Applying the Person–Environment–Occupation Model to Improve Dementia Care

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ABSTRACT
The purpose of this article is to introduce the Person–Environment–Occupation (PEO) Model as a framework to improve dementia care in nursing homes and provide examples from literature that can be framed within the model. The interaction between the person, environment, and occupation is described to promote participation and provide quality care for residents with dementia. The PEO model can be used by occupational therapy practitioners to develop innovative approaches to dementia care and improve quality of life.

LEARNING OBJECTIVES
After reading this article, you should be able to:
1. List the components of the PEO Model
2. Differentiate the relationships within the PEO Model
3. Identify the different components that consist of the person, environment, and occupation
4. Identify strategies for engaging nursing home residents with dementia within the PEO Model

CASE EXAMPLE
The charge nurse on the nursing home unit entered the dining room at lunchtime and observed Mrs. Jones sitting at her table, but she was not eating. The food on her plate had not been touched. Mrs. Jones had previously been able to eat independently after food was set up in front of her, although she required additional time to do so. After observing Mrs. Jones for a few minutes, the charge nurse approached the certified nursing assistant (CNA) and asked about Mrs. Jones's status. The CNA stated that this pattern of behavior had been occurring for a few weeks. The CNA and other CNAs had tried to feed her, but Mrs. Jones would get agitated, start yelling, and try to hit the staff. The CNA went on to describe that this behavior disrupted the other residents trying to eat in the dining room. In response to the escalation of behaviors, the CNA reported that they had stopped trying to feed her and left her alone. Concerned about Mrs. Jones' risk for weight loss, an occupational therapy screen was requested.

On observing Mrs. Jones in the dining room, the occupational therapist (OT) noticed that she was sitting at a table with a white tablecloth, and her food included mashed potatoes, cauliflower, and diced chicken served on a white plate. When observing Mrs. Jones and the CNA staff, the OT also noticed that the staff positioned themselves to either Mrs. Jones' left or right when trying to encourage her to eat, as they were often also encouraging other residents to eat and/or feeding other residents at the same time. When interacting with Mrs. Jones, it was evident that the staff had startled her, which then triggered her agitation and yelling. The OT determined that the barriers to feeding included lack of contrast among the table, plate, and food, as well as staff being positioned outside of Mrs. Jones' line of sight, thereby limiting initiation of self-feeding and facilitating the negative behaviors. On completing the occupational therapy evaluation, the therapist determined three areas relating to feeding that needed to be addressed: (1) the environment (e.g., adding more color contrast to the place setting), (2) Mrs. Jones' positioning during meals, and (3) staff training on strategies for feeding.

Occupational therapy addressing the environment. Based on her knowledge of dementia and understanding of the environment's role in self-feeding for persons with dementia, the OT identified that limited color contrast was an issue. Specifically, as dementia progresses, an individual's vision changes, resulting in greater difficulty distinguishing objects of similar color. Thus, a white plate on a white tablecloth with mostly white food was difficult to see. To address this barrier, the OT worked with the kitchen and CNA staff to provide a colored plate for Mrs. Jones to create contrast between the food and table.

Occupational therapy enhancing resident-staff interactions during eating—positioning and approach. Based on her clinical training, the OT knew that it was more effective to sit directly in front of the individual with dementia so as not to startle them. As dementia progresses, peripheral vision can decrease over time. Thus, sitting to the side of the resident is confusing, as the staff person is not in a direct line of sight and has an unfamiliar voice, which triggers anxiety and resistance. In response, the OT educated and trained the day shift CNAs on the recommended place to sit when working with Mrs. Jones,
including suggestions for positioning for the CNAs and Mrs. Jones.

