JOURNAL OF
NURSING SCHOLARSHIP

VOLUME 49 ISSUE 1 JANUARY 2017

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The Official Publication of the Honor Society of Nursing, Sigma Theta Tau International

WILEY Blackwell

JOURNAL OF NURSING SCHOLARSHIP

GUEST EDITORIAL

Challenges in Research and Practice in Residential Long-Term Care

As the number of care-dependent older people is projected to grow drastically, the number of individuals depending on long-term care services will increase significantly over the next 50 years, while the number of informal caregivers and healthcare professionals is decreasing (European Commission, Economic Policy Committee, 2012). One of the key challenges for healthcare systems therefore is to develop and implement effective long-term care programs that provide person-centered, efficient, safe, and sustainable care and living environments, as well as a corresponding work environment for healthcare workers. Although the majority of care-dependent older people are cared for in their own homes, about one fifth receive care in residential care facilities (Colombo, Llena-Nozal, Mercier, & Tjadens, 2011). Future long-term residential care needs to be able to adapt to older people's needs rather than coerce older people to adapt to the system. Moreover, long-term residential care cannot do without combining both health and social care, putting the evidence into practice to support older persons' best possible quality of life.

While many initiatives and innovations have been launched and tested to optimize long-term care in recent years (Leichsenring, Billings, & Nies, 2013), four major challenges remain to ensure that healthcare workers are able to provide the best possible care at all times in safe and positive work environments. In tackling each of these challenges, residents' well-being should be kept on the forefront, focusing on residents' capacities, personal preferences, interpersonal relationships, involvement, and social needs.

First, despite the great number of initiatives taken to improve long-term care, the actual implementation of evidence-based long-term care models has been scarce. The INTERLINKS research initiative listing European long-term care projects illustrated which elements have to be in place to construct an integrated long-term care system. However, from the 59 identified projects, only 8 had undergone a systematic mixed-method evaluation of processes and outcomes. Half of the project had no, minimal, or uncompleted evaluations and therefore failed to truly impact clinical practice and health policy, because the interventions aspects having the most or no impact could not be identified (Leichsenring et al., 2013). Successful implementation of effective and sustainable interventions in long-term care requires a systematic approach. Implementation research, which is intended to aid our understanding of what, why, and how interventions work in the real world setting, is therefore what is truly and urgently needed (Peters, Adam, Alonge, Ageypong, & Tran, 2013).

Second, person-centered outcomes, such as improving quality of life or strengthening partnerships between resident and healthcare providers on the one hand, and system outcomes, such as reducing avoidable hospitalizations or costs on the other hand, should be equally important in evaluating the effectiveness of new models of long-term care. This is in line with the Institute for Healthcare Improvement triple aim of improving patient's experience of care and health while reducing costs (Berwick, Nolan, & Whittington, 2008). Ideally, the long-term care environment strives to create a living environment mirroring home as much as possible, while strengthening the residents and their relatives as active and empowered service users and not as passive recipients of care (Wagner, Austin, Davis, Hindmarsh, Schaefer, & Bonomi, 2001). Moreover, the development of new models should also address the building of supportive work environments for healthcare professionals that provide the basis to achieve excellence in care.

Third, optimal coordination of care and well-founded care transitions between long-term care settings and healthcare providers are pivotal. Although multiple healthcare professions are involved in the care of older people, nurses are in a key position to ensure continuity of care. As members of the healthcare team, they assume the roles of coordinator, case manager, clinician, counsellor, communicator, and educator (Canadian Nurses Association, 2013). Nurses promote patient health outcomes, provide staff training and support, and reduce pressure on acute care services. However, to be able to take up these crucial roles, advanced education and training of nurses are needed. It has been shown that advance practice nurses provide a high quality of care and manage chronic diseases either as well as or better than physicians, leading to system-level benefits, such as fewer emergency department visits, fewer hospitalizations, and lower treatments costs (Bakerjian, 2008). So with an increasing number of (older) people with chronic diseases, the role of advanced practice nurses in preventive care programs and provision of higher levels of care with complex care needs will gain importance. Despite the clear beneficial impact of advanced practice nurse positions in the care of older people, large investments are needed on policy and organizational levels to establish and consolidate these positions. In the United States, for example, there are still no federal requirements of staffing of care in assisted living facilities, and most of the care is provided by unlicensed and untrained workers (Han, Trinkoff, Storr, Lerner, & Yang, 2017).

The fourth challenge concerns evidence-based policy to prepare and guide future evolutions in long-term care. Local governments should develop strategies for evidence-based capacity planning in order to pro-actively introduce healthcare systems that better meet the health and social needs of care-dependent individuals. This includes both long-term residential care as well as programs for those who can be supported in their own homes with home health care, or in supportive housing, assisted living residential care, or small-scale living. Preferably, strategies enhance home-service models to maximize capacity and to support older adults living in the community longer, but long-term residential care could also expand their services to short-term stays and day programs. There is a huge opportunity for residential long-term care to reposition itself from "the last stage in the care and living trajectory" to "community-care hubs providing community-oriented services to further assist local residents to age in place" (Sinha, 2012).

In this special section, six innovative programs in residential long-term care are presented, including traditional nursing homes (Adams, Verbeek, & Zwakhalen, 2017; Harrison, & Frampton, 2017; Hutchinson et al., 2017; Østensen, Gjevjon, Øderud, & Moen, 2017), small-scale nursing homes (Adams et al., 2017), assisted living facilities (Han et al., 2017; Østensen et al., 2017), and an integrated model of care (Cook et al., 2017). In these six studies, innovations in residential long-term care are described or evaluated on a variety of outcomes representing the perspectives of residents (Cook et al., 2017; Han et al., 2017; Harrison et al., 2017; Hutchinson et al., 2017; Østensen et al., 2017), relatives (Hutchinson et al., 2017), staff (Adams et al., 2017; Cook et al., 2017; Han et al., 2017), and volunteers (Østensen et al., 2017), going in the right direction to meet the aforementioned challenges in long-term care. It should inspire healthcare workers, healthcare organizations, policymakers, and researchers to further invest in the systematic evaluation and implementation of effective and sustainable long-term care models in order to improve outcomes for all stakeholders involved.

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NEW MODELS OF CARE IN RESIDENTIAL LONG-TERM CARE

Resident-Centered Care in 10 U.S. Nursing Homes: Residents' Perspectives

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Key words
Case report, gerontology, long-term care, qualitative research, quality improvement

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Accepted July 11, 2016

doi: 10.1111/jnu.12247

Abstract

Purpose: With increased focus on resident-centered care (RCC) as an organizational imperative and a guiding principle of culture change for long-term care communities, evaluation of its success has centered primarily on the organizational perspective.

Methods: For this case report, we examine resident perspectives of RCC in 10 nursing homes across the United States that had adopted RCC as a philosophy and model of care for at least 12 months with a maximum engagement of 3 years using a phenomenological approach.

Findings: Qualitative findings from 20 focus groups with residents in 10 nursing homes suggest that RCC has meaning in ways that are consistent with intentions at the national and state levels to advance culture change in nursing homes, including efforts to create a more homelike environment, increase resident decision making and direction of his or her lifestyle, and put residents first.

Clinical Relevance: Residents attribute increased choice in wake and bed times, being heard by organizational leaders, and consistent staff assignment as positive changes since RCC began. However, according to residents, aspects of institutional life in nursing homes, inconsistent with RCC, remain. Residents identified three areas of improvement that would make nursing homes more resident centered. The three areas are response time, access to nature, and transparency about illness and death in the community.

"No one wants to grow up and live in a nursing home," explained a resident, age 89, that was interviewed as part of this project. That is likely because nursing homes have long been viewed as institutions in which residents' lives are medicalized, ageism is pervasive, and an individual's power and control are given over to the institution (Frampton et al., 2010; White-Chu, Graves, Godfrey, Bonner, & Sloane, 2009). Goffman (1961) referred to such institutions as "total institutions," in which the routine activities of daily life such as eating, sleeping, personal hygiene, and recreation are formally administered by some central authority. In such total institutions one's prior identity is shed in a process whereby former roles are lost, personal property is disposed of, and it becomes virtually impossible to make choices often taken for granted in life outside the institution. In this sense, one's very notion of self is given over to the logic of institutional practices. For example, "good" or "normal" behavior becomes defined by the degree to which the individual does not interrupt organizational routines. In the last two decades there has been tremendous effort to change the culture of long-term care communities such that they look less like these descriptions of total institutions and remedy systemic problems of neglect, abuse, powerlessness, and ageism (Crandall, White, Schuldheis, & Talerico, 2007; Koren, 2010; Rahman & Schnelle, 2008; Walshe, 2001; White-Chu et al., 2009).

The "culture change" movement is a term used to refer to the social movement and respective changes that emerged out of the Nursing Home Reform Act as part of a report from the Institute of Medicine (IOM, 1986), the Omnibus Budget Reconciliation Act (OBRA, 1987), and grassroots efforts of advocacy groups to improve quality in U.S. nursing homes (Crandall et al., 2007; Frampton et al., 2010; Koren, 2010; Tobin, 2006; Walshe, 2001; Wiener, Freiman, & Brown, 2007). The principles of the culture change movement have been expressed using a variety of terms, such as person-centered, person-directed, client-centered, and resident-centered care. While there is no industry-wide consensus in how the terms are defined (Morgan & Yoder, 2012), in general, the terms refer to a collection of standards for nursing homes including a relationship-based model of care (Watson, 2007), resident direction of his or her lifestyle (including; the right to make choices in decision making about sleep, dining, and bathing), consistency in staff who support them, design of the physical space, and other elements that contribute and define quality of life on an individualized basis in the nursing home (Bangerter, Heid, Abbott, & Van Haitsma, 2016; Frampton et al., 2010; Rahman & Schnelle, 2008; Sterns, Miller, & Allen, 2010).

While the culture change movement was intended to generate a massive system overhaul of long-term care previously characterized by a culture of abuse and neglect (Niederer, 2005), and to improve the safety, experience, and value of living in a nursing home, studies of change efforts are largely inconclusive (for a review of the literature see Petriwskyj, Parker, Brown Wilson, & Gibson, 2015) and rarely include the voices of residents (White, Corazzini, Twersky, Buhr, McConnell, Weiner, & Colón-Emeric, 2012). Yet, those best able to assess changes in culture are those embedded in the culture itself: the residents of nursing homes. The purpose of this project is to describe resident perspectives of resident-centered care (RCC) in 10 U.S. nursing homes in order to highlight the meaning of the term RCC, perceived changes brought about by RCC efforts, and to uncover resident desires for further change.

Methods

Recruitment and Site Visit Protocols

Data for this project were collected as part of a larger initiative focused on understanding resident, staff, and family member perspectives of RCC in 10 U.S. nursing homes that had adopted RCC as an organizational philosophy and model of care for at least 12 months, with a maximum engagement of 3 years. In this case report, we report findings from focus groups with residents only. Because the project was deemed to be part of the individual nursing homes internal quality and process improvement efforts to understand the strengths of RCC in their nursing home, as well as identify gap areas where RCC could improve from the perspective of residents, ethical approval was determined at the site level by the nursing home administrator or other executive leadership. The data collection period spanned from February 2013 to August 2015.

Recruitment of residents for focus groups was conducted by each nursing home. Similar communication channels were used across all sites to announce the focus groups, which included posting information in the activity calendar, on fliers hung on the wall, and at dining room tables; announcements at resident council meetings; and by word of mouth. All 10 nursing homes indicated they extended an open invitation to all residents and let individuals decide whether or not they wanted to attend. Residents were not preselected based on acuity or cognitive impairment status.

Two focus group moderators attended each site visit and focus group. All were well trained in qualitative research, with additional advanced professional backgrounds in nursing, social work, sociology, gerontology, and health services research. To accommodate residents' schedules, multiple focus groups were offered at different times over a period of several days. Prior to the start of the focus group, residents were informed of the purpose of the focus group, assured anonymity by the moderators, and asked, in turn, to protect the anonymity of other residents in the group. Moderators explained that quotes from the focus groups would be used to illustrate themes that were heard across all the groups; however, pseudonyms would be used and any identifying information would be removed. Participants were reminded that their participation was voluntary and that they could stop participating at any time during the focus group.

