Investigation of the Preferred Learning Styles of Persons Living with Dementia

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Abstract

The purpose of this investigation was to determine the preferred learning styles of persons living with dementia using the learning styles inventory for persons with dementia. Furthermore, this investigation evaluated unit productivity and job satisfaction of nursing assistants when activities of daily living were designed using the residents' preferred learning styles. Revealed through literature review was the concern that nursing assistants in long-term care experience resident resistance to care and resident agitation which is often related to the resident's cognitive decline and confusion which reduces unit productivity and makes task completion difficult. Also, through a literature review, the most significant job satisfaction for the nursing assistant was about the relationship that was experienced and shared with the residents in their care. Although a great deal of research exists on preferred learning styles of children and adults, there appear to be limited studies conducted on persons living with dementia. Also, there is limited information surrounding the subject of whether if knowing the preferred learning styles of patients living with dementia helps foster cooperation during activities of daily living and increases unit productivity while maintaining or improving nursing assistant relationships with their residents.

Introduction

Nursing home facilities are institutional settings designated and designed for long-term care or short-term skilled rehabilitation. The adult population of a nursing facility may consist of any age, morbidity, or socioeconomic class. Dementia is a common condition found in these institutions and may exist in various forms such as Alzheimer's disease, Parkinson's disease, or vascular dementia. Activities of Daily Living (ADLs) in the nursing home setting involve eating, bathing, dressing, personal care, medication administration, and toileting. Dementia-related cognitive impairment can make it difficult for caregivers to provide or assist with these functions because caregivers often experience resistance, and combative behaviors from the residents that they are helping.

The investigation of the preferred learning styles of persons living with dementia is the subject to be examined. The study explored whether caregiver productivity and job quality are improved when ADLs are offered based on the preferred learning style of persons with dementia, and the willingness of the resident to cooperate. Caregivers often feel uncertain and hesitate to provide care that takes into consideration the individual differences of the people that they serve. Few attempts at helping a confused resident relearn ADLs and social skills occur because of a reluctance to believe that positive long-term benefits will happen in the cognitively declined population. The reluctance based on myths, fears, outdated information, and cultural or religious beliefs and

expectations foster a biased attitude about dementia and cognitive decline and the ability for confused residents to learn and optimally engage in the caregiving process. The literature review based on the underlying assumption that the above-observed social science issue occurs because of a knowledge gap concerning caregivers' ability to assess the remaining preferred learning styles of persons with dementia supports the importance of the current study.

Nursing homes and short-term rehabilitation centers are tasked to do more with fewer resources than is needed to meet regulation and to create an environment of relationship-centered care and enhanced quality of life. Cognitive decline associated with dementia can make caregiving difficult and time-consuming. Depending on the level of decline, caregivers of persons living with dementia are often met with resistance or apathy when trying to help residents with the simple tasks of ADLs. According to Pinel, intermediate stages of dementia reveal confusion, irritability, anxiety, and deterioration of speech and later the patient may deteriorate to become a total care patient having difficulty with swallowing and bladder control [1].

Certified nursing aides who work in nursing homes are required to complete a state-approved education program with supervised job-site learning and successful completion of a state-approved competency exam [2].The training to become a certified nursing assistant usually

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consists of six weeks and requires a high school diploma or equivalent. Essential qualities certified nursing assistants should have as stated by the Bureau of Labor Statistics include communication skills, compassion, patience, and physical stamina [2]. Job responsibilities for nursing assistants vary because of the many settings that utilize nursing assistants to help professional nursing staff. The Centers for Medicare and Medicaid Services (CMSa) govern the regulations for the nursing care in nursing facilities and provide suggestions for standardized care concerning various topics of quality of care [3].

Literature Review

Dementia is an umbrella term for different types of memory loss and cognitive impairment. According to the Alzheimer's Association [4], common forms of dementia include Alzheimer's disease, vascular dementia, Dementia with Lewy Bodies (DLB), mixed dementia, Parkinson's dementia, frontotemporal dementia, Creutzfeldt-Jakob disease, normal pressure hydrocephalus, Huntington's disease, and Wernicke-Korsakoff Syndrome. Cognitive losses have been recorded since 2000 BC by Egyptian doctors; however, the term dementia which is Latin for "out of one's mind" was not used until 1797 [5]. In the 1800s dementia was used loosely as a term for the intellectual deficit that occurred in some aging populations and the 1900s resulted in the term dementia used more appropriately for people with cognitive losses [5]. Until better diagnostic tools were available, syphilis was also listed as a common cause of dementia because it affected the brain [5].

Alzheimer's disease, a well-known dementia named after Dr. Alois Alzheimer, who in 1906 discovered a specific type of dementia that created plaques and tangles in the brain that interfered with brain cell connectivity and the health and longevity of neurons in the brain [5]. Alzheimer's disease is the most common form of dementia; however, it is not a normal part of the aging process [4]. Alzheimer's disease causes serious cognitive losses that interfere with tasks and daily life may have an early-onset and is a disease that gradually worsens over time [6].

Alzheimer's disease currently has no known cure; however, certain interventions appear to slow the course of the disease and improved quality of life for those suffering from the disease [4]. Medication has been proven to temporarily help with the symptoms of memory loss, confusion, and unwanted behaviors [4]. Behavioral modification programs and alternative therapies such as art, music, aromatherapy, or pet therapy are often short-term interventions for confusion, sleep disturbances, aggression and anxiety [7]. Also listed and used are herbal remedies, diet changes, and supplements as possible alternative ways to reduce the severity of the symptoms of Alzheimer's as it advances [8].

Ryd, Nygård, Malinowsky, Öhman, and Kottorp stated that during mild cognitive impairment or early stages of Alzheimer's disease ADLs are performed slower, with less efficiency and with errors in judgment, therefore safety is a major concern as the person with Alzheimer's disease declines [9]. For example, during art and music therapy, therapists must design the programming based on the level of cognition and safety needed. In later stages of Alzheimer's disease, patients may attempt to eat objects that could create choking hazards or become toxic if swallowed. Introducing ADLs based on the preferred learning styles will also need to take into consideration safety and the cognitive level of the patient living with Alzheimer's disease, which will also be true for all other dementia types. For example, for bathing, if a patient has a preferred learning style combination of kinesthetic, logical, and music, the program for an early-onset patient with Alzheimer's disease might include soft music and a washcloth with scented soaps, also helpful for the learning style combination above would be taking the patient's hand and using repetitive geometric movements with the washcloth during the bath. However, in later stages of Alzheimer's disease the patient may have limited motor ability and range of motion and may need to sit while listening to music, and the nursing assistant may guide the process with verbal cues without the patient's interaction.

Because it is difficult to diagnose dementias while a patient is living, many dementia processes go undiagnosed or are assumed to be a part of the natural aging process. Savva and Arthur commented that assigning a diagnosis of dementia has both positive and negative consequences such as the fear and stigma of the diagnosis and the lack of support and care when the patient goes undiagnosed [10]. In the case of comorbidity, the symptoms of dementia may be assumed to be a part of the primary diagnosis, which also leads to a delay in treatment when dementia is the comorbidity [11]. Dementia diagnosis often depends on the severity of the symptoms, which means mild dementias are not recognized [10]. Mild to moderate cognitive deficits associated with some dementia types can benefit from the approaches and therapies that have developed recently, which have been proven through research to improve mood, cognitive ability, sense of well-being, and quality of life [11].

Understanding the type of dementia as much as it is possible while the patient is alive may be helpful for determining the patient's ability and tolerance for learning and relearning simple processes such as ADLs. Also, the literature review suggests that some dementia types cause a rapid decline in patients and others show improvement in function of individuals living with dementia depending on type and treatment response. Frequent assessment of cognitive and physical functions would be essential to develop a plan to help persons living with dementia maintain or improve their cognitive and physical functioning.

Nursing assistants and persons living with dementia
Nursing Assistants (NAs) are non-licensed nursing staff, who provides direct care and ADLs for those patients needing assistance [2]. Some NAs work long-term in the job classification and some Certified Nursing Assistants (CNAs) are in transition while they acquired the knowledge and certification to become licensed practical nurses or registered nurses and beyond. NAs may work in hospitals, medical facilities, mental health settings, correctional institutions, skilled nursing care, long-term care facilities, home health care, and adult day care [2]. Also, NAs may be of any age, gender, race or cultural ethnicity.