Specifically, in the dining room, there were tables set for up to six people as well as smaller café tables for two people. The OT and CNAs tried having Mrs. Jones eat at one of the café tables during her meals, which was deemed successful, as the agitation and yelling decreased and feeding improved. To ensure follow through, the therapist worked with the various CNA shifts to promote carryover and ensure that the staff sat directly in front of her, providing one-step prompts to eat. Finally, a training session was scheduled with the family members that came in each weekend for Sunday lunch to educate them on the new strategies for meals. Before discharge from occupational therapy services, the therapist provided one-on-one training sessions with each of the CNAs in the facility and documented the resulting maintenance program, summarizing the recommendations for Mrs. Jones. Copies of the detailed document were placed in the CNA communication log as well as Mrs. Jones’ chart and served as a guide for CNA staff caring for her in the future. The guidance included:

- Using a colored plate for all meals
- Sitting at one of the café tables for two, with the CNA sitting across from Mrs. Jones, directly in her line of sight
- Limiting communication to simple, one-step commands in an effort to prompt Mrs. Jones to eat, thereby limiting excessive side conversations, which were a distraction and confusing

INTRODUCTION

As the U.S. population ages, the number of people with dementia will continue to increase (Alzheimer’s Association, 2014; Ortman et al., 2014). As dementia progresses from the early to late stages of the disease, it causes cognitive decline, the inability to make decisions or communicate, and a decrease in functional and cognitive abilities (McDonald et al., 2010). As the disease advances, people require more assistance with their ADLs and other unmet care needs, which can lead to long-term nursing home placement (Zimmerman et al., 2013). As of 2012, residents with dementia made up 48.5% of the nursing home population, a percentage that is expected to increase as the population ages (Harris-Kojetin et al., 2013; Ortman et al., 2014). This client population is at risk for poor outcomes, including weight loss, accidental falls, morbidity, and mortality (Navarro-Gil et al., 2014; Sylliaas et al., 2012). Thus, the Centers for Medicare & Medicaid Services (CMS; 2013) has identified individuals with dementia as a high priority population in need of quality improvement. The CMS initiative emphasizes enhancing client outcomes and overall quality of life through person-centered approaches. To this end, federal priorities are bringing client-centered care to the forefront of health care delivery.

Client-centered care is an important component to providing quality dementia care by enabling the individual to retain personal worth, decision-making opportunities, and a feeling of independence (Nazarko, 2009). To understand and identify the best interventions to inform a person-centered approach to dementia care in a nursing home, the purpose of this article is to situate occupational therapy practitioners’ approaches to dementia care within the context of the person–environment–occupation (PEO) theoretical framework.

PEO MODEL

The PEO Model was developed to provide a framework for delivering services that encompass a client-centered approach (Law et al., 1996). There are three components to the model: the person, the environment, and the occupation (Law et al., 1996). The person is an individual with a unique set of identities, experiences, and abilities. The environment is a broad domain that comprises physical, social, cultural, and socio-economic factors. Occupation refers to the functional tasks and activities that the individual engages in. The PEO Model is built on the theory that interaction of the person, environment, and occupation facilitates participation. If there is a good fit of these constructs, meaningful participation increases, whereas a poor fit can threaten engagement or performance. The fit between the PEO interaction is defined by the quality of a person’s experience with regard to their level of satisfaction and functioning (Strong et al., 1999).

Consequently, the interconnected relationship presented in the PEO Model can provide a framework for understanding people with dementia and provide client-centered care. By encompassing the person with the occupation and nursing home environment, different factors interact as a barrier or facilitator to providing quality care. Specifically, the PEO Model can be used to understand and develop person-centered interventions for people with dementia.

DEMENTIA WITHIN THE PEO MODEL

Within each domain, several factors interact with and influence dementia care (see Figure 1 on p. CE-3). The person domain includes the physical and cognitive levels of people with dementia as well as their attitudes, preferences, and personality before the diagnosis. Individuals with dementia may experience memory loss, confusion, unclear thinking, decline in problem-solving skills, loss of interest in usual activities, and behavioral symptoms (e.g., aggression, agitation, anxiety), which can affect their ability to participate in activities and overall quality of life (Torpy et al., 2004). The environment domain focuses on both the physical and social contexts. The physical environment for a long-term nursing home resident with dementia includes the physical structure of the nursing home, such as the indoor and outdoor space, including lighting, noise, placement of furniture, and outdoor resident areas (Degenholtz et al., 2006). The social environment in this context incorporates the facility policy; administrative and nursing staff; other residents in the facility; and family, caregiver, and friend support (McFadden & Lumsden, 2010). For people with dementia, the occupation domain
includes the activities provided in the nursing home, routines, and the timing and required abilities for these tasks.