Focus groups were scheduled for 1 hr, took place in private conference or multipurpose rooms, and were transcribed. Accommodations were made for persons with assistive needs, which ranged from removing chairs at the table to create space for persons using wheelchairs, focus group moderators using microphones to accommodate hearing needs of persons in the group, and visiting rooms of persons who preferred to speak privately or were unable to attend the focus group due to other factors such as comfort, condition, or illness. Four residents, at different nursing homes, asked to speak privately. Across all 10 nursing homes, a total of 227 residents participated in 20 focus groups (**Table 1**). The size of the focus groups varied across sites depending on the day and time. Residents consisted of men and women, with ages ranging from 52 to 101 years, who had lived in their respective nursing homes ranging from a few days to 16 years.

Table 1. Nursing Home Characteristics ($n = 10$) and Participants ($n = 227$)

Nursing home	Profit status	No. of certified beds	Total no. of focus group participants
1	Nonprofit	51	17
2	Nonprofit	122	41
3	Nonprofit	51	18
4	Nonprofit	83	27
5	Nonprofit	80	29
6	Nonprofit	54	15
7	Nonprofit	250	19
8	Nonprofit	165	21
9	For-profit	21	7
10	Nonprofit	412	33

Note. Nursing homes 1–6 operate under one parent organization. Profit status and number of beds are from Data.Medicare.gov.

To accomplish the central aim of the project, which was to describe residents' understanding and perspectives of RCC, the following sample of focus group questions were used across all sites, with additional probing when needed: "This nursing home offers resident-centered care. What does that term mean to you?" "What changes have you seen here since resident-centered care began?" "In your opinion, what could this nursing home do to be more resident-centered?" Resident-centered care was the term being used by the participating nursing homes to describe their philosophy and model of care, and therefore was the term used by focus group moderators.

Qualitative Data Analysis

Focus group data were analyzed using a phenomenological approach focused on using open-ended questions to understand residents' lived experiences and descriptions of meaning about RCC. A phenomenological approach was selected because it recognizes the individuality of lived experiences (van Manen, 1990) in that one person may interpret the same experience differently. For example, while focus group participants share the experience of living within the same nursing home that has adopted a guiding philosophy of RCC, the experiences of RCC, and its meaning, are not universal and will be as individual as the residents themselves. While some have seen that individual experience and meaning may be contaminated when collected using a group method (Webb & Kevern, 2001), others have noted focus group methodology as enhancing phenomenological research because it creates an opportunity for individuals to tell their stories in the context of a shared experience and group (Bradbury-Jones, Sambrook, & Irvine, 2009). This approach was intended to maximize the individual voices of residents while at the same time honoring the social reality of living in the same congregate living environment with some communal characteristics, experiences, and routines likely shared by residents. Transcript coding was done by hand with notations and bracketing of themes made directly on the transcripts using an iterative approach of reducing and interpreting initial themes. A process of discussion and peer review followed until consensus was achieved and any discrepancies among coders were resolved.

Findings

What Resident-Centered Care Means to Residents

Several themes emerged throughout the focus groups regarding what RCC means to residents. When asked what RCC means to them, residents often referred to the nursing home as the residents' home rather than a place of business, saying, "It means that we live here and they just work here." Another resident said:

> It means that this is our home. You have to respect people when you go into their home. You have to knock and ask to come in, not just barge in the door. It means the girls [staff members] act like they are in our home because they are.

For residents, RCC conveyed a certain power in decision making about the rhythm of their day. For example, Bob (all names used are pseudonyms), age 93, said, "[RCC] means that no one forces you to do anything. If I don't want to go to an activity, they accept it. I am not pressured. I decide what I want to do." Laura, age 98, said, "No one makes you do anything you don't want to. You only do what you want to do. It's your life." Phil, age 69, described a similar power in decision making, saying, "They ask me what time I want to get up and when I want my shower. If they come and I am not ready, I can just tell them to come back later. We do what we want to do."

In addition to RCC evoking meaning of a homelike environment and increased direction and choice over the rhythm of the day, RCC also meant to residents that they "come first." Residents commonly made statements using that phrase, for example, "To me it means that residents come first. They are here to take care of us first and foremost." "When they explained it to me, they said, 'it means we are going to put you first'."

Changes Since Resident-Centered Care Began

Choosing wake and bed times. In addition to the meaning of RCC, residents were asked about what changes they had seen in the nursing home that they would attribute to RCC. Increased decision making related to wake and bed times was a common theme among participants. Typical comments included, "No one wakes you up for breakfast anymore." "They let you sleep in now." "I used to be put to bed as soon as dinner was over, but now they ask me when I want to go to bed."

Sally, age 94, living with macular degeneration in a nursing home for the past 3 years said:

> The last time you were here, there were just rules, rules, rules. Now, we have more freedom. No one wakes me up for breakfast anymore at 5:30 a.m. because I asked them not to. They had me on the list before, I don't know why, but now I can say no. I like that.

Being heard. In addition to increased decision making around wake and bed times as a noted change since RCC began, residents also expressed the belief that their voices and opinions were now being heard in such a way as to make a difference in the community. For example, Frank, age 79, wore his Veteran ball cap to the focus group. He had lived in the nursing home for 1 year. Frank served as the President for the resident council, a volunteer position at this particular nursing home. When asked what changes he had seen since RCC began, he said:

> They listen to us more. They ask our opinions. The administrator comes to the resident council meetings. Before it was only the activity director and you wondered if our suggestions got passed on because I never really saw any changes, but now the head guy comes and the director of dining comes. I think that we are being heard and that they are taking us more seriously now.

Consistent assignment of staff. In general, residents saw RCC as having a positive impact on assignments. For example, Elizabeth, age 93, shared her positive experience with staff changes since RCC began.

> Before I used to never know who I was going to get. They call them floaters you see and they just float around the building. I like the girls who know how I like things done. Now I know who to expect. It's almost always the same girls. That was a good idea. I had this man I had never met before come in once and say it was time for my shower. I told him to turn around and march right out of here. I shouldn't have to accept a bath from a strange man just because I need help living in here. Can you imagine? That hasn't happened again, thank goodness.

This appeared to be happening to some degree in all of the nursing homes studied, and was referenced as a positive change by residents.

Resident Perspectives on Improvements to RCC

Three primary themes emerged in residents' responses to what the organization could do to be more resident centered. The opportunity areas identified by residents were: improving response time, access to nature, and transparency around illness and death in the community.

Response Time

One of the primary areas identified by residents as needing improvement was response time to calls for assistance. All 10 nursing homes had either a call light or call bell system that residents used to signal that they need assistance. Residents perceived staff response to the signals as taking longer than it should, especially to requests for assistance with toileting. For example, Mary, age 72, said:

> I rang the bell for help yesterday and it took 45 minutes for someone to come help me. When you are old and on diuretics and have to go to the bathroom, you can't wait that long. I can't get to the toilet by myself, so I rang again and then finally just had to go. When she got there, the aid was frustrated that I was wet and so was I.

Residents commonly expressed frustration over response time at change of shift.

> If you ring that bell at 2 o'clock, you can just forget about it until 4 o'clock because the new people are coming in and the old crew is leaving. The ones who are leaving don't want to get stuck helping you and be late getting off work and the ones coming on are not in the mood yet to get the bells because they think the other shift should do it. You are caught in the middle of a shift war.

Response time on weekends was also perceived by residents as an area to improve, making comments like:

> It is a ghost town here on weekends. They have the same number of residents to care for and only half the staff. I don't even bother ringing the bell on Saturday and Sunday because I won't get help. They tell you they will be right there and it takes hours.

Access to Nature

When it comes to what improvements would make the nursing home even more resident centered, the ability and frequency for residents to get outdoors was a potent theme. Upon further probing, it was not uncommon to find that some residents had not been outside, weather permitting, in months or years. “I haven’t been outside for 3 years. It makes me sad. I just stare out the window.” “If we are supposed to be able to live our lives the way we want to, then I want to go outside. I have this thing on my leg. I can’t go outside. I used to love to walk.” (The “thing” on the resident’s leg is a sensor-programmed alarm device designed to audibly alert staff if a resident crosses an exit doorway to the outside.) Residents described relying on staff or family to take them outside. For example:

> I have to ask permission to go outside and they say that they don’t have time to sit with me because they are working short. I bet I haven’t been outside all summer, except for the community barbeque. It was lovely.

The tone used by residents to express a desire to have more access to nature varied from longing to anger. Ralph, age 82, a retired fireman living with Parkinson’s disease said:

> I spend my day pacing the cage like an animal. I haven’t been outside in over 6 months because they don’t have time. They think I will run away and they will get sued. It would be cruel to keep a dog in a cage this long, but not an old man.

In general, taking residents outside was generally described as something that was done by staff in the activity department or family members during visits, rather than clinical staff in the nursing home. Some nursing homes had private enclosed gardens and outdoor areas while others did not. Even among the nursing homes with enclosed outdoor areas for residents, going outside was still a primary theme as to what could be improved.

Transparency Around Illness and Death

The third area that residents identified as needing improvement was transparency around illness and death in the community. Residents described a sense of “knowing” when someone is missing from their community as a result of hospitalization or death, but not “really knowing.” That is, residents are keenly aware when someone does not attend activities or meals due to hospitalization or the end of life, but are not officially told at all or until sometime later. “They think we don’t notice when someone has gone missing, but these people are our friends. We notice,” a resident explained. Another resident said:

We ask staff where so-and-so is and they say that they can’t tell us. It’s like some big conspiracy. We know it’s either the hospital or the funeral home. When you get this age, you have very few friends left. You know the drill when they go missing.

Seven of the ten nursing homes held quarterly memorial services for residents who passed. While residents acknowledged that the quarterly memorial services were helpful, the lack of conversation and immediacy left them suffering in the interim. Residents described grieving in private and having no formal check-in with staff about their ability to cope.

> I really like the quarterly memorial service. It makes me feel good because I like to think that people will gather to remember me when I go, but it is not enough. Unless you are really depressed and they call a social worker, you are pretty much on your own to grieve. I cried for days about this man that sat at my dining room table because he was so nice and he died. No one asked me if I was ok or said anything to us at the table. They had a new person sit there the next day.

Residents also cited a desire by staff to protect them from bad news as one of the common explanations for the lack of transparency about death and illness. As one resident said, “I think they are trying to protect us. They want to pretend like nothing bad has happened because they don’t want to hurt our feelings or scare us. But, we know what is next. We deserve the truth.”

Summary of Findings

Among the residents we spoke with, RCC had meaning in ways that are consistent with intentions at the national and state levels regarding culture change in nursing homes, which include efforts to creating a more homelike environment, increase resident decision making and direction of his or her lifestyle, and putting residents first, a commonly used phrase in the culture change movement. Residents reported positive changes in nursing homes since RCC began in the areas of choosing wake and bed times, being heard by organizational leaders, and consistent staff assignment.

Despite these efforts, according to residents in this project, aspects of institutional life in nursing homes, inconsistent with RCC, remain. Residents identified three areas of improvement that would make nursing homes more resident centered. The three areas are response time, access to nature, and transparency about illness and death in the community.

Discussion and Future Directions

Overall, our findings contribute to a growing body of work which suggests that RCC has meaning to nursing home residents and that while residents attribute positive changes to RCC in their lived experience, they are also able to describe areas in which the principles of RCC are unfulfilled. With the increased emphasis on RCC in U.S. nursing homes, the persons ablest to inform our understanding of RCC in nursing homes are the residents who live there, yet very few studies and industry tools on culture change engage residents as qualified assessors of RCC (White et al., 2012). For example, one of the most widely adopted quantitative assessment tools of nursing home culture change is a 79-item self-assessment tool known as the Artifacts of Culture Change Tool (Centers for Medicare & Medicade Services [CMS], n.d.). Funded by the CMS and, later, the Commonwealth Fund, the Artifacts of Culture Change Tool generates a score for nursing homes to benchmark their progress on the degree to which aspects of culture change principles are in place (Bowman & Schoeneman, 2006; CMS, n.d.; White-Chu et al., 2009) As White et al. (2012) pointed out, the assessment tool, which is supported by agencies and policies at the federal, state, and coalition levels, has not been evaluated by residents to ensure that the tool is assessing nursing homes on what matters most to the people who live there. In this project, of the three areas that residents perceive as positive changes since RCC began in their nursing home—choosing wake and bed times, being heard by organizational leaders, and consistent staff assignment—all three are identified as elements in the Artifacts of Culture Change Tool (CMS, n.d.). This finding suggests some shared level of meaning between residents and federal, state, and coalition groups that endorse the tool. Facility-level scores calculated using the Artifacts Tool were not collected as part of this project; however, future efforts should explore the relationship between residents' qualitative assessments of RCC and organizational benchmarks using the Tool.