NAs are required to complete nursing assistant training and then take a standardized competency exam before they are allowed to work as a CNAs in the settings described above [2]. CNAs and NAs have many responsibilities within their job description, and these responsibilities may include collecting patient vital signs, medication administration, specimens, bathing, toileting, dressing, assistance with personal grooming, assisting with setting up and meals, changing linens, assisting with mobility and ambulation as needed [2]. CNAs and NAs are the staff that residents see and interact with the most and often become the resident's emotional support.

Boscart, d'Avernas, Brown, and Raasok stated that new graduates of nursing assistant programs are not attracted to nursing homes [12]. Much of the reluctance of working in nursing homes comes from a lack of confidence of working with such a diverse population and the broad range of diseases that must be addressed in the nursing environment that may or may not have been briefly addressed during training [12]. Van der Cingel, Brandsma, van Dam, van Dorst, Verkaart, and van der Velde discussed that person-centered care includes knowledge of specific characteristics of the person in their care and then using the information to deliver more personalized care [13]. For example, some Alzheimer's types actually improve when the cause and treatment are known [14]. According to van der Cingel et al. understanding the wishes and preferences of patients helps to establish a caring relationship between the patient and the caregiver [13]. Understanding the wishes and preferences of the patient reveals how the patient interacts and understands their environment [15]. Person-centered care improves productivity and also inspires compassion and value-driven

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actions concerning trust, equality, and ethical balance and involvement with the patient [13].

Norman and Strømseng Sjetne commented that patient relationship is an important part of the commitment of the nursing assistant and job satisfaction [16]. Kusmaul found that NAs are the first to notice mental status changes and physical changes in their residents but may not have the education to assess the situation accurately [17]. Being placed in such complex situations with residents and with so much responsibility, NAs may rely on intuition because of knowledge gaps and make decisions based on inaccurate information and may also underreport certain conditions that may be treatable [17]. According to Kusmaul, NAs are missing important information concerning cognitive and mental health assessment and reporting of resident needs [17].

Fasanya and Dada stated that healthcare workers are at risk of experiencing violence in the workplace and the problem include threatening behavior, verbal assaults, and physical assaults from those in their care [18]. Retention for NAs is typically low because of injuries, stress, poor work environments, and burnout and fatigue [19]. Khatutsky, Wiener, Anderson, and Porell stated that there are 8.3 injuries for every 100 NAs that result in absences, work restrictions, and job transfer [20]. Khututsky et al. found through their study that job preparation and training are serious issues and often CNAs and NAs feel unprepared for their job requirements [20]. The type of injuries that CNAs and NAs experience are varied and range from human bites, resident aggression, and lifting and general handling injuries that occur during ADLs [20].

Preferred learning styles

According to Dr. Howard Gardner learning styles and multiple intelligences are different concepts and should not be confused (personal communication, August 10, 2017). Multiple Intelligence (MI) is an assessment of definable strengths in the way that one learns and understands the world. Dr. Howard Gardner believes that human intellectual capacities range in different categories and reveals specific performance levels depending on the intelligence in that category (personal communication, August 10, 2017). Intelligence in one intellectual capacity does not necessarily predict strength in another domain of intelligence, and that personal cognitive profiles are different among populations and even among twins [20].The difference between MI and preferred learning styles is that a person with a preferred learning style may enjoy something, but be unable to develop a high intellectual capacity in that area (personal communication, August 10, 2017). For example, a person may love music, but be unable to understand the science and composition of music or be able to perform effectively with any high cognitive capacity (personal communication, August 10, 2017).

The categories of MI are intrapersonal, interpersonal, logical-mathematical, naturalistic, spatial, bodily-kinesthetic, linguistic, and musical [21]. Dr. Howard Gardner states that there are no official MI tests for self-assessment because it is difficult to assess personal strengths and weaknesses without bias and personal insight. Testing using multiple triangulation is essential to differentiate between what a person likes to do, appeals to the person, and true MI capacities [21]. Intellectual capacities are both formed by nature and nurture and education and learning, and according to Dr. Howard Gardner educators should incorporate MI to assist the learning process using multiple ways and methods to deliver a curriculum [21].

Recognized throughout academia is the theory that students are different in how they would like learning material presented. According to learningstyles.com [22], students may have a mix of learning styles that they prefer and that preferred learning styles may also depend on the situation. Preferred learning styles can be further developed and may frame how an event becomes internalized, recalled and expressed [22]. Successful use of learning styles may be the result of different learning utilizing different parts of the brain [22].

Rogowsky, Calhoun, and Tallal stated that there are several approaches to preferred learning styles and assessment using inventory metrics and some inventories focus on perception and ordering while others focus on experiential learning and accommodating [23]. Urick suggested that preferences for learning vary among different age groups and learning may vary depending on how information becomes processed [24]. Urick commented that some of the differences in preferences for learning might evolve from societal events and certain groups may have a "collective conscious" where members have similar preferences in learning styles because they have had similar life course influences [24]. According to Urick, age-based training that suits the preferences of the learning may yield better participation [24].

Weggelaar-Jansen, van Wijngaarden, and Slaghuis, also commented that the preferred learning styles change over time [25]. Weggelar-Jansen et al. suggested that for optimal learning there are four things to consider (1) relearning and growth concerning abilities, (2) active integration of new ideas and associations, (3) adapting to the situation, and (4) preferred learning styles [25]. For example, examining health care workers, preferred learning styles are better revealed through real-life experiences and social experiences [25]. Interestingly, the authors commented that if the learners know their learning styles, they might be more engaged in designing the learning process.

Bourgeois et al., shared that although Alzheimer's disease and other dementia types are forms of progressive cognitive decline, learning or relearning ADLs may improve quality of life and an enhanced sense of well-being [26]. Bourgeois et al. stated that modeling the action desired of a patient with dementia reduced errors during learning and relearning [26]. Explicit memory declines in a patient experiencing dementia and patients with the diagnosis rely on implicit learning for those functions that are more automatic and without intention [26]. However, with cues and modeling, explicit memory produces fewer errors. The errorless learning model that Bourgeois et al. discussed seeks to emphasize modeling with spaced retrieval, which increases the number of correct responses; however, the memory of certain tasks may decay after a month without prompts, cues, and modeling [26].

Hitch, Wright, and Pepin commented that several studies had found evidence that one of the major influential factors of good health is socialization and engaging in an occupation [27]. For older individuals, the occupation could mean volunteering, hobbies, and engaging in meaningful activity [27]. Occupational therapy focuses on key aspects of ADLs and reducing depression in the elderly by encouraging meaningful activity to bring about a heightened sense of health and wellbeing [27]. According to Hitch et al. leisure activity includes the pursuit of interests and self-care; however, older individuals with depression are less likely to pursue leisure activities and interest [27]. Therefore, when patients with memory loss are encouraged to participate in ADLs and leisure interests with cues and prompt in a person-centered manner, better health and well-being are recorded [27].

Complementary Alternative Medicine (CAMs) or Complementary Integrative Medicine (CIM) are approaches to disease prevention and management that focus on non-mainstream health practices that are used alone or integrated into traditional western medicine. According to the National Center for Complementary and Integrative Health (NCCIH) [28], complementary integrative medicine brings together aspects of CAMs and CIM in a systematic way to produce optimal health. Some examples of CAMS and CIM that are relevant to dementia care would be relaxation techniques, movement therapies, music and art therapy, dance therapy, and prayer and meditation. Many organizations are promoting clinical trials to create an evidence-based approach to CAMs and CIM, but informal reports and studies have confirmed that an integrative approach to healthcare can improve mood, reduce pain, and create a better cognitive function, and a greater sense of well-being [28].

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Activity professionals have used intellectual, occupational, physical, emotional nutritional, environmental, spiritual, and social therapies with various forms of art, music, meditation, relaxation, movement therapy, pet, and dance therapies since the inception of the Omnibus Reconciliation Act of (OBRA-87) [29]. When patients interact with their preferred activity and methods for socialization and interacting with others, they display less boredom and participate at higher cognitive and physical levels versus being placed in a generic program without respect to being person-centered [30].

