177/1471301209103276>

This article provides further insight into the first concept of a dwelling that is designed for people with dementia and how the built environment can affect their navigation through a space. This source supports my claim that when designing an environment for Alzheimer's patients, a sense of familiarity must be considered. This could include familiar layouts or elements that remind them of past life experiences, to create a sense of understanding.

Zarit, S.H., & Leitsch, S.A. (2001). Developing and evaluating community based intervention programs for alzheimer;s patients and their caregivers. *Aging & Mental Health*, 5(1) 84-95. <https://doi.org/10.1080/713650006>

This article shows how community based social interventions for both individuals suffering from Alzheimer's disease and their caregivers have promising results, as they lower stress on family members dealing with this disease. This source helps explain why intervention support programs are beneficial to both individuals with this disease and family members.

Appendices

Below is an unanswered version of the survey provided to participants.

Survey:

1.What is your relationship to the individuals for whom you provide care?

- a.Spouse
- b.Family Member
- c.Caregiver (Nurse, Long-Term Care Volunteer etc.)
- d.Friend

2.How often do you utilize music therapy or other support programs when providing care for your patients?

- a.Never
- b.1-2 Times a Week
- c.3-5 Times a Week
- d.1-2 Times a Month
- e.3-5 Times a Month

f.Other:

Please specify the amount: _____

3.How active is your participation in support or therapy programs?

- a.Not Active
- b.Somewhat Active
- c.Active
- d.Very Active

4.Which type of support and therapy programs result in the most engagement from yourpatients?

- a.Music Therapy
- b.Art Therapy
- c.Active Therapy (Fitness)
- d.Counseling Support Programs
- e.Other

5.Describe your patients' emotions after participating in therapy or support programs. Pleasestate which type of support program they experience these emotions.

- a.Joyful
- b.Sentimental/ Nostalgic
- c.Frustrated
- d.Overwhelmed
- e.Confident
- f.Bored
- g.Other

Type of therapy and/or support program: _____

6. How have support or therapy programs affected your relationship with your patients?

a. Very Negatively

b. Negatively

c. Neutral

d. Somewhat Positivity

e. Very Positivity

7. Describe your personal relationship with your patients before beginning support or therapy programs.

8. Describe your personal relationship with your patients after the support or therapy programs.

9. Do you have a better understanding of your patients' emotional needs after participating in therapy or support programs? Yes _____ No _____

If Yes, please explain: _____

10. Do you have a better understanding of your patients' physical needs after participating in therapy or support programs? Yes _____ No _____

If Yes, please explain: _____

11. In your opinion, does the environment in which you provide care impact the interactions you have with your patients? Yes _____ No _____

If Yes, please explain: _____

12. What emotions has your patient exhibited when being introduced into a new environment?

- a. Anxious
- b. Enthusiastic
- c. Confused
- d. Uncomfortable
- e. Cheerful
- f. Other

Please Specify: _____

13. When patients recall memories of their past, how often do they use physical spaces to describe their memory?

- a. Never
- b. Rarely
- c. Sometimes
- d. Frequently
- e. Always

14. Describe the physical space in which you and your patients enjoying spending time together.

15. What physical items within your patients' living environment do you think are most important to their emotional stability and why? Please select all that apply.

- a. Artwork
- b. Color Choices
- c. Furniture
- d. Personal Belongings
- e. Other

Please Specify: _____

16. What has been the greatest contributing factor in developing the personal relationship with your patients? Please explain.