Residents identified response time to call bells and lights as a systematic problem that needs improvement in order for nursing homes to be more resident centered. Response time to toileting needs and general responsiveness at change of shift and on weekends were viewed as poor by residents. Previous descriptions on the impact of staff responsiveness to toileting needs of older persons in a variety of settings has been shown to impact dignity, privacy, and be influenced by staffing levels (Anonymous, 2012). Response time to calls for assistance is not currently included in the Artifacts of Culture Change Tool (CMS, n.d.); however, with its wide adoption in the long-term care industry, future revisions to the tool could include standards for response time as an indicator of culture change as a method for improving lingering effects of institutionalization for residents in nursing homes.

Based on their understanding of RCC, residents identified access to nature as an area to improve. Residents described depending on staff and family for limited outdoor experiences, which they describe as important to their quality of life. Despite increasing research and resources to support design of outdoor spaces and access to nature for older adults living in nursing homes, access to nature has gotten little attention in the culture change movement relative to other areas (Bengtsson & Carlsson, 2006). The Artifacts of Culture Change Tool does assess whether outdoor spaces exist for resident use for which a nursing home scores points, but not the frequency of meaningful use of that space by residents. Future revisions of the self-assessment tool should consider measures of frequency in real access to nature, not just availability. Not only did residents identify lacking access to nature as having a negative impact on their quality of life, but lack of natural sunlight likely influences other health outcomes for residents, such as vitamin D deficiency (Yenupotula & Zirker, 2008) and depression (Morley, 2010), conditions that are well documented among older adults living in nursing homes.

The final area that residents identified as needing to improve was transparency about death and illness in the community. The Artifacts of Culture Change Tool provides direction to nursing homes on how to honor life events of residents, such as celebrating a resident's birthday on the actual day rather than just a monthly or quarterly party and memorializing residents who pass on an individual basis upon death as practices to de-institutionalize life in long-term care communities (Pioneer Network, 2015). The premise is that outside of an institution, that is, in our homes, we do not memorialize friends and family who have passed away on a quarterly time frame. We generally honor or memorialize others within a few days of their passing. Friends are notified. Families are supported. We honor people's unique lives individually and in a timely fashion. Findings from this project suggest the need for more tools and direction regarding memorialization of residents as resources for nursing homes. The dynamics of hosting an individual birthday party is much less complicated than hosting a memorial for a resident that has passed. The intersection of privacy, ageism, family dynamics, grief, loss, religion, a desire to protect other residents from bad news, and comfort level of staff members in acknowledging death to residents living in, what is often, their last home is a complex endeavor that requires additional education and training resources in applied practice and ethics. Additionally, in modern society, the reliance on third party vendors and experts to mediate the bereavement process, including memorialization or funerals for friends and family, limit the knowledge and skills that nursing home staff must have to perform this role effectively (Harrison & Ryan, 2012). Therefore, more support for nursing homes in this area is needed.

As a second common explanation, residents described staff as citing Health Insurance Portability and Accountability Act of 1996 (HIPAA) privacy rules (Department of Health and Human Services [HHS], n.d.) as a barrier to sharing information about illness and death. This finding reflects an increased need for clarification and subsequent education around HIPAA for nursing home staff as to what is actually permitted by law. For example, revisions to HIPAA in 2013 extended privacy protection to refrain from identifying health information for 50 years after a person dies, while also granting some discretion to providers regarding the sharing of some information about deceased persons, "unless doing so is inconsistent with any prior expressed preference of the individual" (HHS, n.d., p.1). The degree to which nursing homes interpreted this rule and how it influenced their willingness and comfort level to inform peers about illness and death of other residents in the community varied. Three of the 10 nursing homes had residents and family members sign a type of waiver granting staff permission to share information that a resident was hospitalized. These same communities had a public collection area for cards and letters to hospitalized residents, which residents seemed to enjoy.

Limitations

Culture change is a process, not an event. While all nursing homes were in the process of implementing RCC, each home was unique in the degree and kind of changes being made and at the single point in time in which focus group data were collected. Across sites, themes were consistent despite this variance in implementation. Six of the nursing homes were part of the same parent organization, which could impact how RCC is implemented and the ways in which the meaning of RCC for residents is constructed. Additional limitations of this project include the potential bias of our sample in that all participating nursing homes were actively implementing RCC initiatives and may have been more vested in communicating its importance to residents, making them more informed and able to speak about what RCC is than residents in other nursing homes. Additionally, the adoption of RCC by the nursing homes in which participants live could also create different expectations of RCC compared to residents living in nursing homes that have not adopted RCC.

An additional limitation is that all residents in the community were invited to the focus group regardless of the length of time they had lived in the nursing home, which means that some residents were more likely to have seen changes due to RCC than others. The perspective of residents may have been influenced by the duration of time they had lived in the nursing home. Residents were asked how long they had lived at the nursing home as part of general welcoming and introductions at the start of the focus groups; however, detailed information about how long each individual resident had lived at the nursing home prior to the start of RCC and since RCC began was not specifically collected because it would have required moderators to identify focus group participants to staff or ask residents to recall and calculate the information. Finally, because sites announced the focus groups to all residents, residents with cognitive impairment were not excluded from participating, but were also not identified by a formal diagnosis to focus group moderators by the nursing homes. Residents, who were able, arrived to the multipurpose room on their own or were assisted with transportation by staff members. As such, moderators were not able to identify participants by the area of the nursing home in which they lived, for example, a memory care unit. It is the subjective assessment of the moderators that all residents who chose to attend a focus group had decision-making capacity. Because the data analysis focused on aggregating resident comments into common themes, comments that were off topic or uninterpretable were outliers and, by definition, did not enter into the aggregated themes.

Conclusions

As a quality improvement initiative that emerged from the regulation that nursing homes "attain and maintain [residents'] highest practicable physical, mental, and psychosocial well-being" (OBRA, 1987) there is opportunity to conduct longitudinal qualitative research on how that standard is interpreted by future cohorts of nursing home residents, as well as whether resident perspectives of and experiences with RCC change over time. As a model to maximize self-determination and well-being (Koren, 2010; Zimmerman, Shier, & Saliba, 2014), the areas of improvement to RCC mentioned by residents are those in which those elements are lacking. Qualitative health services research is an important tool for gathering resident perspectives of RCC, changes in their lived experience since RCC was adopted by the nursing home, and identifying gaps in areas where the spirit and intention of RCC as part of a deep and systemic culture change is not yet fulfilled.

Clinical Resources

- Leading Age: http://www.leadingage.org/
- The Long-Term Care Improvement Guide: www.residentcenteredcare.org
- The Pioneer Network: www.pioneernetwork.net

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JOURNAL OF NURSING SCHOLARSHIP

NEW MODELS OF CARE IN RESIDENTIAL LONG-TERM CARE

Integrated Working for Enhanced Health Care in English Nursing Homes

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Key words
Enhanced health care, integrated working, nursing home

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Accepted October 2, 2016

doi: 10.1111/jnu.12261

Abstract

Background: The increasingly complex nature of care home residents' health status means that this population requires significant multidisciplinary team input from health services. To address this, a multisector and multiprofessional enhanced healthcare programme was implemented in nursing homes across Gateshead Council in Northern England.
Study Aims: To explore the views and experiences of practitioners, social care officers, and carers involved in the enhanced health care in care home programme, in order to develop understanding of the service delivery model and associated workforce needs for the provision of health care to older residents.
Methods: A qualitative constructivist methodology was adopted. The study had two stages. Stage 1 explored the experiences of the programme enhanced healthcare workforce through group, dyad, and individual interviews with 45 participants. Stage 2 involved two workshops with 28 participants to develop Stage 1 findings (data were collected during February–March 2016). Thematic and content analysis were applied.
Findings: The enhanced healthcare programme provides a whole system approach to the delivery of proactive and responsive care for nursing home residents. The service model enables information exchange across organizational and professional boundaries that support effective decision making and problem solving.
Clinical Relevance: Understanding of the processes and outcomes of a model of integrated health care between public and independent sector care home services for older people.

Since the early 1980s, the independent residential and nursing home sector (collectively known as care homes) in the United Kingdom (UK) has become a major provider of long-term care for older people. Approximately 426,000 people live in these care facilities, of which 405,000 are 65 years of age and older. The number of care home residents has remained relatively stable since 2001, in spite of an 11% increase in the overall U.K. population of this age group (LaingBuisson, 2014). Gordon, Franklin, Bradshaw, Logan, and Elliott (2014) proposed that this is primarily because older people with chronic illnesses are now more likely to remain in their own homes longer, only relocating to a care home setting if and when their conditions become more complex or acute.

Residential and nursing homes in the UK are categorized by the types of care provided. Residents undergo needs assessments to determine which category of placement will offer the most appropriate care to match their needs. Nursing homes employ registered nurses to manage the care of residents with complex healthcare requirements and severe disabilities, and care assistants to deliver personal care support. The purpose of residential homes is the provision of personal care support, so only care assistant staff are employed. Any nursing care required in residential homes is provided by community nursing services. In both settings, medical care is provided by general practitioners (GPs), with referral to specialist services including community geriatrician and old age psychiatric specialists.

Studies investigating the health status of this population have found that admissions are driven by a combination of multiple morbidity, frailty, sensory impairment, and functional decline (Bowman, Whistler, & Ellerby, 2004; Gordon et al., 2014; Moore & Hanratty, 2013). For example, Gordon et al. (2014) found that the mean number of morbidities for care home residents is 5.5, and 75% of residents have some level of cognitive impairment. Gordon et al. (2014) concluded that "complex multi-morbidity is a defining feature" of this population (p. 101).

Hence, residents require significant multidisciplinary team input to support the maximization of health and quality of life. Access to healthcare professionals is known to be problematic for this population in the UK. A number of inquiries indicate that the provision of allied health professional support is variable in accessibility (Care Quality Commission, 2011; Fletcher-Smith, Drummond, Sackley, Moody, & Walker, 2014; Levin, Cardosa, Hoppitt, & Sackley, 2009). Levin et al.'s (2009) cross-sectional postal survey of 121 care homes (with 95% response rate) indicated that most homes had access to a physiotherapist, chiropodist, optician, and hearing services. Yet less than half reported access to an occupational therapist, speech and language therapist, or dietician services. Funding and complex referral mechanisms were key factors that restricted access to services that are routinely available to people in other settings. Also, while most care homes are able to access specialist nurses reactively, few homes have access to proactive input from specialists to prevent problems arising in the first place (Kinley et al., 2014; Robbins, Gordon, Dyas, Logan, & Gladman, 2013).

In addition, reports have consistently highlighted that care home residents unable to attend GP practices struggle to access regular medical and medication reviews, as GP visits to care homes tend to provide a reactive service that involves limited care planning (British Geriatric Society [BGS], 2011). In response, the Royal College of General Practitioners and Royal College of Physicians (2016) has suggested that care homes should have dedicated GPs responsible for provision of medical services to their residents. Alldred et al. (2010), later supported by the Royal Pharmaceutical Society (2016), proposed that having these "link GPs" will also address polypharmacy-related issues and unacceptable levels of medication errors.

The quality of care that residents receive in care homes affects the whole health economy. For example, Smith, Sherlaw-Johnson, Ariti, and Barsley (2015) identified in their analysis of hospital admissions that care home residents 75 years of age and older have 40% to 50% more emergency admissions and accident and emergency attendances than the general population of the same age. Smith et al. suggested that without consistent, high-quality medical care within the care home setting, the resident population will increasingly contribute to pressure across all health sectors. Acknowledging this, National Health Service (NHS) England (2014) promoted partnership working between the NHS, care home providers, and local authority social service departments with the aim of developing shared models of care providing holistic clinical reviews, medication reviews, and rehabilitation services for care home residents. This article reports on one such shared model of care.

Enhanced Health Care in Nursing Homes Programme

In the study location, the Gateshead care home programme (referred to as the enhanced healthcare programme) has been in operation for 5 years. It provides enhanced health care in care homes (with nursing beds) through multisector and multiprofessional working. This programme involves aligning both GP practices and older people nurse specialists (OPNS) to care homes with nursing beds. GPs are paid via an enhanced service and the OPNS are employed by the Community Services Provider. These services have direct access to a multidisciplinary community virtual ward and the wider health economy. The aim of this study was to explore the views and experiences of practitioners, social care officers, and carers who have been involved in the enhanced healthcare programme, in order to develop understanding of the service delivery model and workforce needs for the provision of health care to older residents living in nursing care homes.