Krupa et al. also suggested that activities can be designed to increase self-care, self-esteem, and self-actualization, and reduce unwanted behaviors such as resident-to-resident abuse and staff-to-resident abuse and wandering behavior and exit seeking [30]. Activity programs are mandated by CMS to maintain and empower resident abilities under the supervision of a qualified activity professional [31]. However, activity programs usually do not include ADLs and the scheduling of programs become conducted during specific time frames of the week and weekends. Knowing the preferred learning styles of patients with dementia can provide NAs with the same success during ADLs because residents usually are drawn to those activities that are still enjoyable and are interesting thus mirroring their preferred learning styles.

The preferred learning styles are similar to the multiple intelligences defined by Dr. Howard Gardner in a category only (personal communication, August 10, 2017). According to Dr. Howard Gardner, in preferred learning styles the level of intelligence or mastery are not measured; however, observations of resident experiences and responses throughout the day through selection and choice reveal outward signs of contentment and engagement (personal communication, August 10, 2017). The preferred learning styles discussed in the current study are interpersonal, intrapersonal, linguistic, logical-mathematical, musical, kinesthetic, visual or spatial, naturalistic, spiritual or existential, and concrete.

Miao, Yixue, Liqin, and Yi-Lung commented that interpersonal skills such as communication and being able to socialize with peers led to greater cooperation and collaboration [32]. Hill, Tomkinson, Hiley, and Dobson suggested that of the preferred learning styles such as intrapersonal (solitary) and interpersonal (social) the interpersonal or social preferred learning style was preferred by business students who normally work collaboratively [33]. However, the engineering students who tested preferred the logical and intrapersonal or solitary form of learning [33]. According to the Memletic Styles Questionnaire, a preference for the interpersonal learning styles indicates that a person may like to learn in groups [34]. According to the Official Authoritative site for MI, the interpersonal learning style is a social learning style that reveals an ability to interact with others and intuitively respond to other's mood, motivation, and temperament [21].

The intrapersonal or solitary learning style means that the person prefers working or pursuing solitary leisure interests and introspection and reflection. MI Oasis states that persons who referred the intrapersonal learning style were self-intelligent or better at identifying their feelings, goals and personal strengths and weaknesses [21]. Persons who prefer the intrapersonal learning style prefer one-to-one interaction. For example, solitary learning style students were more likely to prefer individual projects than when working in social learning groups [33]. According to Jensen, Rekve, Ulstein, and Skovdahl some patients with a history of preferring to eat alone who develop severe Alzheimer's have difficulty with the overstimulation of meal times [35]. However, patients who prefer the intrapersonal learning style may prefer to eat alone and may respond calmer and finish their meals when in settings consisting of fewer stimuli.

The linguistic preferred learning style involves an interest in speech, words, writing, and the meaning of words [22]. A preference for linguistic learning might also include the order of words, rhythm,

sound, or sing-song verses [21]. Miller of California State University Sacramento described the preferred linguistic learner as one who hears words before music or special arrangement. Also, a person with a preferred linguistic style may enjoy making lists, reading, and having social experiences and an environment filled with both oral and written language [36].

The preferred learning style of logical-mathematical favors the logical relationships among actions or representations or symbols [21]. Miller stated that these learners prefer to think of their world in units that they can place meaning, evaluate, problem-solve, and use mathematical terms to communicate ideas, predictions, and organize their environments [36]. According to Learning Styles [22], those who prefer the logical-mathematical learning styles make lists, agendas, itineraries, favor predictable goal setting, identify flaws in logical during interactions or conversations. Miller stated that the person who prefers the logical-mathematical learning style might enjoy facts, figures, collecting, classifying and organizing activities [36].

The preferred learning style of music can be seen in a lifelong involvement and love of music and moving rhythmically. A person who prefers music as a learning style uses music to relax or energize one's self to action [36]. MI Oasis listed rhythm, pitch, meter, tone as sensitivities of one who has a preferred learning style of music [21]. For the person with music as a preferred learning style, music may evoke emotions, movement, and sometimes the desire to sing or play musical instruments [22]. The learner who prefers music may also like doing art and dance to music, hum, tap, drum, and write lyrics and music [36].

The kinesthetic preferred learning style involves movement, self-expression using movement, expression of ideas through movement, gaining meaning from movement, and is observant of movement in others [36]. According to Memletics, persons who prefer the kinesthetic learning style use their hands to touch to gain understanding and also to express understanding [34]. According to Learning Styles [22], kinesthetic learners gain satisfaction from manual manipulation, getting the hands dirty, and putting together models and jigsaw puzzles. Also, kinesthetic learners will use movement to problem-solve and to make sense of their environment [21].

The visual or spatial preferred learning style uses pictures, colors, lines, shapes, and landscapes and cityscapes to relax or show emotion [36]. According to MI Oasis, spatial learners can intellectualize and influence complex spatial arrays and picture or visualize difference and movement in the imagination [21]. According to Memletics, learners who prefer using pictures and images may also enjoy the visual arts, painting, and sculpture [34]. Learning Style [22] adds that the visual learning preferences provide learners with a good sense of direction and orientation to their place and surroundings.

The naturalistic preference for learning enjoys and has the unique ability to distinguish and find meaning between natural formations [21]. Also, the urge to classify and organize the environment is said to be a naturalistic tendency for learners who learn from their environments whether they are in urban or rural settings [21]. According to Gardner, naturalistic learners are similar to kinesthetic learners in that they prefer hands-on learning that involves being outside and in nature [21].

The preferred learning style involving spiritual or existential beliefs that help support a person's religious beliefs or questioning and analysis of human existence or a sense of a higher power. According to Clarken, Gardner did not include existential beliefs as a learning style, because he did not find a neurological connection to spiritual or existential learning intelligence [37]. Clarken commented on the difficulty of locating the biological location of a spiritual phenomenon or cosmic inquiry as being a risky venture; however, many have accepted the spiritual, existential learning preference [37]. Also, many

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psychologists do feel that some individuals center their world around living spiritually, morally and by being seekers of life's larger questions [37]. Quadagno stated that older individuals manage life transitions by centering their world around religious or existential beliefs because it helps to give meaning to these transitions [38].

The preferred learning style of the concrete or sequential learner involves individuals who prefer order, structured steps, and predictability and looking at the parts rather than the "big picture," and these individuals tolerate very little ambiguity [39]. The concrete learning style is also a learning preference that is not neurologically based but found within personality models such as the big five personality theory and the trait conscientiousness [40]. Also, the person who experiences memory decline or cognitive decline relies on structure and concrete thinking to make sense of their world [41].

Another system for determining the preferred learning styles is the VARK assessment which is an acronym for visual, aural, read/write, and kinesthetic learning preferences [42]. The VARK is a condensed inventory of learning styles that are useful for student and teaching environments because the modality easily utilizes the resources found in an educational setting [42]. According to Amir, Farzane, Hamidreza, Hossein, and Ali presenting educational information based on the preferred learning styles of patients improved understanding and compliance with treatment protocols and recommendations [43]. Students were placed in groups and depending on their preferred learning style were asked to read aloud, discuss and explain concepts, and audio record and conduct group reviews of the information. In their study of learning groups with diabetes information based on learning styles, significantly improved outcomes were noted for lower fasting blood sugar results and HbA1c levels [43].

Maslow's hierarchy of needs for employees

Maslow's hierarchy of needs theory was chosen as the theoretical framework for the current study so that the employment position of the nursing assistant would reveal a better understanding of unmet needs regarding basic needs, safety and security, belonging and love, and self-actualization. According to Goodwin, Maslow felt that it was more productive to examine unmet needs as an opportunity to help individuals find self-actualization rather than seeing unmet needs as a barrier [44]. Maslow's hierarchy of needs depicted in a pyramid formation lists basic needs such as the basic needs of life, which for the individual also means making a living wage with benefits [45]. Employees should also feel physically safe and free from workplace violence and feel secure in their job status [45]. For employees to feel love and belonging, they also need to be a part of the mission and purpose of the organization with shared goals and recognition [45]. Also, Maslow hierarchy of needs states that individuals seek self-actualization, which is the step that achieved when all other needs become met [40]. Achieving self-actualization is then a step-wise progression toward meeting the needs of the individual to eventually self-actualize which are the basic needs of life, safety and security, love and belonging, and self-esteem and self-actualization [44].