The degree of overlap among the person, environment, and occupation factors reflects the ability of participation among residents with dementia. When the environment and occupation adjust to the abilities of the person, then participation is considered successful.

RELATIONSHIP BETWEEN PERSON AND ENVIRONMENT
The primary focus of research exploring the person and environment interaction has been on the physical environment. The physical environment of a nursing home includes the resident’s bedroom and bathroom, common areas, lounges, and dining rooms as well as the lighting, space, and life-enriching features in these areas (Degenholtz et al., 2006). According to Degenholtz and colleagues (2006), residents with lower levels of cognitive or functional abilities report a higher quality of life when living in an environment with life-enriching features and less noxious stimuli. As shown in the PEO Model, the environment is able to promote the person’s functional and cognitive skills, and allow the individual to adapt to their health declines. This is reflective of Mrs. Jones’ case example, where the OT recommended changes to her environment to accommodate her visual impairment.

Research has evaluated the effect of physical environment modifications on the negative behavioral symptoms among individuals with dementia, specifically symptoms of agitation, aggression, and anxiety (Maseda et al., 2014; Milev et al., 2008). Intervention approaches include altering the appearance of a typical nursing home to create multiple small-scale and home-like facilities and creating multisensory stimulation environments, which were found to improve the quality of life for residents (Maseda et al., 2014; Milev et al., 2008; Verbeek et al., 2009). Implementing a multisensory stimulation environment increased activity engagement and improved behavior and mood for residents in nursing homes (Maseda et al., 2014; Milev et al., 2008). The multisensory stimulation environment can adjust to the preferences and the abilities of the individual to reflect the person–environment interaction.

Research has also demonstrated improvement in client outcomes when the social environment is modified to support individuals with dementia. When equipped with the knowledge to understand dementia symptoms, the progression of the disease, and the cause of negative behaviors, nursing staff were
able to implement behavioral management programs to provide better care for the residents and reduce behavioral symptoms (DeYoung et al., 2002; Galik et al., 2008). The person–environment interaction between the nursing staff and the individual’s health status ameliorated some of the negative effects of dementia.

For residents with dementia, their family and caregivers are also an integral component of the social environment. Having contact and meaningful engagement with family can contribute to the psychosocial well-being of residents, even those with limited cognitive abilities (Bauer & Nay, 2003). To maintain the relationship between the resident and their family, one study incorporated family participation into the activity program at the nursing home (Cochran et al., 2001). Family and significant others were invited to attend certain activity programs, which were found to increase engagement and interaction among the resident, family members, and staff.

Research on the relationship between the person and environment has shown that the environment encompasses different factors (physical and social). The different components that make up the environment can influence the person’s abilities and functional level. When the environment is adapted to meet the needs of the person, it can improve participation among residents with dementia.

**THE RELATIONSHIP BETWEEN PERSON AND OCCUPATION**

The person–occupation relationship examines how the activity affects the individual with dementia. Residents with dementia usually prefer activities that address their psychological and social needs (Harmer & Orrell, 2008). However, inactivity and lack of interest in activities is common among residents with dementia (Altus et al., 2002). In addition, as the condition progresses, cognitive and functional ability declines; this can reduce engagement in activities and lower quality of life (McDonald et al., 2010). Many of the activities that are offered in nursing homes are inappropriate, and residents do not find them meaningful, which is a key component for quality of life (Harmer & Orrell, 2008). Using the person–occupation interaction, activities can be designed based on the individual’s personal preferences and abilities, to increase engagement.