Methods

To explore stakeholder views and experiences of the enhanced healthcare programme, a qualitative methodology was adopted within a constructivist paradigm. We felt explorations of shared meanings and understandings within professional and organizational contexts reflected the view "that all knowledge, and therefore all meaningful reality as such, is contingent upon human practices, being constructed in and out of interaction between human beings and their world, and developed and transmitted within an essentially social context" (Crotty, 1998, p. 42). The study design had two stages. Stage 1 was an exploration of the experiences of the workforce who have delivered services within the care home programme during the previous 5 years. Stage 2 involved workshops to disseminate preliminary findings from the Stage 1 interviews, and provide an opportunity for participants to contribute their views on the service model and workforce needs. Approval to undertake this study was granted by the Department of Healthcare, ethics committee, Northumbria University.

Settings and Participants

Stage 1. In Gateshead Council there are 16 care homes with nursing beds. All the nursing homes met the following criteria:

- Care home with nursing beds
- Involvement in the enhanced healthcare programme for at least 4 years
- Referrals to specialist community services and patient safety concerns (2015 data)

It was not possible to hold interviews with staff in each home due to limitations in the project time scale. Therefore, to optimize sample diversity, a sampling matrix with the following criteria was utilized for the selection of 5 of the 16 care homes: small/large home; least/most referral to specialist community services; least/most safety concerns. This approach ensured that data were collected from a range of care environments and staff with varied experiences. Within each care home site, all care staff and management were invited to take part, and those available participated. NHS and local authority sector professionals with involvement in the enhanced healthcare programme were identified by service managers and were also invited to take part (see participant details in **Table 1**). Information explaining the study was made available via service managers to all interested parties, and written informed consent was collected at each interview.

Stage 2. Invitations to take part in the workshops were distributed by the enhanced healthcare programme team and the Northumbria University research team. Both workshops were multiprofessional. Two events were held, with 11 and 17 practitioners, managers, and carers from older peoples' services in the Gateshead (5 participants had also taken part in Stage 1).

Data Collection

Stage 1 data collection featured two strands: eight pair or group interviews and two individual interviews. The use of different forms of data collection ensured that individuals working in very small teams could participate while not detracting from resident care, and maintained a unidisciplinary approach to data collection. This facilitated greater openness and allowed for cocreated understandings to be explored during discussions. The interviews provided an opportunity for participants to give in-depth descriptions of their experiences of the delivery of care within the enhanced healthcare programme. Across all types of interviews, participants were invited to explore their own experiences of delivering care within the enhanced healthcare programme; the knowledge, skills, and competencies required to deliver this care; their views on their workforce development needs; and the barriers they faced in everyday practice. Data and findings from Stage 1 were then discussed within two workshops during Stage 2 of data collection. At these events, participants were encouraged to record their views on Post-it notes as discussions progressed. All data were collected between February and March 2016.

Data Analysis

Stage 1 audio-recorded data were transcribed verbatim and open coded by individual members of the research team. This allowed elucidation and description of participants' experiences of the Gateshead care home programme, whilst creating meaningful themes (Braun & Clarke, 2006). Randomly selected transcripts were independently coded by another team member, and the outcomes were compared with the original coding to validate findings. Following this, analyses from group interviews were then triangulated with dyad and individual interviews to explore how teams or individuals in different services worked together in the enhanced healthcare programme and how this affected care of residents and outcomes. Rigor was built into the data analysis process via discussing emerging preliminary findings with workshop participants. The individual views that were recorded on Post-it notes and summary points made by the workshop facilitators were transcribed in preparation for

Table 1. Demographic and Role Details of Interview Participants

	Gender		Age (years)						Length in current role (years)				
	Male	Female	20–29	30–39	40–49	50–59	60–69	Role	<1	1–5	6–10	11–20	20+
Care home staff (*n*= 11)	1	10	1	4	5	1	0	2 × manager, 2 × deputy manager, 1 × clinical lead, 1 × staff nurse, 2 × senior carer, 3 × care assistant	0	9	1	1	0
NHS staff (*n* = 27)	4	23	0	6	11	10	0	18 × nurses, 4 × GPs, 2 × consultants, 1 × therapist, 2 × managers	5	9	4	5	4
Social services staff (*n* = 7)	2	5	0	0	4	2	1	4 × assessing officer, 2 × social workers (adult), 1 × social worker (mental health)	0	0	2	3	2

Note. NHS = National Health Service; GP, general practitioner.

analysis. Content analysis was used to systematically capture the themes and main ideas expressed during the Stage 2 workshop discussions (Mayring, 2000).

Findings

The participants were keen to share their experiences and views of working in, and with, care homes. The presentation of the findings commences with a discussion of the participants' views that the resident population of contemporary nursing homes has extremely complex health problems that are challenging to even the most experienced practitioners. They highlighted the importance of "working together" across NHS and care home organizations to provide high-quality and dignified care for older vulnerable, ill, and frail individuals. This is followed by an explication of the service delivery model of the enhanced healthcare programme. This programme is a whole system that enables practitioners to share information and knowledge, problem solve, and deliver care as a multidisciplinary team. The final section presents the participants' views of workforce competencies required for responsive health care in care homes.

Older People With Complex Health and Personal Needs

Participants' discussions of care home residents focused on the complexity and multifaceted nature of residents' needs. Many suggested that the care home population is the most frail, complex and dependent of all our patients. Some participants proposed that caring for residents with such complex comorbidities poses a challenge for health and social care professionals and support workers, who are at times required to manage residents conflicting needs:

> We're looking after people with so many multiple needs that you've got to weigh up all together all the time. That we can't treat people by the exact National Institute for Clinical Excellence (NICE) standards for blood pressure and NICE standards for this, because they all conflict with each other and there's residents with 26 conditions, and you've got 92 problems and 43 medications. (NHS)

Participants proposed that care home residents have increasingly acute care needs, due to initiatives to support people to remain at home in order to avoid or delay admission to care homes and initiatives to reduce both hospital admissions and long hospital stays from care homes. While they acknowledged that achieving these objectives is desirable for older people, and for economic considerations, some felt that, consequently, care homes are providing more intense healthcare interventions:

> We start and think about being able to deliver more hospital-type things in that setting … to let residents stay in their own homes. (NHS)

> And they're getting sent home from hospital… . They'll give them a quick course of IVs, antibiotics, and then they send them home within 2 days … but they've still got pneumonia. (care home participant [CH])

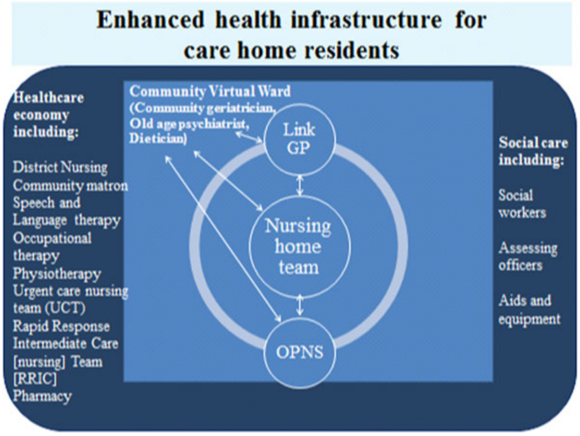

Figure 1. Diagrammatic representation of Gateshead care home enhanced healthcare infrastructure developed through dialogue with the study participants.
Note. GP = general practitioner; OPNS = older people nurse specialist.

Participants suggested that the care home population includes an increasing number of "transient" residents, for example, residents admitted from their own home because they require respite care, functional assessment, or intermediate care, or residents transferred from hospital requiring intermediate care or rehabilitation services:

> [They are] accessed as pressure placement beds, which is essentially a nursing bed in a private care home—step up. She didn't want to go back into hospital. This was local to her family, local to her GP surgery . . . we've got people transiently going in and out of nursing home areas . . . people that are so complex. (NHS)

Many participants felt that because of the increasingly complex and acute needs of older residents it should be acknowledged that this population requires specialist skills and expertise from multidisciplinary teams: "These are specialist care areas. Because you know, you need a lot of skills to do that" (NHS).

A Whole System Approach to Delivering Health Services in Care Homes Enhanced Healthcare Programme Service Delivery Model

Participants' discussions of their experiences of the enhanced healthcare programme informed the development of a diagrammatic representation of the service delivery model (**Figure 1**). Each care home's link GP completes weekly visits to review residents. Each care home also has a designated OPNS who visits two or three times per week, including participation in the weekly GP review. The regular meetings between the care home staff, GP, and OPNS were viewed as an effective vehicle for these professionals to "get to know each other," to "know how everyone works," and to "understand the other person's perspective and their working practices." In situations where participants indicated that this way of working was effective, it was suggested that "everyone worked together to provide the best care for the older person."

The regular meetings provided opportunities for continuous review of a resident's physical and mental health status, and assessment of the effectiveness of the care plan:

> Little things, like, if they're not taking their medication—you're not going to ring the GP up every time . . . "Oh, they're not taking their paracetamol. Will you change it?" You know, a GP is not going to come out just to do that. Because he's here, Tuesday, you are able to discuss and review the situation. (CH)

The GP and OPNS have direct access to specialist and consultant services. The most direct contact is through the "whole systems" virtual ward, which provides regular case management. There is a core membership of this community-based virtual ward, including the community geriatrician, old age psychiatrist, and dietician. Other professionals are drawn into this group on a case-by-case basis. Here, complex and problematic situations are explored. Participants indicated that ongoing multidisciplinary problem solving was particularly important in those situations where conflict between treatment options of multiple chronic diseases was present:

> If they've got all those things . . . I think if you've got all those people, all having that discussion on a regular basis, you know, sometimes you get an old age psychiatrist in, if you've got some problems, you know, around dementia and behaviors and chronic disease . . . . But just all being together and pulling together. You know, with the care home staff. And seeing exactly what's going on. It really makes a difference to management of care. (NHS)

Ability to access the wider economy of health care affects the support available to the older resident. At its best, it is this nestling of a care home within an infrastructure of specialist and responsive healthcare services that provides an effective network for enhanced health care to those living in nursing homes.

Responsive and timely resident-centered care.

The following case example occurred during one of the focus group interviews and is illustrative of how the service delivery model is responsive to an individual's personal situation:

> This gentleman has been unwell for the past 6 weeks. He's had a urinary tract infection . . . . We've given him antibiotics in the care home for 3 weeks now. He has not responded to this treatment. I [GP] have just had a message from the OPNS to say that he's still unwell and his last urine specimen indicated that this is only sensitive to a particular antibiotic. In the past this situation may have led to an admission. But through discussion with the consultant geriatrician I can arrange for him to go and get a stat dose of the drug and then return to the home. So preventing an admission . . . . He also has dementia and depression. A stay in hospital, if it can be prevented, is better for his mental health. (NHS)

This is one of many examples that were discussed by the participants. It indicates that by using this service delivery model, early intervention and responsive care are delivered by a team working across sector and professional role boundaries.

Information transaction. Throughout the discussions there were many illustrations of professionals accessing and using different types of information to inform decisions about the management of residents' care. The care home staff spoke of their knowledge of the residents' biographies, preferences, aspirations, and behaviors. This knowledge of the person provided care staff with a baseline to identify when an individual's presentation had changed:

> The staff here get to know the residents; they get to know any slight changes. It can be something just like somebody is mixing their tea in with their juice—this could indicate somebody having an infection. It can be minor or big changes. It just varies. (CH)

Often changes in behavior were described as the individual being "not quite right" or "not themselves." Participants stressed the importance of sharing this information with nurses and other health professionals in order that an in-depth assessment could be carried out, which would inform the management of care:

> [Colleague] had seen him and was worried about his mood. I went in and said "no this is part of his apathy related to his dementia." I didn't have to catch up because I knew him. All the information is staying together and now being used more holistically. (NHS)

In this example, the participant is suggesting that being able to readily access different types of knowledge is essential if person-centered, holistic care is to be provided. Older residents frequently present with complex healthcare problems derived from their multiple chronic conditions, frailty, and functional problems. This requires professionals to make difficult choices between various treatment options. Such choices are not necessarily only based on "knowing how to treat a disease," but may also involve weighing up individuals' preferences, values, and aspirations for their lives. Hence, there is a complex interplay between knowledge of the person, knowledge of how the individual reacts to disease or presents with disease, and biomedical knowledge of how to treat disease. The participants suggested that the enhanced healthcare programme service delivery model enabled sharing of these different types of knowledge, and this enhanced the quality of decision making and problem solving.