Ivtzan, Gardner, Bernard, Sekhon, and Hart commented that people who are self-actualized have a better sense of well-being and positive interpersonal relationships [46]. It is essential to remember that self-actualization is a very individual life course process where people work toward their highest level of self-fulfillment [40].

Regarding developmental psychology, self-actualization is a process and prioritization of needs as adults can seek higher levels of self-actualization because they have had more time to resolve the lower levels of needs during their normal life course [46]. Older adults in the Ivtzan et al. study were more likely to be self-actualized because they lived in the present, were confident problem solvers problems, and relied on experience and life course knowledge to solve problems [46]. Understanding that nursing assistants may be more involved with resolving lower levels of unmet needs and struggle with building self-

esteem and self-efficacy may help with the development and acceptance of new workplace tools and methods to make the workplace safer and more enjoyable.

Maslow's hierarchy of needs was used in the study to help categorize NAs' unmet needs as found in the current study. Being able to identify and categorizing NAs needs would help identify problem areas in job satisfaction and productivity to help build therapy programs for patients with dementia that are relevant to the caregiver and ordered according to unmet needs for both employee and the patient. Job satisfaction and productivity for CNAs or NAs would be subjective and different for each employee. One of the weaknesses of Maslow's hierarchy of needs theory is the difficulty of measuring self-actualization objectively and standardizing interventions across populations [40].

Self-actualization is personal and unique for every individual; however, the lower-order needs on Maslow's hierarchy of needs are more basic or considered fundamental and biologically based, which makes these needs easier to resolve and help to create standardized programs to meet those needs. Psychological and safety needs can be great motivators for change especially when the change resolves lower-order unmet needs [40]. CNAs and NAs process of reporting is different across cultures because of the various relationships that develop with the patient and is especially true if the nursing assistant is fearful of job security or patient aggression, hostility and resistance [47].

Many of the unwanted behaviors of the persons living with dementia are a response to pain and discomfort and being unable to express pain symptoms accurately so that staff can intervene with treatment [48]. Hooten suggested that in the case of patient behaviors and chronic pain and mental health disorders it is essential to see a linkage in the comorbidity because of similar neural expressions involved with anxiety, depression and other high-risk behaviors associated with poor pain management [49]. Vaingankar et al. stated that the interdisciplinary team must take into consideration the mental health issues that occur with job stress of nursing assistants and informal caregivers because they are at risk for mental and physical decline [47]. The possibility of mental health issues is especially true for CNAs and NAs with formal relationships with the patient living with dementia and who are difficult to care for because of the behaviors associated with dementia [47].

Also, when chronic pain and dementia issues are comorbid, the fear of pain escalating behaviors or confusion may create hypervigilance for CNAs and NAs and their patients living with dementia. Comorbidity and the fear of pain create antisocial behaviors in the patient and in CNAs and NAs response which add to the burden of meeting lower-order needs for both the patient and the nursing assistant [49]. Hooten suggested an interdisciplinary approach to dementia and pain management which be advantageous and would include pharmacological intervention, emotional support, and other therapies [49]. Vaingankar et al. suggested that caregivers should be screened for mental health issues and stress-related factors commonly associated with caregiving so that support is available on an individual basis [47]. Caregiver attitudes and beliefs about caregiving and dementia that are faulty or outdated create additional stress which may lead to an increased perception of caregiver burden and decrease effective coping strategies [47].

Information throughout the literature review confirms that caregivers have knowledge gaps but are receptive to new information and knowledge. CNAs may benefit from educational intervention regarding caring for persons living with dementia and feel higher job satisfaction. Maslow's hierarchy of needs provides the theoretical foundation to explain caregivers' unmet needs and how caregivers may not achieve self-actualization in their role as a caregiver when there are knowledge gaps and conflicting information and cultural values regarding caring for patients living with dementia.

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Biopsychosocial model of care

The Biopsychosocial Model of Care (BMC) is a way to holistically understand the needs of patients during illness and rehabilitation by addressing several dimensions of wellness during the treatment process [50]. George Engel developed the model to encourage a mind-body-spirit connection to healing and to acknowledge that humans heal better in socially supported environments [50]. According to Gatchel, Howard, and Kishino, it is difficult to manage attitudes about dementia increases fatalistic beliefs, especially helplessness and hopelessness about the disease process [51]. Kent, Rivers, and Wrenn also found that certain positive life-skills may help redirect inappropriate behavior and reduce the psychological burdens of chronic pain [52].

While pain associated with dementia originates from various progressive levels of comorbidity, cultural factors determine the response and source for coping with pain and the symptoms of dementia in an attempt to promote a sense of functioning in one's environment [53]. Sociocultural factors that influence how dementia becomes managed are cultural background, prejudice, and family and community support [53]. Cross-culturally patients experience morbidity differently; however, similar physiological processes for dementia are experienced across cultures [53]. The difference is in how dementia becomes personally tolerated and the sociocultural context that forms CNAs and NAs attitudes and beliefs about dementia [53].

The biological expression of dementia symptoms may be varied and complex and comorbidity may also be present which complicates the clinical understanding of dementia and pain [53]. Another complicating factor is the patient's age because early-onset dementia may have a slower rate of decline and patients may understand or be more aware of the decline, which may result in depression and withdrawal [54]. For example, older patients with dementia and comorbidity occurring with pressure ulcers may mask an older patient's needs concerning depression, pain, wound and skin care [53].

The biopsychosocial model of care considers the sociocultural context of morbidity as well as the psychological and biological [53]. For example, from a psychological perspective of morbidity, many factors can add to the intensity of the experience of the disease such as lack of sleep, stress, catastrophizing pain and individual attitudes and beliefs about pain [53]. Depression is also common when experiencing dementia and pain, and research has found that other emotions that may make the perception of confusion and pain worse are anger and anxiety [53]. In the Kim et al. study, the intensity of the emotional event or crisis in conjunction with the physical process of pressure ulcers intensified the pain experience. However, using a multidimensional approach that also addresses the psychological and sociocultural context of pain greatly reduces the intensity of the pain experience [53].

Ryan and Carr commented that treating the whole person during an illness can provide a wider therapeutic range of treatment that supports both traditional complementary and alternative treatment protocols [55]. Andreasen, Lund, Aadahl, and Sørensen, stated that the biopsychosocial model also helps to ease the transition between care settings and rehabilitation periods because more professionals are involved with helping the elderly feel supported in their daily decision-making [56]. Also, the biopsychosocial model of care would ease the transition back to home care if needed [30].

Research Methodology

The research method for the current study was a nonrandom qualitative descriptive single-case study research design and involved ten participants who were both certified and non-certified nursing assistants (N = 10) of varying experience and education working in long-term care. The research questions were designed to gather information about the preferred learning styles of residents with dementia and to determine if knowing the preferred learning styles information would improve unit productivity in areas of dementia patient care. The study examined the following three questions.

RQ1. Is there a signification relationship between knowing the preferred learning styles of patients with dementia and dementia unit productivity?
RQ2. How do nursing assistants describe their attitudes and beliefs about using an inventory that reveals the preferred learning styles of patients living with dementia?
RQ3. To what extent do patients with dementia participate and accept care that is designed based on the patient's individual preferred learning styles?

The instruments used to determine the preferred learning styles of persons living with dementia were the learning styles inventory. The learning styles inventory is a scoring method for determining the preferred learning styles of residents living in long-term care with cognitive decline. Based on the literature review, identified were the learning styles and behaviors common to cognitively declined residents in institutional settings. A pilot test further evaluated the practicability of the learning styles inventory in long-term care settings, and the interview questions were field tested by various medical professionals.