Engagement can be achieved when activities are modified to accommodate the residents’ cognitive and functional ability, personality, and previous interests (Buettner et al., 2006; Cohen-Mansfield et al., 2006; Kolanowski et al., 2011; van der Ploeg et al., 2013). These interventions engaged residents in an individually tailored activity. Designing activities that consider the person domain of the PEO model allows for an increase in participation.

However, research is limited on the daily routines of residents in nursing homes with dementia and how the routines affect the activities they participate in. Alterations or disruptions in an individual’s daily routines can create stress that triggers behavioral symptoms, such as agitation, aggression, and wandering (Kovach, 2000). Kovach and colleagues (2004) believed arousal imbalance, defined as being awake in an arousal state for 1.5 hours or longer without any change, causes those behavioral symptoms. Lack of activity for a period of time or overstimulation results in imbalance. After observing the Mrs. Jones’ daily routines, the OT adjusted her daily activity schedule accordingly to reduce the occurrence of arousal imbalance.

Within the PEO framework, occupations take into the account the timing and frequency of the task, and how it can affect the person. If an activity is given when a resident is over-stimulated, then negative outcomes can occur, such as aggression. However, if there is a fit with the timing and frequency of the activity, then the resident will become engaged (Kovach, 2000; Kovach et al., 2004). For Mrs. Jones, understanding her routines and the best time to have meals could affect whether she engaged in eating.

**RELATIONSHIP BETWEEN ENVIRONMENT AND OCCUPATION**

Changes in the environment can be facilitators of or barriers to the outcomes of occupations. A few studies have examined the effects of environmental design on activities as occupations. Cutler and colleagues (2006) evaluated a set of nursing home facilities and found that many of the residents’ rooms and other parts of the facility were often bare. Living in facilities that cause sensory deprivation have been found to exacerbate negative behavioral symptoms, which can lower overall quality of life and cause inactivity (Cutler et al., 2006). Similarly, some facilities do not have the resources to provide quality activity programs that could improve the quality of life for residents (Kolanowski et al., 2006). When the environment is unable to provide the positive characteristics for activity participation, adjustments need to be made in the PEO model (Strong et al., 1999).

Having an environment that promotes participation can cause positive environment–occupation interaction. One intervention moved the structured activity program of a facility from an indoor program to an outdoor program (Connell et al., 2007). The purpose of this change in environment was to allow the residents to be exposed to bright light, while participating in an activity to promote participation. Mrs. Jones’ situation also illustrated this type of interaction. The plate and food lacked contrast (environment), which contributed to her lack of engagement in eating (occupation). Thus, changing the color of the plate to match her current abilities was needed.

**THE PEO INTERACTION**

The studies of dementia care in nursing homes that were reviewed focused on fragments of the PEO model. When looking at dementia care, there were no studies that implemented the entire PEO model. However, there was one study that looked at the PEO interaction when evaluating meaningful activities within nursing homes, although not specifically on residents with dementia (Green & Cooper, 2000). Twenty
nursing home matrons from different facilities in the United Kingdom were interviewed regarding their nursing home and how they facilitated meaningful activities for their residents. Framing their analysis within the PEO framework, Green and Cooper (2000) were able to recognize how the PEO interaction played a role in engagement of meaningful activities. The person focus consisted of the decline in health, increase in frailty, and preference of choosing their activities. The environment focus included the organizational level (e.g., control by the matron, creativity, resourcefulness, flexibility) and the physical level (e.g., home comforts, characteristics of the nursing home). The occupation focus consisted of the activity being individualized, varied, familiar, and broad in range. To accommodate for a decline in the residents' abilities (the person), the nursing home staff (the environment) had to be flexible and creative when designing an individualized activity (the occupation). Green and Cooper (2000) advocated for further research and using the model to encourage purposeful activities.

**FUTURE DIRECTIONS FOR DEMENTIA CARE USING THE PEO MODEL**

Areas of research still need to be evaluated within the PEO interaction for dementia care in nursing homes. Interventions have been developed that address separate components of the model. However, these interventions are not specific for the whole progression of dementia and how the PEO interaction changes as dementia progresses. As an individual reaches the advanced stages of dementia, their functional and cognitive abilities decline further and they are generally bedridden, with sensory deprivation and complete dependence on care (Lussier et al., 2011). The environment and occupation would have to adapt to the changes in the person, and research should examine whether these interactions can exist when the abilities of the person have become even more limited.