Participants reported that during the regular meetings between care home staff, GPs, and OPNS, information is constantly shared and discussed: "She's [OPNS] got access to all the IT of the NHS . . . well, she looks at the notes. That helps us. And [OPNS] will access records and tell us loads about the resident" (CH).

However, participants, particularly those from care homes, described situations where continuity of care was adversely affected when information was not shared between professionals and across sectors:

> A care home manager rang up and wanted to ask one of our wards about a resident who had been admitted. They knew her really well and had a wealth of information about her. The nurse was told "you're not a relative, we can't tell you anything." (NHS)

This care home manager could not access up-to-date information about a resident who was due to be transferred back to the home following treatment for an acute illness. This lack of knowledge about in-patient care and treatment could adversely affect the quality and continuity of care following discharge. Many other participants indicated that the quality of information that "traveled" with the individual following discharge from hospital was often very poor. In the preceding extract, information was not shared with the care home staff. However, when the OPNS contacted the ward, the ward staff readily provided up-to-date information about the resident. In this instance, the OPNS was able to support the care home staff to "navigate" through the healthcare service.

These discussions suggested that professionals utilize particular types of knowledge within their roles. For example, carers have more access to, and utilize, biographical knowledge in their daily interaction with residents and their families. In contrast, the GP may draw more on biomedical knowledge to inform decisions about treatment plans. Thus, the system is effective because all professionals know about different types of knowledge and how to access that knowledge. In this service delivery model, the OPNS fulfilled an important role in supporting information transaction across services, sectors, and agencies. Enhanced levels of information transaction had a consequent impact of ensuring that biographical knowledge informed care and treatment decisions and promoted continuity of care.

Workforce competency to provide responsive resident-centered care. As presented in the previous section, participants generally reported positive experiences and outcomes of the whole systems service delivery model. However, they proposed that the sustainability of the model depended upon developing and maintaining workforce competency. During the Stage 2 workshops, participants discussed the multiple competencies required to provide preventative, enabling, and complex management of multimorbidity, frailty, and end-of-life care. Furthermore, the resident population can simultaneously require all of these levels of care. In addition, as individuals with particular health conditions enter the resident community, the workforce competency to deliver the required care may change. This would be problematic enough if the only element that changed was the care needs of the resident population. However, participants suggested that the workforce of the care home sector is also quite fluid due to staff attrition, staff sickness, and a reliance on agency staff. This results in variation in the skills and knowledge that care home staff have at any point in the rostered week: "There are nursing homes that have got staff trained up to use a syringe driver . . . . And then the bank nurse comes in to take over at the weekend and doesn't know how to use it" (NHS).

Whilst all staff may meet the requirement of holding professional or vocational qualifications, there is little standardization with respect to ongoing training, skills updates, and competency evaluation for individuals who work in the care home setting. This can be problematic:

> There should be some standards in the home as well . . . in terms of bloods, some nurses can't take bloods . . . I have had three patients needing bloods in one visit. If it's an agency nurse who hasn't had their blood taking training ticked off they can't do it. (NHS)

This and many other competencies were discussed, and there was a consensus that there should be a direct relationship between role and competence, to reduce the risk of problems brought about by staffing concerns. It was also recognized that the range of health issues that could present in the care home setting was enormous, with some issues rarely occurring, and others presenting on a very regular basis. This observation stimulated participants to propose that it would not be unreasonable to "bring in" staff with specific competence for occasionally occurring issues. However, the care home workforce should possess the competence to provide care for regularly occurring issues:

> We had one lady who was going into hospital every week. The OPNS got us trained where we can put a catheter into the bowel, and just drain that. And now the resident doesn't go into hospital, at all. I think that made a massive impact on her quality of life. (CH)

This participant highlighted the importance of the workforce continually developing new competencies to address residents' unique needs. Although participants gave many examples of the various skills required to care for residents, they preferred to group skills into competency domains or categories. They proposed that there should be categories of "core," "frequently required," and "specific resident need" workforce competencies that align with resident populations' needs.

Participants identified attitudinal core competencies they felt all staff should have, such as creating confidence and trust across the care team to know residents well, anticipate and meet their needs and wishes, promptly recognize minor deterioration, and ensure residents' safety. This requires the team to value each other's knowledge, skills, and abilities to provide person or relationship-centered dignified care. It also requires team members to support and empower each other to provide appropriate, responsive yet flexible care. A shared culture of working together across organizational boundaries, where the safety, health, and well-being of the person is at the core is central to the enhanced healthcare approach.

Participants also identified core practice competencies for a preventative rather than reactive model of care, based upon care planning, early intervention, enablement, and rehabilitation. These competencies included a range of assessment skills, for example, comprehensive geriatric assessment, as undertaken by professional staff, and knowing residents' individual preferences, norms, and behaviors, as undertaken by care support staff. Competencies in clinical decision making to meet complex care needs, managing multimorbidity (including polypharmacy), and identifying and managing frailty were also identified as critical. Appropriate referral to other agencies and shared record keeping were considered core competencies. Competence in monitoring and evaluating outcomes and amending care plans was prioritized. In addition, competence to lead and manage teams, particularly when working across organizational boundaries, was identified as a core requirement.

Frequently required competencies identified related to common issues such as managing exacerbation of chronic disease, changes in functional level, confusion and delirium, dual diagnosis, palliative, and end of life care. In contrast, competencies to meet specific client needs focused on skills required to respond effectively to individuals' unique care needs.

Discussion

Effective, resident-centered outcomes have been achieved by the enhanced health care in nursing homes programme in situations where there is a shared culture of working together across organizational and professional boundaries. This culture is fostered by professionals and organizations that are willing to come together as a team, and value each other's contribution to the provision of care for older people with complex needs. The recent Care Act (Legislation.gov.uk, 2014) underlines the drive towards person-centeredness and efficiency by legislating for integrated services between health and social care providers. The enhanced healthcare programme is one approach to an integrated and shared model of care that brings the needs of the older person to the fore, whilst addressing the inequity in terms of restricted access to health care that has been experienced by older care home residents in the UK (BGS, 2011; Care Quality Commission, 2011).

The care home population presents with high levels of dependency, multimorbidity and frailty, and increasingly high levels of acute health problems (Faulkner & Parker, 2007; Gordon et al., 2014). Providing quality care for older residents is complex and requires a workforce that is flexible and responsive to changing resident needs (BGS, 2011). This workforce has to be capable of balancing personalized care that enables residents to enjoy life in a home setting, with the delivery of complex health care for ill and frail individuals. The whole systems approach of the enhanced health care in care homes programme actively enables practitioners to work across organizational boundaries. This was found to offer multiple benefits, including increased continuity of care and facilitation of regular review. Moreover, information exchange allowed greater sensitivity to and ability for practitioners to solve complex problems.

While the use of a whole systems approach may be a key benefit in the development of responsive resident-centered care, the approach necessarily crosses organizational boundaries. Where there are boundaries, there is the potential for barriers. Indeed, the development of this service delivery model is hindered by several factors. These include difficulties in implementing standardized education and training; logistical issues underpinning the development, maintenance, and evaluation of the necessary workforce competencies; and the lack of standardized accessibility to information exchange processes.

For a whole systems approach to be successful in this setting, organizational issues must be considered. The contractual status of staff can be the determining factor in how and where continual professional development is accessed and how professional competencies are maintained. What patient information is available to staff across all aspects of the system has a direct impact on quality and continuity of care. Without systems in place to ensure that staff employed by private care homes can support residents in an integrated model of shared care with health and social care workers, such a model will be unsustainable.

Participants suggested that a whole systems integrated approach was needed in relation to how proficiency can be developed, achieved, maintained, and assessed. This includes:

- The development of an appropriate competency framework aligned to the specific needs of the care home population
- Agreement on standardized, appropriate, accessible ongoing personal development and assessment.
- Development of the infrastructure to enable reliable assessment of competence and underpinning knowledge, at a range of levels from support worker to specialist and advanced practice.

McNall's (2012) whole systems workforce development model adopts a collaborative action research approach to generate workforce solutions that are suited to a specific context. The approach uses a coproduction method to develop competency frameworks and blended learning solutions. It also develops the infrastructure required to enable and support valid and reliable assessment of proficiency across the workforce. It includes a negotiated agreement of evaluation outcomes from all stakeholder perspectives.

In the context of the Gateshead enhanced healthcare programme, this evidence base and resulting workforce requirement could inform future outcomes-based commissioning specifications. This would optimize the potential for developing a suitably competent workforce capable of delivering high-quality care within the service delivery model that has developed.

Acknowledgments

We wish to express our appreciation to the participants who provided generous input into this study. We also wish to acknowledge the funding provided by Newcastle Gateshead Clinical Commissioning Group as part of their new models work programme, which enabled us to undertake this study.

Clinical Resources

- My Home Life: resources for promoting good practice in care homes: http://myhomelife.org.uk/good-practice/8-best-practice-themes/improving-health-and-healthcare/
- The UK national Vanguard programme: care homes: https://www.england.nhs.uk/ourwork/futurenhs/new-care-models/care-homes-sites/

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JOURNAL OF NURSING SCHOLARSHIP

NEW MODELS OF CARE IN RESIDENTIAL LONG-TERM CARE

Variation Across U.S. Assisted Living Facilities: Admissions, Resident Care Needs, and Staffing

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Key words

Assisted living, personal care aide, residential care needs, staffing, United States

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Accepted September 10, 2016

doi: 10.1111/jnu.12262

Abstract

Purpose: Though more people in the United States currently reside in assisted living facilities (ALFs) than nursing homes, little is known about ALF admission policies, resident care needs, and staffing characteristics. We therefore conducted this study using a nationwide sample of ALFs to examine these factors, along with comparison of ALFs by size.

Design: Cross-sectional secondary data analysis using data from the 2010 National Survey of Residential Care Facilities.

Methods: Measures included nine admission policy items, seven items on the proportion of residents with selected conditions or care needs, and six items on staffing characteristics (e.g., access to licensed nurse, aide training). Facilities ($n = 2{,}301$) were divided into three categories by size: small, 4 to 10 beds; medium, 11 to 25 beds; and large, 26 or more beds. Analyses took complex sampling design effects into account to project national U.S. estimates.

Findings: More than half of ALFs admitted residents with considerable healthcare needs and served populations that required nursing care, such as for transfers, medications, and eating or dressing. Staffing was largely composed of patient care aides, and fewer than half of ALFs had licensed care provider (registered nurse, licensed practical nurse) hours. Smaller facilities tended to have more inclusive admission policies and residents with more complex care needs (more mobility, eating and medication assistance required, short-term memory issues, $p < .01$) and less access to licensed nurses than larger ALFs ($p < .01$).

Conclusions: This study suggests ALFs are caring for and admitting residents with considerable care needs, indicating potential overlap with nursing home populations. Despite this finding, ALF regulations lag far behind those in effect for nursing homes. In addition, measurement of care outcomes is critically needed to ensure appropriate ALF care quality.

Clinical Relevance: As more people choose ALFs, outcome measures for ALFs, which are now unavailable, should be developed to allow for oversight and monitoring of care quality.

Journal of Nursing Scholarship, 2017; 49:1, 24–32.

The volume and complexity of care needed for the U.S. elderly population has increased the demand for alternative long-term care residential models (Scan Foundation, 2014). As a result, many people who formerly would have been served by nursing homes now reside in assisted living facilities (ALFs; National Care Planning Council, 2012). Furthermore, ALFs are now the fastest growing sector of the U.S. long-term care market. From 2007 to 2010, the number of ALF beds increased by almost 18%, from 1.05 to 1.2 million beds, while the number of beds in nursing homes decreased slightly during the same time period (Mollica, Houser, & Ujvari, 2012).

ALF growth will likely continue because many prospective residents view ALFs as a more attractive and homelike alternative to nursing homes (Imamoglu, 2007). ALFs are based on a social care model designed to provide supportive housing and meals and some assistance with daily living activities, but were not intended to address serious health needs. Therefore, ALFs are not generally required to have a full complement of nurses, certified nursing assistants, or medical staff.