The participants of the study were briefed about the study, risks, and volunteer participation and asked to sign a consent form, fill out a demographic study, and were then given a copy of support agencies to assist with any risk associated with caregiver compassion fatigue or burnout. Offered was a brief training unit concerning the preferred learning styles and the learning styles inventory then the participants were asked to evaluate one resident using the preferred learning styles inventory. The scoring of the learning styles inventory was next, and the participants of the study were asked to conduct one ADL based on the top combination of preferred learning styles revealed through assessment. The participants were then asked to complete the structured steps rubric to measure the level of engagement of the resident during the ADL designed around the resident's preferred learning styles. The participants were then interviewed using nine questions based on the perceived accuracy of the learning styles inventory. The interview questions were designed to evaluate the attitudes and beliefs about ADLs based on perceived learning styles, the ease of implementation of the preferred learning styles inventory, and the use and transfer of ADLs designed with the residents' preferred learning styles across shifts and PRN staff. Also, evaluated through the interviewing process was unit productivity using the preferred learning styles and the potential for maintaining or building upon resident and staff relationships when ADLs are conducted using the preferred learning styles of the patients in their care. For privacy, the participant's interview responses and identity were coded for privacy. The data analyzed for themes and patterns using the NVivo12 qualitative software helped to determine if data saturation occurred [57].

Results and Discussion

The purpose of the study was to gather data and to present the data for the research topic of the investigation of preferred learning styles of persons living with dementia and to see if knowing the information could increase unit productivity for nursing assistants when performing ADLs for their residents. The research method used was a nonrandom qualitative single-case study and involved ten participants (N = 10) who were nursing assistants working at Knowles Assisted Living facility in Nashville, Tennessee. The data analysis revealed that the learning styles inventory was consistent in framing then preferred learning styles of patients with dementia and the results also identified the attitudes and beliefs of caregivers concerning the implementation of the learning styles inventory when conducting ADLs with long-term care residents. The themes that emerged from the NVivo12 software queries and resulting nodes and most commonly discussed by the

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nursing assistants in the current study helped to establish the belief that data saturation occurred:

- The participants felt that the learning style inventory accurately assessed the resident and that the inventory produced stable results.
- Residents were cooperative, and the preferred learning styles implemented during the teaching of ADLs would also help with resident understanding during the resident's decline.
- Implementing the learning styles inventory was simple and intuitive and would continue to increase positive resident-staff relationships.
- PRN staffs were knowledgeable staff members with high retention rates; and therefore, also were knowledgeable of facility protocols and resident preferences.
- Staff felt that if there were more time in the day staff would use the time to spend quality time with the residents and complete training modules, paperwork, and other duties on the floor.
- The staff had high regard for relationship-delivered care.

The themes emerged quickly and without hesitation, and the participants of the study revealed a common knowledge-based concerning training and facility protocols. Often, participants would pause during the interview and cite a policy to support their responses. For example, facility protocols for managing agitation and inappropriate behaviors were similar as was giving the resident choices and honoring resident decision-making. Interestingly, the rapport and positive regard for other staff were prevalent as well as staff dedication and loyalty toward the residents, the facility, and its mission and values.

The staff was open and accepted of trying a new process; however, the staff was a little guarded because of privacy laws and resident confidentiality. The staff used generic terms to describe their resident responses and avoided using the resident's name or location of the living area within the facility. The recorded interviews were somewhat brief because of the need for the staff to return to the floor. Noted were informal discussions during the introduction and the training sessions. All introductions and training sessions were conducted individually except for the third shift that was able to assemble as a group of three participants while leaving the door open and with random floor checks during the training.

Theme 1: The learning style accurately assessed the residents

All ten participants of the study choose the resident that they wanted to assess with the learning styles inventory. The name of the resident was held private by the participant, and only gender references used on occasion during the interview. Once the researcher explained the learning styles inventory scoring, all ten participants completed the learning styles inventory in private and without assistance. Upon scoring and identifying the top strongest learning styles, the participants commented that the learning styles described their resident accurately.

Most of the participants added additional information to confirm their feelings for the results of the survey. For example, participants would often remark that they could see the connection to the learning styles and resident choices throughout the day and particularly when the resident was not feeling well or needed to calm down after becoming agitated.

P10 commented that I would use the preferred learning styles to calm my resident during one-to-one, and P9 stated that during teaching or coaching moments the preferred learning styles would make the process more accepting by the resident. P4 felt that since her resident was intrapersonal in their approach to their preferred learning styles, moving to a quieter area and offering one-to-one interaction would be helpful during times of agitation.

The participants did suggest that new residents should not be assessed immediately after admission because of the adjustment process. Participants of the study stated that after the adjustment period staff would have more knowledge about the resident and time to observe the resident in their environment concerning their preferences, choices, and ways of interacting with others. Most of the staff felt that a two-week period would be sufficient for staff to complete a learning style inventory on a new resident. Interestingly, P8 cautioned that during a significant change, infection or medication change the resident may not be themselves and may deviate from their normal responses and ways of interacting.

According to QSR International results, the participants of the study commented on how accurate, consistent, and stable the learning styles inventory was in determining their resident's preferred learning style 161 times during the interviews [57]. The participants stated that they were surprised that the preferred learning styles of their residents closely mirrored how they interacted with their residents and supported the knowledge that they had gained about their residents through social contact. It is essential for nursing assistants to maintain an accurate assessment of their residents' mood and well-being and be consistent and maintain a stable and social presence in the lives of the residents that are in their care [41]. Kim et al. commented that the sociocultural aspect of care could ease confusion and reduce pain because support and social interaction helps to calm anger and anxiety [53].

Theme 2: Activities of daily living and cooperation

The participants of the study related the preferred learning styles to how they learn and interact with their environment or their children and grandchildren prefer to learn. After the learning styles inventory scored for their resident, they were asked to conduct one ADL using the preferred learning styles of their resident. The ADLs and nursing assistant functions selected from the participant populations consisted of a shower, weighing the resident, toileting the resident, medication administration, transfer to bed, orientation, and glucose testing.

During training, the participants stated that have been using the current approach to ADLs because of the relationship and knowledge that they have with the resident. Therefore, designing an ADL or nursing assistant function and then measuring the results was fairly easy for the participants. P2 felt that conducting ADLs using the learning style would build more cooperation. In the past, P2 would give the resident a coke to gain cooperation.

P2 also stated that sometimes this resident gets agitated because of the things that he cannot do because of his stroke. Using the learning styles approach, I can use this information to help motivate him to try different activities and games. P9 commented, "I have a lot of experience, and I feel that the learning styles would be a good fit with the facility protocols for agitation." Additionally, P9 added, "I am involved with teaching and interviewing the resident to encourage the best choices, and I would use the relationship that I have built with the resident and the learning styles to encourage acceptance of suggested behaviors to stabilize glucose readings."

P3 felt that using the preferred learning styles during ADLs would help to build consistency and trust and because offering the preferred learning styles during ADL design improves understanding and skill, P2 stated that it would also help to build self-esteem. P7 offered a point of caution that while some residents calm easily with the learning styles in the event of a crisis, it would be important to follow facility protocols for dangerous scenarios.

ADLs are a major component of a nursing assistant's job, and the caregivers in the study were comfortable with incorporating the preferred learning styles into the design of the ADL. For example, if they knew that the resident in their care was intrapersonal, visual, and linguistic, the ADL would involve a one-to-one interaction, provide

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choices regarding the items in view of the resident during care, and a dialogue that encourage the resident to express their thoughts and views on the subject at hand or even a topic of community interest. According to QSR International [57], the topic of ADLs, learning, and knowledge about the resident occurred 221 times where the participants emphasized how important it was to build a relationship with the resident through learning and knowledge of the resident.

Theme 3: Learning style inventory implementation

The researcher provided the participants of the study with the learning styles inventory to discover the preferred learning styles of the resident that they chose to evaluate. The participants completed the inventory in private and then the researcher scored the instrument. Some of the participants had started the scoring process themselves and understood that the higher scores meant that those categories of learning styles were the preferred learning styles for the resident. The learning styles inventory was based on common behaviors relating to the various learning styles; however, the inventory was also based on behaviors and responses commonly found in long-term care settings.

The participants were invited to select an ADL of their choice to compare and contrast the design of the ADL when the preferred learning styles were also incorporated into the process. The participants were encouraged to combine what they know about the resident's preferences with the requirements of the ADL so that all standards and protocols are met. The participants of the study stated that it was easy to combine these concepts because they felt that they were already doing the ADL with the learning preferences, they did not have the official terms of the learning process.