Additionally, within the nursing home setting, more research is needed to examine the interplay of the social environment and the person and occupation components. Limited studies were found on the organizational level and specifically how the nursing home organization interacted with residents with dementia and their participation in activities. With the CMS (2013) initiative to provide quality dementia care, it is important to evaluate how the higher organizational environments (e.g., federal policies) affect the other factors of the PEO model.

**CONCLUSION**

Occupational therapy practitioners can use the PEO model to provide client-centered care and engage individuals residing in nursing homes. By understanding the PEO interaction for persons with dementia, occupational therapy practitioners are better able to provide high-quality care. Practitioners can also use the PEO model to evaluate innovative approaches to caring for residents with dementia in nursing homes.

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**REFERENCES**


Final Exam

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May 2018

To receive CE credit, exam must be completed by May 31, 2020

Learning Level: Intermediate

Target Audience: Occupational Therapists and Occupational Therapy Assistants

Content Focus: OT Process: Intervention

1. Client-centered dementia care allows the individual with dementia to have all of the following except:
   - A. Personal worth
   - B. Decision-making opportunities
   - C. Access to health care
   - D. Independence

2. What are the components of the Person–Environment–Occupation (PEO) model?
   - A. Person, environment, and organization
   - B. Person, environment, and occupation
   - C. Policy, environment, and organization
   - D. Public spaces, extrinsic factors, and occupation

3. All the following from the Mrs. Jones case example are examples of the “person” in the PEO model except:
   - A. Having visual impairment
   - B. Having dementia
   - C. Living in a nursing home
   - D. Expressing negative behavioral symptoms
4. A good fit between the person, environment, and occupation:
   - A. Promotes participation
   - B. Increases social support
   - C. Improves cognition
   - D. Decreases risk for falls

5. All the following make up the environment domain of the PEO model except:
   - A. Nursing staff
   - B. Dining room
   - C. Facility policy
   - D. Eating meals

6. Research has shown that the following type of environmental modification can reduce negative behavioral symptoms:
   - A. Having a multisensory stimulation room
   - B. Placing residents in the dining room
   - C. Having multiple certified nursing assistants attend to the resident
   - D. None of the above

7. Which of the following statements best describes the person–environment relationship?
   - A. The environment has no effect on a resident’s function or cognitive abilities
   - B. Only the social environment can reduce negative behavioral symptoms
   - C. Different components of the environment can influence a person’s abilities and functional levels
   - D. The physical environment affects a person’s cognition

8. Residents with dementia usually prefer activities that:
   - A. Are physical exercises
   - B. Address their psychological and social needs
   - C. Are provided in a group program
   - D. Affect their daily routines

9. Engagement in nursing homes can be achieved when activities are modified to accommodate the activities to all the following resident characteristics except:
   - A. Cognitive ability
   - B. Past experiences
   - C. Personality
   - D. Social support

10. What environmental intervention was shown to have a positive effect on engagement in an occupation in the environment and occupation relationship?
    - A. Having an activity program outdoors instead of indoors
    - B. Providing exercises in a larger activity room
    - C. Dimming the lights in the activity room
    - D. Hiring a new activity provider

11. Which of the following are barriers in the relationship between environment and occupation?
    - A. Facilities that lack resources
    - B. Having an outdoor area for activities
    - C. Using a multisensory stimulation environment
    - D. Having a larger population of residents who are cognitively impaired

12. Which recommendation made by the occupational therapist in Mrs. Jones’ case example addressed the environment?
    - A. Changing the color of the plate at meal times
    - B. Encouraging Mrs. Jones to eat with other residents
    - C. Having Mrs. Jones eat her meals inside her room so as not to disrupt the other residents
    - D. Changing the food that was made for Mrs. Jones

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