However, despite the intended purposes of ALFs to provide minimal assistance, the limited data available suggest there are many assisted living residents with considerable healthcare needs (Caffrey et al., 2014; Stearns et al., 2007). A substantial number of assisted living residents have medical and physical conditions, such as multiple chronic diseases, dementia, behavioral impairment, and activities of daily living (ADL) impairment that require regular nursing care (Kane & Mach, 2007; Morgan, Gruber-Baldini, & Magaziner, 2001). Examination of ALF admissions criteria seems warranted, as these criteria could indicate whether ALFs are admitting residents with extensive care needs, or alternatively if residents may be developing these needs after they move in.

Despite considerable care needs reported among ALF populations, there are no federal requirements for staffing of care workers in ALFs, leaving it to states to decide whether and how to regulate and qualify ALF direct care providers. As a result, requirements vary widely (Assisted Living Federation of America, 2013), and most of the care is provided by unlicensed workers, who also may be untrained and unregulated. This can result in a workforce with little understanding of patient care needs, creating possible quality and safety issues. In contrast, nursing homes have federally mandated staffing and training requirements to serve populations with nursing care needs (Social Security, n.d.).

Recognizing this potential gap between ALF staffing and care needs, in 2010 the National Center for Health Statistics (NCHS) surveyed a nationally representative sample of U.S. ALFs as part of their National Survey of Residential Care Facilities (NSRCF; Moss et al., 2011). When NCHS compared ALFs by size (i.e., small [4–10 beds] vs. larger ALFs), they found that small ALFs tended to be private, for-profit facilities, with care mostly reimbursed by Medicaid, while larger ALFs were more likely to be non-profit, chain-affiliated, and supported by private client or family payments (Park-Lee et al., 2011). The proportions of residents with dementia, depression, and needing assistance with activities of daily living were sizable, though smaller ALFs tended to have sicker residents compared to larger ALFs (Caffrey, Harris-Kojetin, Rome, & Sengupta, 2014; Leroi et al., 2007).

Despite the increases in ALF availability and population, little is known about admission characteristics of the facilities, resident care needs, and staffing (Caffrey et al., 2014; Leroi et al., 2007). Therefore, the purpose of this article is to further describe ALF admission policies, resident care needs, and staff characteristics, including care providers and training. We will also include comparisons by ALF size. Study findings will contribute information about the assisted living component of long-term care.

Methods

Design and Data Sources

This is a secondary analysis of findings from a national survey of ALFs. The first survey of its kind, the 2010 NSRCF was designed to describe the nationwide picture of U.S. ALFs, including residents and staff (Moss et al., 2011). To accomplish these goals, the NCHS surveyed directors or administrators of 2,302 ALFs with four or more beds, who completed a computer-assisted personal interview. Our sample includes all sampled ALFs, with data weighted to yield national estimates.

Measures

ALF characteristics. Facility characteristics included ownership (for-profit, not-for-profit), occupancy rate, years of operation (<10 years, ≥10 years), if they were certified or registered to participate in Medicaid (yes, no), availability of skilled nursing services (yes, no), and whether a pharmacist or doctor reviewed medications for appropriateness (yes, no). For the ALF comparison by size, facilities were divided into three categories: small, 4 to 10 beds; medium, 11 to 25 beds; and large, 26 or more beds.

Admission policies. We included all admission policy survey items. These nine items inquired whether an ALF admitted residents with: (a) an inability to leave in an emergency without help; (b) cognitive impairment; (c) behavior problems; (d) skilled nursing requirements on a regular basis; (e) daily monitoring needs (e.g., blood sugar, taking insulin); (f) urinary incontinence; (g) bowel incontinence; (h) a history of drug or alcohol abuse; or (i) a need for two or more staff or a lift to get in or out of bed. Responses included "yes," "no," and "no specific policy." In other words, facilities with no specific policy considered admissions with these conditions as they arose, making a decision whether or not to accept the resident on a case-by-case basis.

Resident characteristics and care needs. The survey assessed seven characteristics or care needs by asking for the proportion of the ALF population served at the facility: (a) age 85 years or older, (b) with short-term memory problems, (c) confinement to bed or chair, (d) require assistance with transfers in or out of bed or chair, (e) eating assistance, (f) assistance with medication self-administration or management or supervision or storage, or (g) bathroom assistance. These seven care needs were selected to reflect the amount and intensity of potential nursing care required (Caffrey et al., 2014; Harris-Kojetin, Sengupta, Park-Lee, & Valverde, 2013; Morgan et al., 2001; Stearns et al., 2007). For these items, responses were expressed using categories provided by the NCHS in the public use dataset as the proportion of residents with these conditions or needs in the surveyed facility, except for eating assistance, assistance with medication, and bathroom assistance, which were collapsed further due to some small group estimates.

Staffing characteristics included direct care minutes or hours per resident day (PRD) for registered nurses (RNs) and licensed practical nurses (LPNs) and were measured categorically. For RNs and LPNs, categories provided in the public use data were 0, 0.01 to 7.49, and ≥7.5 min PRD, and for patient care aides categories were 0, 0.01 to 0.99, 1 to 1.99, 2 to 2.99, and ≥3 hr PRD. The number of staff on duty and awake on a typical night was categorized as 0 to 1, 2, and 3 or more. Two items described whether ongoing in-service training was provided to aides, and if formal training was required of aides before providing resident care (yes, no).

Data Analysis

Descriptive statistics were used to describe the facility characteristics, admission policies, resident care needs, and staffing among ALFs using proportions for categorical variables, and means and standard deviations for continuous variables. To examine ALF characteristics by facility size, chi-square tests were conducted. SUDAAN was run within the SAS session (SAS-callable SUDAAN version 10.0.1; RIT International, Research Triangle Park, NC, USA) to properly account for the complex sample design features, enabling us to project national (i.e., weighted) estimates.

Results

Most ALFs were for-profit facilities (82%), with about half operating 10 or more years, and half were Medicaid certified or registered. Overall, about 40% of ALFs provided skilled nursing services; this did not differ by facility size. Over two thirds (68%) indicated that they had a pharmacist or doctor review medications for appropriateness. Half (50%) of all ALFs were classified as small (4–10 beds), one third (34.5%) were large (26 or more beds), and the rest (16%) were medium-sized facilities (11–25 beds). As seen in **Table 1**, the proportion of ALFs that were for-profit was highest among small facilities (91.4%), though the for-profit rate was still quite high for larger ALFs (72%–74%, $p < .01$). Significantly more small facilities had been operating for fewer than 10 years (59%) versus only 27% to 34% of medium to large ALFs ($p < .01$). In addition, small ALFs were significantly less likely to have a pharmacist or doctor available to review medications ($p < .01$).

Most ALFs admitted residents with daily monitoring needs (81%) or urinary incontinence (82%; **Table 2**). Over half accepted those needing help to leave in an emergency (56%) or with cognitive impairment (55%), and 45% admitted those with a history of drug or alcohol abuse. Admission policies differed by facility size, with smaller facilities significantly more likely to admit residents with all care needs (e.g., help to exit in emergencies, cognitive impairment or behavior problems, regular skilled nursing care, urinary or bowel incontinence, needing two people or a lift to get in and out of bed; all $p < .01$).

In addition to admission policies, ALF residents showed substantial care needs (e.g., 91% of ALFs reported that 75% or more of their residents required medication assistance). Small facilities had significantly higher proportions of residents with each care need compared to medium and large facilities (**Table 3**). For example, small facilities contained a higher proportion of residents with short-term memory problems, who were confined to a bed or chair, and who needed assistance in transferring in and out of bed or chair, with eating, with medication management or administration, or with using the bathroom ($p < .01$).

Less than half of ALFs had licensed nursing staff direct care hours, though these were not randomly distributed across facilities. In addition, over 60% of ALFs required no formal initial training or less than 75 hr of training for personal care aides prior to caring for assisted living residents, with no differences by facility size. Small facilities

Table 1. Assisted Living Facility Characteristics in the United States, 2010 (unweighted $n = 2{,}302$)

		Facility size				
	Weighted %	4–10 beds *n* (%)	11–25 beds *n* (%)	26+ beds *n* (%)	χ^2	*p*
Total		626 (49.6)	654 (15.9)	1,022 (34.5)		
Ownership						
For-profit	82.4	544 (91.4)	481 (72.4)	751 (74.0)	127.3	<.01
Nonprofit	17.6	82 (8.6)	173 (27.6)	271 (26.0)		
Occupancy rate						
1.0%–65.0%	21.6	117 (20.0)	146 (22.5)	239 (23.3)	177.3	<.01
65.1%–80.0%	25.5	161 (26.2)	124 (19.3)	283 (27.5)		
80.1%–95.0%	27.7	117 (18.5)	253 (38.4)	368 (36.1)		
95.1%–100.0%	25.2	231 (35.3)	131 (19.8)	132 (13.1)		
Years of operation						
<10	43.8	343 (58.6)	219 (34.4)	275 (27.0)	205.3	<.01
≥10	56.1	282 (41.4)	434 (65.6)	747 (73.0)		
Don't know	0.1					
Certified or registered to participate in Medicaid						
Yes	49.7	344 (54.0)	351 (55.0)	426 (41.3)	35.0	<.01
No	50.1	281 (46.0)	301 (45.0)	595 (58.7)		
Don't know	0.2					
Providing skilled nursing service						
Yes	38.8	239 (38.3)	255 (40.8)	398 (38.7)	0.7	.66
No	61.1	386 (61.7)	399 (59.2)	623 (61.3)		
Don't know or no response	0.1					
Having a pharmacist or doctor to review medications for appropriateness						
Yes	67.5	378 (57.8)	457 (70.1)	820 (80.4)	109.9	<.01
No	32.4	247 (42.2)	197 (29.9)	202 (19.6)		
No response	0.1					

were more likely to report no RN or LPN direct care hours (**Table 4**), along with a higher proportion of direct care hours from personal care aides compared to medium and large facilities. Fifty-one percent of small facilities had 3 or more care hours PRD from personal care aides versus only 33% of medium and 9% of large facilities. The proportion of ALFs having three or more staff on night duty was higher in medium and large facilities.

Discussion

We found that resident care needs among all ALFs were substantial, and in some facilities were comparable to some nursing home populations (Kane & Mach, 2007; Zimmerman et al., 2003). However, licensed staffing levels were limited, and many facilities required no training for their direct care workers. Despite these concerns, the number of nursing home beds is declining (Grabowski, Stevenson, & Cornell, 2012; Hawes, Phillips, Rose, Holan, & Sherman, 2003), likely because more clients are choosing ALFs due to their more attractive appearance and homelike atmosphere compared to nursing homes (Imamoglu, 2007). ALFs of all sizes had limited staffing for direct resident care. Even in larger facilities, 80% had fewer than 7.5 min PRD and over 50% had minimal direct LPN staffing. Smaller ALFs had even lower RN and LPN direct care staffing ratios.