P3 stated that the learning styles would be easy to implement, but it would still be important not to rush the resident or force the resident to complete their ADLs. P7 felt that the learning styles inventory would be easy to teach and also make teaching ADLs to new staff easier.
P10 stated that the learning styles inventory would benefit the resident because the residents like when you honor their likes and dislikes and understand their personality. P6 commented that the learning styles would help to build upon existing relationships with the resident and it would be important to apply this concept across the facility to ensure fairness and impartiality.

Most of the participants cited two concerns with the learning styles inventory. One concern was about new residents and the adjustment period that they go through upon being admitted to the facility, nursing assistants of the current study recommended that the learning styles inventory should be given after a two-week adjustment period to properly reflect how they normally interact and learn from their environment. Also, during a medical event or facility crisis, facility protocols should be followed first. If the event allows for the preferred learning styles used during such an event, then the staff would feel comfortable with managing the crisis while relating to the resident using the preferred learning styles. Some staff stated that the preferred learning styles approach might even calm a resident during an emergency.

The participants of the study had high regard for the resident's comfort and what would make the residents' quality of life better. The participants who already are committed to providing the best care possible using a relationship-based person-centered approach were very open and curious about the learning styles inventory. Most of all of the nursing assistants stated that they were providing care based on the residents' preferences, but they did not know the science and psychology behind the learning styles and the everyday choices that residents make.

The participants stated that the survey was easy to complete and the nursing assistants only needed brief training on how to score the inventory. The inventory was designed so that a series of questions could be answered based on behaviors and choices that are common for

the learning style being assessed and common for residents with cognitive deficits in long-term care settings. Constructed in brief progress note language, the nursing assistants were familiar with the terms in the survey, and no questions were posed. NVivo12 found 30 references to learning styles with sub nodes that the inventory was easy to share, that the inventory provided increased knowledge about the resident, that the learning styles inventory was intuitive and personal centered. Nursing assistants are required to support the nursing function and are under great pressure to respond with limited education and training; however, training designed within the known educational parameters, understanding of CNAs and NAs, and critical thinking of the nursing assistant position would be better received [12].

Theme 4: PRN staff could easily use the learning styles inventory

Retention of nursing assistants and nursing staff exceeds the national average at Knowles Assisted Living [58].The facility does not use pool staff, and their PRN staff is long-term with a significant connection to training and resident interaction. The nursing staff who participated in the study felt confident that PRN staff could continue the preferred learning styles ADL design and also follow recommendations from other shifts and those whom they are working their shift in their absence. One of the participants of the study was a PRN staff and has held the position over six years and even worked at the facility when it was under previous management.

P8 who was the PRN staff stated that he has worked at the facility long-term and knew the routine and residents very well. P8 commented that it is important to gather recent information on the resident that might affect mood or well-being such as a urinary infection or other medical situation which is the normal part of the communication during the shift change. P9 commented on how important knowledgeable PRN staff is for the facility to function when other staff takes off for any reason.

All other participants of the study supported the knowledge and skill of the PRN staff and felt very confident of the PRN staff and their ability to conduct ADLs designed with the resident learning styles in mind. During training, the participants did comment that new staff should also receive training on how to assess and use the preferred learning styles to provide consistency and improve better cooperation with new staff who may not know the residents as well.

There were 15 references to the PRN staff node with subthemes discussing the high retention of staff in general, and the common belief that staff was very knowledgeable of the residents' likes and dislikes and daily preferences, and that PRN staff were as skilled as the full and part-time staff. Additionally, the staff felt confident that the transfer of information across shifts and during PRN shifts would be a simple process. Staff did comment that all staff should receive initial training on the preferred learning styles and the preferred learning styles inventory.

Theme 5: Productivity

Another interview question wanted to know what the participants would do if they had more time in their workday, all of the participants without hesitation reflected on resident comfort and task completion that would improve facility standards or the residents' quality of life. For example, some staff stated that they would get to know the resident better and spend time talking to the resident rather than just talking about the next schedule for medical care.
Participants of the study felt that they were surrogate families for the residents because many did not have relatives that visited.

P5 reflected, "I would love to cook, draw, and offer arts and crafts if I had the time. I would be more interested in their lives and what they like to do." P9 commented that "I am the beautician as well so I would do their hair and other special things to brighten their day. P10 stated

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that she would tidy up and interact with the residents on a more playful level

Other comments concerning productivity were about completing paperwork, training, and helping residents relearn social and grooming skills. Also, participants expressed tremendous value in being able to interact more on a one-to-one basis with residents.

There were 16 references for the theme of improved productivity when implementing the learning styles inventory and knowing the preferred learning styles of the residents. The subthemes that developed under the main theme of productivity were based on what the participants would do if they had more time in their day which was conduct activities, socialize with the residents, use the time for teaching and coaching wellness and healthier lifestyle choices, and spend more time with personal development and training and miscellaneous unit duties.

Theme 6: Patient relationship

Nursing assistants throughout the training and interview process discussed that close relationships with a resident helps with cooperation and has a calming effect during agitation or sun downing, which is late-day confusion [59]. The facility has protocols for managing agitation and catastrophic events, and often the first phase is to talk with the resident and listen to their concerns. Staff commented that a relationship is also needed during learning and relearning tasks and that in general, they are teachers too as they work to help residents understand their medical condition and make good choices. Participants felt that their residents are very cooperative during ADLs because each staff member has worked at the facility for an extended time which helps with knowing their residents' needs and preferences.

During the initial walk-through of the facility, the researcher observed relationship-delivered care throughout the facility. The facility has two main sections designed separately for men and women living areas; however, there were common areas, dining, and activity areas for all residents to use and mingle and socialize. During the walkthrough, the staff addressed the residents by name and as able the residents addressed the staff in the same manner. The atmosphere of the facility was calm, and residents were pursuing their individual and group interests.

Artifacts of resident personal accomplishments were showcased, and each room personalized according to the residents' choices. During one of the training sessions and within the recorded interviews, staff often remarked Knowles Assisted Living is the residents' home, and we feel like we are their family. Also, families often do not visit, and the residents need a relationship-centered approach to reduce self-isolation and possible depression.

For example, P8 commented that even with years of working with a resident as staff we are still learning from each other, and when a resident declines, he or she must learn to accept more assistance. Accepting more help is difficult for the caregiver and the patient as ADLs need to be redesigned to accommodate the decline without minimizing the resident's independence and choices.

P8 suggested that the preferred learning styles may increase the relationship because you know them even more personal. When residents decline, and more help is needed, and the resident is new to getting assistance, using the learning styles to design that ADL would help build trust and cooperation with the resident and increase acceptance of the next level of care.

P1 stated that all of the staff have wonderful relationships with their staff and that everyone is different in how they go about developing the relationships with their residents. Although the staff may work in different units, because of their long-term employment staff felt that they had a good rapport with each resident.

P1 stated yes, as I know this resident very well and I would share this information with other staff working with this resident. Every staff member has their technique or approach with the resident, and that technique may be specific to what the staff is comfortable doing.

There were 26 references to the relationship theme with subthemes based on calming the resident through the relationship, being comfortable with interactions both social and clinical, a desire to know the resident better, and build upon an ongoing relationship-delivered quality of care. Other discussions occurred concerning the importance of relationship-delivered care during the training and informal discussions. The word relationship was a term often used to describe the care and interaction at the facility.

Concluding Comments

The purpose of the current study was to investigate the preferred learning styles of patients living with dementia. The study intended to reveal if nursing assistants experienced increased productivity during their workday when they designed the residents' ADLs based on the preferred learning styles of the residents in their care. In revealing the preferred learning styles of patients with dementia, the attitudes and beliefs of the nursing assistants can be investigated to determine if the caregiver would agree that knowing the preferred learning styles of residents would continue to build the patient/caregiver relationship while increasing unit productivity. Also, if the learning styles inventory survey proves to be easy to use and provides accurate information, facility administrators may provide the resources and training to incorporate an easy to use application for the nursing assistants to use to assess their residents' preferred learning styles.

RQ1 was concerned with the question of is there a signification relationship between knowing the preferred learning styles of patients with dementia and dementia unit productivity? Nursing assistants in the current study felt as if though they were already intuitively using the preferred learning styles of their resident during ADLs because they knew their residents so well through their established relationships with the residents, and they felt that they understood the residents' likes and dislikes very well. Of the most concern for the nursing staff was honoring residents wishes and choices during their ADLs and respecting the residents' social and activity interest.