Many assisted living residents also suffer from dementia—roughly 81% of residents in small homes and 63% in larger facilities (Leroi et al., 2007). Since dementia is a common condition, such behaviors of dementia may be overtreated with antipsychotics; assisted living residents were found to receive more antidepressant and antipsychotic medications than nursing home residents (Mitty & Flores, 2007). Other studies have found that assisted living resident needs are surprisingly complex, with over 40% of residents needing assistance with three of five activities of daily living (Caffrey et al., 2014) and 86% requiring medication assistance (National Care Planning Council, 2012). In fact, medication assistance is one of the primary reasons given for ALF admission (Mitty & Flores, 2007). Additionally, many assisted living residents are prescribed nine or more medications

Table 2. Admission Policies of Assisted Living Facilities in the United States, 2010 (unweighted $n = 2{,}302$)

		Facility size				
	Weighted %	4–10 beds *n* (%)	11–25 beds *n* (%)	26+ beds *n* (%)	χ^2	*p*
Total		626 (49.6)	654 (15.9)	1,022 (34.5)		
Admit a resident unable to leave in an emergency without help						
Yes	56.3	357 (65.3)	282 (43.7)	505 (49.3)	98.1	<.01
No	29.1	167 (20.3)	279 (42.4)	358 (35.6)		
No specific policy	14.6	101 (14.4)	93 (13.9)	159 (15.1)		
No response	0.1					
Admit a resident with cognitive impairment						
Yes	55.4	380 (66.8)	271 (41.9)	465 (45.3)	140.5	<.01
No	32.5	163 (21.6)	306 (47.2)	423 (41.5)		
No specific policy	12.0	82 (11.5)	77 (10.9)	134 (13.2)		
No response	0.1					
Admit a resident with behavior problems						
Yes	35.9	250 (41.8)	206 (31.7)	301 (29.6)	42.9	<.01
No	48.5	281 (42.4)	365 (56.3)	551 (53.7)		
No specific policy	15.5	94 (15.8)	83 (11.9)	170 (16.7)		
No response	0.1					
Admit a resident needing skilled nursing care on a regular basis						
Yes	20.3	159 (29.8)	103 (15.9)	92 (8.9)	168.3	<.01
No	71.4	402 (59.6)	512 (77.8)	872 (85.6)		
No specific policy	8.2	64 (10.7)	39 (6.3)	58 (5.5)		
No response	0.1					
Admit a resident needing daily monitoring (e.g., blood sugar, taking insulin)						
Yes	81.2	495 (77.5)	542 (82.6)	879 (86.2)	26.0	<.01
No	12.4	88 (15.6)	65 (10.5)	89 (8.8)		
No specific policy	6.3	42 (6.9)	47 (6.9)	54 (5.1)		
No response	0.1					
Admit a resident with urinary incontinence						
Yes	81.5	524 (87.8)	475 (73.1)	779 (76.6)	70.5	<.01
No	10.0	58 (6.9)	114 (17.3)	116 (11.1)		
No specific policy	8.4	32 (5.3)	65 (9.7)	127 (12.3)		
No response	0.1					
Admit a resident with bowel incontinence						
Yes	0.8	455 (78.7)	388 (60.0)	597 (58.9)	109.2	<.01
No	19.5	105 (12.5)	187 (28.5)	261 (25.3)		
No specific policy	11.6	65 (8.7)	78 (11.6)	164 (15.8)		
Refusal or no response	0.1					
Admit a resident with history of drug or alcohol abuse						
Yes	45.4	267 (40.8)	326 (50.6)	511 (49.8)	60.6	<.01
No	25.8	193 (32.8)	144 (21.7)	177 (17.8)		
No specific policy	28.7	165 (26.5)	184 (27.7)	333 (32.4)		
Don't know or no response	0.1					
Admit a resident needing two people or a Hoyer lift to get in and out of beds						
Yes	32.6	227 (42.7)	151 (24.0)	226 (22.3)	118.4	<.01
No	58.8	344 (47.9)	452 (68.4)	719 (70.2)		
No specific policy	8.5	54 (9.5)	51 (7.5)	77 (7.5)		
No response	0.1					

with additional over-the-counter drugs (Mitty, 2009). For most U.S. states, there are no outcome data for ALFs, and there are no nationwide quality care outcome data available for assisted living. Using data from one state, medication errors were found to be a regular occurrence, as demonstrated by a 61.8% medication-related citation rate (Woods, Guo, Kim, & Phillips, 2010). However, because many unlicensed and untrained staff

Table 3. Residential Care Needs of Assisted Living Facilities in the United States, 2010 (unweighted $n = 2{,}302$)

		Facility size				
	Weighted %	4–10 beds *n* (%)	11–25 beds *n* (%)	26+ beds *n* (%)	χ^2	*p*
Total		626 (49.6)	654 (15.9)	1,022 (34.5)		
Percentage of residents age 85 years and older						
≤25%	33.9	286 (42.6)	247 (36.8)	206 (20.1)	145.5	<.01
26%–74%	42.6	202 (33.0)	245 (38.3)	596 (58.4)		
≥75%	23.5	138 (24.4)	162 (24.9)	220 (21.4)		
Percentage of residents with short-term memory problems or who are disoriented						
<95%	79.4	480 (72.1)	540 (82.7)	913 (89.8)	93.1	<.01
≥95%	20.1	145 (27.9)	112 (17.3)	98 (10.2)		
Don't know or no response	0.5					
Percentage of residents confined to a bed or chair						
≤10%	69.8	376 (54.4)	541 (82.4)	878 (86.4)	279.8	<.01
11%–24%	11.9	100 (16.4)	53 (8.4)	75 (7.2)		
25%–49%	8.7	65 (12.9)	28 (4.4)	49 (4.7)		
50%–74%	4.2	35 (6.8)	17 (2.6)	14 (1.2)		
≥75%	5.3	49 (9.6)	15 (2.2)	5 (0.4)		
Don't know or no response	0.1					
Percentage of residents receiving assistance in transferring in and out of a bed or a chair						
≤10%	40.0	199 (25.4)	379 (56.6)	543 (53.4)	321.9	<.01
11%–24%	16.5	111 (16.0)	74 (11.7)	201 (19.5)		
25%–49%	17.7	113 (20.6)	72 (11.8)	168 (16.4)		
50%–74%	11.3	72 (13.5)	76 (11.7)	80 (7.9)		
≥75%	14.4	130 (24.6)	53 (8.2)	27 (2.8)		
Don't know or no response	0.2					
Percentage of residents receiving assistance in eating						
<75%	85.5	494 (74.9)	602 (91.4)	1,005 (98.2)	216.9	<.01
≥75%	14.4	131 (25.1)	52 (8.6)	17 (1.8)		
No response	0.1					
Percentage of residents receiving medication management/supervising/storing or assistance with self-administration of medications						
<75%	9.0	12 (1.8)	48 (7.6)	209 (20.0)	189.1	<.01
≥75%	90.8	613 (98.2)	606 (92.4)	811 (80.0)		
Don't know or no response	0.2					
Percentage of residents receiving assistance using the bathroom						
≤10%	26.5	173 (20.8)	269 (41.1)	292 (28.2)	377.3	<.01
11%–24%	12.1	43 (6.8)	59 (9.4)	215 (21.1)		
25%–49%	14.1	60 (9.7)	85 (12.8)	215 (21.1)		
50%–74%	14.4	85 (13.3)	80 (12.3)	172 (17.0)		
≥75%	32.7	264 (49.5)	160 (24.4)	124 (12.6)		
Don't know or no response	0.3					

administer medications to assisted living residents, medication management in assisted living has long been a concern (Gruber-Baldini, Boustani, Sloane, & Zimmerman, 2004; Kemp, Luo, & Ball, 2012; Mitty et al., 2010) and needs to be studied further.

We also found that many characteristics varied by facility size. Despite the greater complex care needs of residents in small ALFs, these facilities had a lower presence of licensed nursing staff and less in-service training to personal care aides than mid-sized or larger facilities. Other studies have found that residents in smaller ALFs were more likely to be African American, male, and younger than those in larger facilities (Caffrey et al., 2014; Howard et al., 2002). Because of these differences, disparities in ALF care may exist (Hernandez, 2012). For example, access to larger ALFs may be limited by financial constraints since assisted living is primarily "private pay." Medicaid and Veterans Affairs (VA) payments vary by state, with differences in eligibility and provider participation (Hernandez, 2012).

Finally, as the regulatory situation currently stands, there are no systematic quality data for these facilities, so there is no way to monitor ALF care outcomes. This is of great concern because ALFs are growing in number with

Table 4. Staffing Characteristics of the Assisted Living Facilities in the United States, 2010 (unweighted $n = 2{,}302$)

		Facility size				
	Weighted %	4–10 beds *n* (%)	11–25 beds *n* (%)	26+ beds *n* (%)	χ^2	*p*
Total		626 (49.6)	654 (15.9)	1,022 (34.5)		
RN direct care minutes per resident day						
0	61.3	467 (77.9)	337 (49.9)	428 (42.9)	321.4	<.01
<7.5	20.9	58 (8.0)	160 (25.5)	386 (37.6)		
≥7.5	17.6	101 (14.1)	155 (24.7)	203 (19.5)		
Don't know	0.2					
LPN direct care minutes per resident day						
0	66.5	548 (89.3)	446 (67.6)	338 (33.5)	658.6	<.01
<7.5	10.6	28 (4.2)	47 (7.6)	219 (21.3)		
≥7.5	22.7	50 (6.5)	159 (24.8)	459 (45.2)		
Don't know	0.2					
Personal care aide direct care hours per resident day						
0	5.2	61 (9.2)	21 (3.1)	5 (0.6)	625.8	<.01
<1	16.0	72 (11.5)	89 (13.6)	246 (23.8)		
1–1.999	26.4	73 (11.4)	165 (25.1)	497 (49.0)		
2–2.999	18.5	100 (16.7)	166 (25.1)	182 (18.2)		
≥3	33.6	320 (51.2)	211 (33.2)	83 (8.5)		
Don't know	0.3					
Number of staff on duty and awake at a typical night						
0–1	59.6	541 (86.8)	444 (66.6)	177 (17.5)	1080.9	<.01
2	21.7	72 (11.7)	170 (26.6)	337 (34.0)		
3 or more	18.6	13 (1.6)	39 (6.7)	08 (48.5)		
Don't know	0.0					
Providing ongoing in-service training to personal care aides						
Yes	90.0	517 (82.3)	621 (95.1)	1,011 (98.8)	156.7	<.01
No	3.5	35 (6.3)	8 (1.2)	7 (0.7)		
Having no personal care aides	6.4	73 (11.5)	25 (3.7)	4 (0.4)		
No response	0.1					
Formal training required of personal care aides prior to providing care to residents						
No formal training	3.5	23 (4.2)	32 (4.7)	28 (2.8)	7.5	.29
<75 hr of training	59.5	346 (62.2)	423 (67.3)	647 (64.5)		
75 hr of training	9.7	55 (10.7)	53 (8.4)	113 (11.0)		
>75 hr of training	20.4	127 (22.9)	119 (19.5)	224 (21.7)		
Have no personal care aides	6.4					
Don't know or no response	0.5					

little regulation in many states (Kossover et al., 2014). While a few states have implemented periodic surveys that mirror evaluation outcomes in nursing homes, state-level deficiency databases are not widely available and there are no standardized ALF outcome definitions. Our analyses found that ALFs allow the admission of populations with complex healthcare needs that may be similar to those of the nursing home population. These circumstances highlight the need for research to identify regulatory gaps and suggest evidence-based remedies to address them. Ideally, if appropriate measures were to become available, a large observational study across states could examine effects of regular surveys on resident care quality.

A few limitations of this study merit consideration in interpreting the findings. Data were collected using self-report questionnaires; therefore, there is potential for self-report biases and reporting errors. Analyses were based on secondary data, which does not permit additional data collection beyond the variables already collected. The lack of systematically available outcome data also limits the ability to relate staffing and other characteristics to quality.

Conclusions

In conclusion, this study suggests the need for a policy and regulatory agenda to monitor staffing and care quality in assisted living. The distinctions across ALFs by size also need further scrutiny. Because residential care facilities are gaining an increasing share of long-term care residents in the United States (Kossover et al., 2014), more stringent monitoring and evaluation of ALF staff and outcomes are needed to assess care quality in these settings.

Acknowledgment

This research was funded by the National Council of State Boards of Nursing (Grants R60006 and R81006).

Clinical Resources

- Assisted Living State Regulations and Licensing: http://www.argentum.org/alfa/State_Regulations_and_Licensing_Informat.asp
- National Center for Assisted Living: http://www.ahcancal.org/
- U.S. National Study of Long-Term Care Providers: http://www.cdc.gov/nchs/nsltcp/index.htm

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JOURNAL OF NURSING SCHOLARSHIP

NEW MODELS OF CARE IN RESIDENTIAL LONG-TERM CARE

Tri-focal Model of Care Implementation: Perspectives of Residents and Family

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Key words

Aged care, long-term care, model of care, nursing, person-centered care, qualitative, residential aged care facility

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Accepted October 3, 2016

doi: 10.1111/jnu.12269

Abstract

Purpose: To explore residents' and family members' perceptions of partnership-centered long-term care (LTC) associated with implementation of the Tri-focal Model of Care. The Model promotes partnership-centered care, evidence-based practice, and a positive environment. Its implementation is supported by a specifically designed education program.

Methods: The Model was implemented over approximately 12 months in seven LTC facilities in Victoria, Australia. A qualitative exploratory-descriptive approach was used. Data were collected using individual and focus group interviews with residents and family members prior to and following implementation of the Model. Data were analyzed thematically.