Ongoing concerns were typical in long-term settings such as residents resisting care, exhibiting agitation, and the refusal of certain ADLs. Nursing staff used such words and phrases as intuition, guessing, using their judgment, and coaching and encouraging appropriate resident behaviors and choices concerning grooming and showers. Also, in general, nursing assistants reported being uncertain when patients experience confusion and sun downing behaviors as evidenced by concerns of backing away and giving the resident time to calm down or regain their composure. The participants of the study felt comfortable with facility protocols for managing minor mood changes and catastrophic behaviors.

When caregivers use intuition to guide decision-making and personal beliefs, knowledge gaps can lead to faulty assumptions and barriers to proper treatment and prevention [56]. Miao et al. commented that certain learning styles naturally include interpersonal skills such as communication and being able to socialize with peers [32].

However, others combinations of learning styles are more reflective of the intrapersonal learning style. Knowing the learning styles of a person can help create a person-centered approach or help with the interaction of group members concerning cooperation and collaboration. For example, if residents are sharing a dining experience where the members of the table have diverse learning styles, conflicts may arise when with certain stimuli. For example, a cognitively impaired resident who has musical and kinesthetic learning styles may tap out a rhythm on the table with his utensils and be unaware that he is

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annoying certain members of the dining experience who may be intrapersonal and nonmusical or non-kinesthetic. An aggregate look at the unit or facility concerning overall learning styles may help with resident room assignment and when designing activities based on learning style preferences.

Hill et al. found that certain learning styles are common in certain trades or careers and that people who have similar learning styles may have more in common [33]. Hill et al. also suggested that grouping people with similar learning styles may be able to work better together and more collaboratively [33]. According to the Memletic Styles Questionnaire, certain learning styles indicate that a person may like to learn in groups. Also, MI Oasis stated that certain learning styles shared with others improve interactions and members intuitively respond to others mood, motivation, and temperament with those learning styles [21].

The observations apply to cognitively intact persons but may also be significant in long-term care to reduce agitation and frustration of individuals who may have reduced tolerance for ambiguity and respond to their environment in limited ways [60]. The themes that emerged from the study that supported research RQ1 were that the participants in the study felt that the learning style inventory accurately assessed the resident. Also, the results were stable over time, and ADLs were easier, and the residents were more cooperative, and the preferred learning styles could benefit staff and residents when teaching ADLs during a resident decline.

The subthemes or sub-nodes that emerged from theme one was that the learning styles inventory was accurate and consistent and that the learning styles of the resident chosen for the study revealed the residents' preferred ways of interacting with their environment. Theme two involved the participant's beliefs that the ADLs and the ability to design ADLs with the preferred learning styles was easy and that the information could be transferable to other staff. Also, the participants felt that the preferred learning styles could be used in teaching and coaching both staff and residents because the relationship-centered aspect of ADLs designed with the preferred learning styles would build trust and understanding.

RQ2 addressed the question of how do nursing assistants describe their attitudes and beliefs about using an inventory that reveals the preferred learning styles of patients living with dementia? The learning styles inventory does not depend on where a resident is verbal or nonverbal or whether the person has cognitive decline or is cognitively intact. Also, the learning styles inventory does not rely on a resident's report should they be a poor historian. The learning styles inventory rates how a resident interacts within his environment using the resident's preferred or remaining learning styles.

At times, the participants of the study expressed their willingness to change a resident's schedule or approach to preserve resident choices and maintain dignity during periods of confusion or acute illness. The preferred learning styles give the caregiver a tool to use that favors the familiar with persons living with cognitive losses or confusion. The Alzheimer's Association recommends focusing on the enjoyment of the process rather than the achievement [8]. Incorporating the preferred learning styles into ADL design offers the opportunity to favor the familiar and focus on the enjoyment of the activity.

The themes that supported RQ2 were that implementing the learning styles inventory was simple and intuitive and would continue to increase positive resident-staff relationships. Sub-nodes that emerges under learning styles implementation was that the learning styles inventory was easy to share across shifts and during times of employee absence. The results of the learning styles inventory increased knowledge of the resident, the inventory was intuitive and easy to implement, and that the entire process of discovery of a resident's

preferred learning study and implementation into ADL design was person-centered.

RQ3 involved exploring the question to what extent do patients with dementia participate and accept care that is designed based on the patient's individual preferred learning styles? The participants of the study stated that the residents love relationship-delivered care and anything that involves the resident being able to express themselves, share wisdom, or talk about their past during social interactions or even when performing ADLs. Participants stated that ADLs designed with the learning styles produces more cooperation and less resident resistance to facility caregiving. For example, one resident was spiritual and existential, and the nursing assistant discussed bible verses with him that she knew was part of his daily study, participant of the study stated that the resident response was one of surprise and enjoyment.

The themes that emerged that supported RQ3 involved participants of the study stating that PRN staff were knowledgeable staff members with high retention rates; and therefore, also were knowledgeable of facility protocols and resident preferences. Staff felt that if there were more time in the day staff would use the time to spend quality time with the residents and complete training modules, paperwork, and other duties on the floor. Finally, staff had high regard for relationship-delivered care, which was one of the most important belief stated throughout with word frequency around relationship, knowledge, and communication exceeding 180 occurrences throughout the interviews.

The staff of the study was very aware of the concept that when the resident is cooperative in ADLs and fully engages in the relationship, unit productivity is higher and staff reports a higher sense of job satisfaction [16]. Also, the staff demonstrated that knowledge about a resident's likes and dislikes and normal routines improve resident satisfaction and interaction. Reports from the staff stated that intuitively they know that relationship-delivered care improves cooperation and completion of ADL functions in a timely manner. In the current study, the residents were cooperative and accepted the slight changes that the staff made concerning the staff's already existing relationship-delivered care practices. Also, the structured steps rubrics used to measure the process gave the participants of the study some insight that learning and or cooperation occurs in measurable ways.

Some participants felt that the paper-version used in the study was somewhat cumbersome but that if the inventory was an application that the staff could use with their current software that the process would be more efficient and easier to share with other staff. Participants also felt that new residents should have time to adjust to the facility before being assessed because the new resident may need time to become comfortable enough to exhibit their normal patterns of interacting in their environment. Additionally, staff thought that there might be a change in the way that a resident interacts with his environment concerning learning styles during loss or significant decline.

The study was guided by three questions to determine the attitudes and beliefs of nursing assistants regarding using the preferred learning styles of residents in their care to design ADLs based on the information gained through the learning styles inventory. The study examined the prevailing low retention rates for the nursing assistant position and the challenging nature of the nursing assistants' duties and personal living environmental factors that may make caring for others difficult. Also, nursing assistants who care for older adults with various emotional issues and cognitive decline may experience resident aggression, inappropriate behaviors, and resistance to care. Nursing assistants of the current research site focused on relationships with the residents and making a concerted effort to know the residents' likes and dislikes. Also, participants of the study were atypical because of their long-term employment and high level of job satisfaction.

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References

1. Pinel J. Biopsychology (2013) Pearson-Allyn and Bacon, New York, USA.
2. https://www.bls.gov/ooh/Healthcare/Nursing-assistants.htm#tab-4
3. https://www.cms.gov/Regulations-and-Guidance/Guidance/Manuals/downloads/som107ap_pp_guidelines_ltcf.pdf
4. https://www.alz.org/dementia/types-of-dementia.asp
5. http://dementiatalk.net/history-of-dementia-when-did-it-all-start/
6. https://www.alz.org/dementia/huntingtons-disease-symptoms.asp
7. https://www.alz.org/kansascity/in_my_community_63761.asp
8. https://www.alz.org/professionals_and_researchers_activity_based_care.asp
9. Ryd C, Nygård L, Malinowsky C, Öhman A and Kottorp A. Associations between performance of activities of daily living and everyday technology use among older adults with mild-stage Alzheimer's disease or mild cognitive impairment (2015) Scand J Occup Ther 22:33-42. https://doi.org/10.3109/11038128.2014.964307
10. Savva G and Arthur A. Who has undiagnosed dementia? A cross-sectional analysis of participants of the Aging, Demographics and Memory Study (2015) Age Ageing 44:642. https://doi.org/10.1093/ageing/afv020
11. https://www.alz.org/dementia/mixed-dementia-symptoms.asp
12. Boscart VM, d'Avernas J, Brown P, and Raasok M. Changing the impact of nursing assistants' education in seniors' care: the living classroom in long-term care (2017) Canadian Geriatrics J 20:15-21. https://doi.org/10.5770/cgj.20.238
13. Van der Cingel M, Brandsma L, Van Dam M, Van Dorst M, Verkaart C, et al. Concepts of person-centered care: a framework analysis of five studies in daily care practices (2016) Intl Practice Development J 6:1-17. https://doi.org/10.19043/ipdj.62.006
14. https://www.alz.org/dementia/wernicke-korsakoff-syndrome-symptoms.asp
15. https://www.alz.org/dementia/normal-pressure-hydrocephalus-nph.asp
16. Norman RM and Strømseng SI. Measuring nurses' perception of work environment: a scoping review of questionnaires (2017) BMC Nurs 16:1-15. https://doi.org/10.1186/s12912-017-0256-9
17. Kusmaul N. The content of education for direct caregivers (2016) Educational Gerontology 42:19-24. https://doi.org/10.1080/03601277.2015.1059142
18. Fasanya B and Dada E. Caregiver's concerns-Age group issues on workplace violence (2015) Elsevier 3:227-233. https://doi.org/10.1016/j.promfg.2015.07.133
19. https://psnet.ahrq.gov/perspectives/perspective/190/burnout-among-health-professionals-and-its-effect-on-patient-safety
20. Khatutsky G, Wiener J, Anderson, W and Porell F. Work-related injuries among certified nursing assistants working in US nursing homes (2012) RTI Press, USA. http://dx.doi.org/10.3768/rtipress.2012.rr.0017.1204
21. https://www.nia.nih.gov/health/diagnosing-dementia
22. https://learning-styles-online.com/overview/
23. Rogowsky BA, Calhoun B M, and Tallal P. Matching learning style to instructional method: Effects on comprehension (2015) J Edu Psycol 107:64-78. https://psycnet.apa.org/doi/10.1037/a0037478
24. Urick M. Adapting training to meet the preferred learning styles of different generations (2017) Int J Training and Development 21: 53-59. https://doi.org/10.1111/ijtd.12093
25. Weggelaar-Jansen AM, van Wijngaarden J, and Slaghuis S. Do quality improvement collaboratives' educational components match the dominant learning style preferences of the participants? (2015) BMC Health Services Research 15:1-13. https://doi.org/10.1186/s12913-015-0915-z
26. Bourgeois J, Laye M, Lemaire J, Leone E, Deudon A, et al. Re-learning of activities of daily living: A comparison of the effectiveness of three learning methods in patients with dementia

of the Alzheimer type (2016) J Nut Health Aging 20:48-55. https://doi.org/10.1007/s12603-015-0597-6v
27. Hitch D, Wright K and Pepin G. The impact of leisure participation on mental health for older people with depression: A systematic review (2015) Phys Occup Ther Ger 333:36-345. https://doi.org/10.3109/02703181.2015.1091873
28. https://nccih.nih.gov/health/integrative-health#cvsa
29. https://www.ncbi.nlm.nih.gov/pubmed/9256852
30. Krupa J, Miller M, Peckham C and Peckman A. Activities keep me going and going (2011) Thomas-Shore, Inc. Learning Styles, Michigan, Dexter, USA.
31. https://www.iadvanceseniorcare.com/article/cms-release-customizable-nurse-aide-training-modules-0
32. Miao Z, Yixue Q, Liqin H, and Yi-Lung K. The impact of learning styles on academic achievement (2017) Int J Intell Techn Appl Stat 10:173-185.
33. Hill F, Tomkinson B, Hiley A and Dobson H. Learning style preferences: An examination of differences amongst students with different disciplinary backgrounds (2016) Innovations in Education and Teaching International 53:122-134.
34. http://www.crs.sk/storage/memletics-learning-styles-inventory.pdf
35. Jensen LH, Rekve KH, Ulstein I D, and Skovdahl K. Promoting independence at mealtimes for older persons with severe dementia (2016) Int Practice Development J 6:1-13. http://dx.doi.org/10.19043/ipdj.62.007
36. http://www.csus.edu/about/
37. https://rodclarken.wordpress.com/2012/04/21/gardener-on-spiritual-existential-and-moral-intelligence/
38. Quadagno J. Aging and the Life Course: An Introduction to Social Gerontology (2010) McGraw-Hill, New York, USA.
39. https://child1st.com/blogs/resources/113571143-the-concrete-sequential-learning-style
40. Feldman R. Understanding psychology (2014) McGraw-Hill, New York, USA.
41. https://www.alz.org/alzheimers_disease_what_is_alzheimers.asp
42. http://vark-learn.com/introduction-to-vark/
43. Amir R, Farzaneh H, Hamidreza BV, Hossein KM, and Ali B. Evaluation of the effect of self-care education based on VARK learning style on HbA1c and FBS in patients with type II diabete (2016) Medical-Surgical Nursing Journal 5:67-76
44. Goodwin J. The history of modern psychology (2008) Wiley and Sons, Hoboken, New Jersey.
45. http://smallbusiness.chron.com/hierarchy-needs-employees-20121.html
46. Ivtzan I, Gardner HE, Bernard I, Sekhon M and Hart R. Wellbeing through self-fulfilment: Examining developmental aspects of self-actualization (2013) Humanistic Psychologist 41:119-132.
47. Vaingankar JA, Chong SA, Abdin E, Picco L, Shafie S et al. Psychiatric morbidity and its correlates among informal caregivers of older adults (2016) Comprehensive Psychiatry 68:178-185. https://doi.org/10.1016/j.comppsych.2016.04.017
48. https://www.alz.org/dementia/creutzfeldt-jakob-disease-cjd-symptoms.asp
49. Hooten WM. Chronic pain and mental health disorders: Shared neural mechanisms, epidemiology, and treatment (2016) Mayo Clinic Proceedings 91:955-970. https://doi.org/10.1016/j.mayocp.2016.04.029
50. Borrell-Carrió F, Suchman AL and Epstein RM. The Biopsychosocial model 25 years later: Principles, practice, and scientific inquiry (2004) Annals of Family Medicine 2:576-582. https://doi.org/10.1370/afm.245
51. http://www.practicalpainmanagement.com/treatments/psychological/biopsychosocial-approach
52. Kent M, Rivers C, and Wrenn G. Goal-directed resilience in training (GRIT): A biopsychosocial model of self-regulation, executive functions and personal growth (eudaimonia) in

---

Citation: Stewart D and Swanson A. Investigation of the preferred learning styles of persons living with dementia (2019) Neurophysio and Rehab 2:12-23

evocative contexts of PTSD, obesity and chronic pain (2015) Behav Sci 5:264-304.https://doi.org/10.3390/bs5020264

53. Kim J, Ahn H, Lyon D and Stechmiller J. Building a biopsychosocial conceptual framework to explore pressure ulcer pain for hospitalized patients (2016) Healthcare 4:7. https://dx.doi.org/10.3390%2Fhealthcare4010007

54. https://www.alz.org/dementia/fronto-temporal-dementia-ftd-symptoms.asp

55. Ryan S and Carr A. Applying the biopsychological model to the management of rheumatic disease in Rheumatology:evidence-based practice for physiotherapists and occupational therapists (2010) Elsevier, New York, USA. http://dx.doi.org/10.1016/B978-0-443-06934-5.00005-X

56. Andreasen J, Lund H, Aadahl M, and Sørensen E. The experience of daily life of acutely admitted frail elderly patients one week after discharge from the hospital (2015) Int J Qualitative Stud Health and Well-being 10:27370. https://doi.org/10.3402/qhw.v10.27370

57. http://www.qsrinternational.com/industry/nvivo-in-education

58. https://www.cdc.gov/nchs/nnhs/nnas.htm

59. https://www.mayoclinic.org/diseases-conditions/alzheimers-disease/expert-answers/sundowning/faq-20058511

60. https://alz.org/dementia/parkinsons-disease-symptoms.asp

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