Findings: Prior to implementation of the Model, residents described experiencing a sense of disempowerment, and emphasized the importance of communication, engagement, and being a partner in the staff–resident care relationship. Following implementation, residents reported experiencing improved partnership approaches to care, although there were factors that impacted on having a good experience. Family members described a desire to remain involved in the resident's life by establishing good communication and rapport with staff. They acknowledged this was important for partnership-centered care. Following implementation, they described experiencing a partnership with staff, giving them confidence to assist staff and be included in decisions about the resident.

Conclusions: The Tri-focal Model of Care can enable residents, family members, and staff to be partners in resident care in LTC settings.

Clinical Relevance: With an ageing population, an increasing demand for complex, individualized LTC exists. Delivery of high-quality LTC requires a strategy to implement a partnership-centered approach, involving residents, family members, and staff.

The advent of consumer-focused care is having a profound effect on service delivery in health care. The shift to individual patient- and resident-centered approaches has, in part, been driven by government policy and standards for care (Australian Commission on Safety and Quality in Health Care, 2012; National Health Service Executive, 2000; Victorian Department of Human Services, 2003). In Australia, for example, the National Safety and Quality Health Service Standards, against which health services are measured for accreditation purposes, include a standard for "Partnering with Consumers" (Australian Commission on Safety and Quality in Health Care, 2012). This standard requires consumer involvement in service planning, measurement, and evaluation, and is intended to ensure health services are responsive to consumer input and need.

This shift has also been a key driver in promoting consumer participation in care decisions. In the United States, patient engagement is enshrined in law for the Centers for Medicare and Medicaid Services. The U.S. Patient-Centered Outcomes Research Institute was created through law to fund research to assist consumers to make informed decisions about their health care. Similarly, in Europe, the Picker Institute was established in 2000 as a not-for-profit organization to capture the experiences of consumers and identify areas of priority for delivery of high-quality care.

Alongside this shift, many countries are experiencing changing demographics, resulting from increased life expectancy, with a corresponding larger older population and a relatively smaller working population, rising costs, and expectations for quality care provision. The ageing phenomenon is placing pressure on publicly funded health and social services, including long-term care (LTC; Taylor, 2011). Thus, health system performance is under considerable pressure and scrutiny, mainly due to the demands of an ageing population, rising costs, and expectations for quality in care provision.

The World Health Organization (WHO, 2015) identified population ageing as one of the major public health challenges. Additional challenges to aged care provision include changing societal models with a reduction in family carers, increasing expectations for well-coordinated care services, and changes in technology (Organisation for Economic Co-operation and Development, 2011). Older people living in LTC are a highly dependent and frail population requiring complex, individualized care. Increased demand for aged care services combined with community expectations for high-quality LTC has led to a need for targeted education to promote capacity building among the LTC workforce (Ansell, Davey, & Vu, 2012; Cook & Halsaw, 2011).

To deliver LTC in accordance with best practice, models of care need to combine teaching, clinical care, research, and service delivery (Barnett, 2014). Barnett describes education of the multidisciplinary workforce and students as a defining feature of such models. Teaching comprises that delivered through university partnerships, and clinical teaching and supervision initiated within the practice setting itself. Such models ensure high-quality care through integration of evidence-based practice and person-centered care.

The LTC sector in many countries is under pressure to adopt person-centered care policies and practice. A concept analysis of person-centered care identified key attributes as: recognition of personhood, evidence of a therapeutic relationship, respect for individuality of the person, care that reflects professional ethical standards, identification and reinforcement of the individual's strengths, acknowledgement of the person's lived world, and empowerment of the person to make his or her own health decisions (Slater, 2006). The Institute for Patient- and Family-Centred Care (n.d.) in Europe defines person-centered care as: "An approach to the planning, delivery, and evaluation of health care that is grounded in mutually beneficial partnerships among health care providers, patients, and families." Petriwskyj and colleagues (2014) published a metasynthesis of quantitative evidence for family involvement in decision making for people with dementia living in residential LTC. The findings revealed the complex and varying levels of involvement of family in decision making, and as a consequence the authors called for greater consideration to be given to collaborative decision making between staff and family members.

In recognition of the importance of the role of family in the care of an older person residing in an LTC facility, Mass and colleagues (2004) developed and tested an intervention, the Family Involvement in Care intervention, to promote negotiated partnerships between staff and family. The intervention is composed of four components: (a) orientation of family members to the facility and the partnership role; (b) education of family members regarding how they may be involved in care; (c) development of a formal partnership agreement; and (d) evaluation and renegotiation of the agreement. Among family members of the same generation as the resident, the intervention was statistically significantly associated with reduced sense of loss and captivity, increased satisfaction with physical care provided, and reduced decline in satisfaction with activities for residents. Further, perceptions of the relationships between family, staff, and residents were more positive following the intervention. This work highlights the potential for interventions designed to promote partnerships between staff and families to result in positive outcomes.

In 2008, the Tri-focal Model of Care was developed by a team of researchers and educators in collaboration with aged care clinicians to provide a "whole of organization" approach to building staff capacity to meet increasingly complex care needs of older people residing in LTC residential facilities (O'Connell, Ostaszkiewicz, Sukkar, & Plymat, 2008; see also the Center for Innovation and Education in Aged Care). This Model is intended to produce culture change that fosters a learning environment to support workforce and student development to deliver quality LTC in residential facilities. The Model is underpinned by the teaching nursing home literature (Barnett, 2014), according to which the nexus between teaching, research, and practice provides the foundation for high-quality care, and it is philosophically grounded in three core concepts: (a) evidence-based practice, (b) positive environment, and (c) partnership-centered care. The concept of partnership-centered care, as espoused by Nolan, Davies, Brown, Keady, and Nolan (2004), extends the notion of person-centered care, highlighting the importance of the relationship of mutual respect, trust, and collaboration between the resident, his or her family, and staff to optimize the well-being of the older person (O'Connell et al., 2008).

Based on best available evidence (including systematic reviews [e.g., Chang-Quan et al., 2010; Milne, Potter, Vivanti, & Avenell, 2009], evidence-based practice guidelines [e.g., Department of Health and Ageing, 2012; Substance Abuse and Mental Health Services Administration, 2011], and other published research), a nine-module education program was developed to facilitate implementation of the Model. Three modules address the philosophical underpinnings of the Model as well as leadership, change management, collegiality, and teamwork in LTC, and six modules address aspects of care, including challenging behaviors, continence, depression, medications, mobility, and nutrition and hydration. Presentation of the education modules is designed to suit a range of education levels, and the content is relevant to, and intended to be accessed and used by, all categories of staff as well as family members and residents. In this way, the same information is available to all stakeholders within facilities and a common understanding of the core principles of the Model (partnership-centered care, evidence-based practice, and a positive environment) is established. While the Model was designed to be used in residential LTC, much of the content of the educational modules is transferrable across other settings in which older people are cared for. When instigating substantive organizational change, such as implementing a model of care, it is important to understand stakeholder perspectives as an intrinsic part of the evaluation.

Method

Aims

This article is based on the findings of a larger study that evaluated the outcomes of implementing the Tri-focal Model of Care in the LTC setting. The aim of this article is to report residents' and family members' perceptions of partnership-centered care in association with implementation of the Model.

Design

A pre- and postqualitative exploratory-descriptive design was used to determine if perceptions changed in association with implementation of the Model (Lincoln & Guba, 1986; Patton, 2002). The Tri-focal Model of Care principles were introduced and integrated through the education program, which was delivered over approximately 12 months. Experienced educators delivered the modules within the respective LTC facilities using interactive meetings with staff, including nurses, personal care workers, allied health professionals, catering, and cleaning staff. During this 12-month period, educators facilitated staff in the adoption of a partnership approach to care and the use of evidence to inform practice. Qualitative interviews were undertaken with residents and family members prior to implementation and following completion of implementation of the education program.

Sample and Setting

Tri-focal Model of Care was implemented in seven purposively selected LTC facilities in Victoria, Australia, including one private and six publicly funded facilities, of which two were rural and five were metropolitan facilities. Residents had varying levels of care requirements, including dementia-specific needs. In total, approximately 311 older people resided in the seven LTC facilities.

Selection criteria. We specifically selected facilities from which the managers had expressed interest in implementing the Model. Further, facilities were purposefully selected to ensure a mix of public, private, metropolitan, and rural facilitates were included. Residents who were cognitively unimpaired (as determined by the registered nurse in charge), able to give informed consent, able to communicate in English, and available while the researchers were present in the facility were invited to participate.

Procedure

Ethical considerations. Prior to commencement, the study was approved by the Human Research Ethics Committees at each healthcare organization and the university.

Data collection. Data were collected from consenting cognitively intact residents and unmatched family members using individual and focus group interviews. Family members were invited to participate via a letter sent by the facility manager. Nursing staff provided the researchers with a list of residents who were deemed to be suitable for inclusion. These residents were initially approached in person by the researchers and provided with a brief overview of the study and the Participant Information and Consent Form. Researchers returned at a later time to establish residents' interest in participating and to arrange interview times with those consenting to participate.

Interview questions varied depending on the participant group and across pre- and postintervention time frames. The individual and focus group interviews explored perceptions of care practices in the facility, the care environment, and relationships and communication among key stakeholders. Examples of the interview questions are illustrated in Tables S1 and S2 (available with the online article). Additional questions in the postintervention focus group and individual interviews explored perceived changes following the intervention. All interviewers were experienced researchers and members of the investigative team. At least two researchers facilitated each focus group using an interview guide. A total of 33 focus group and individual interviews (17 individual interviews with residents, 12 individual interviews, and four focus groups with family members) were conducted during the pre-intervention period (January–June 2013), which included 17 residents and 34 family members. The demographic characteristics of the residents and family members are reported in Tables S3 and S4 (available with the online article). During the postintervention period (February–July 2014), in total, 22 focus group and individual interviews were conducted (12 individual interviews with residents, 7 individual interviews, and three focus groups with family members), which included 12 residents and 13 family members. Interviews were up to 45 min in duration, were audio recorded and transcribed verbatim, and identifying information was removed prior to analysis.

Data analysis. Interview data were analyzed using thematic analysis procedures recommended by Grbich (2013). Data were reduced into meaningful groupings using block and file (identifies context through reading large sections of data), concept mapping (allows identification of concepts through a broad review of data), and segmentation (closely examines fragmented data groups to elicit key words and concepts) methods. All three approaches allowed categorization, linking, and interpretation of aspects, and enabled key themes to emerge from the data (Grbich, 2013). To stay true to the data, we used an audit trail linking all themes, subthemes, and codes to actual quotes. We constantly referred to the transcripts and specific quotes in the process of categorization and theming. Data from pre- and postimplementation focus groups within resident and family member groupings were compared.

Rigor

In addition to upholding key principles of qualitative research (i.e., credibility, fittingness, auditability, confirmability), there was also a particular focus on triangulation to ensure the rigor of the study (Patton, 2002) through the use of source and analyst triangulation. In this study, source triangulation was achieved by recruiting participants from public and private LTC facilities from rural and metropolitan locations, with data collected pre- and postimplementation of the Model. Analyst triangulation was achieved by the data being analyzed separately for each group (residents and family members) and independently by two members of the study team. They then came together to reach consensus on the coding and to subsequently group the codes into the most consistently reported and salient set of issues for each group. Following this process, another team member discussed and critiqued the emergent findings and compared them with those from the extant literature.

Findings

Analysis of the data revealed that for residents and family members the move to LTC was a decision made out of necessity, and as a consequence being empowered, maintaining control, and communication were key aspects of the partnership-centered care they desired.

Residents' Perceptions Prior to Implementation of the Model

Residents indicated that in LTC everything was "decided" for them; often they were "told" what to do, and this left them feeling "very annoyed." Emerging from resident interview data prior to implementation of the Model were three major themes that represented residents' perceptions of partnership-centered care in LTC: disempowerment, communication and engagement, and a partner in care.

Disempowerment. It was perceived that LTC promoted dependence and reliance on staff: "Well, I've been out once or twice, and it's a little bit difficult because you've got to have a nurse. They won't let you go out without a nurse." However, despite feeling disempowered, some residents clung to elements of control. They negotiated with management, "... fought ..." for "... freedom ..." or chose not to be "regulated." One resident described the importance of freedom: "I'm allowed to go out here as long as I'm home by seven at night. My word [freedom], that's everything."

Communication and engagement. Communication and engagement were important for some residents and although "... it's difficult to make friends [in here]," they sought companionships with staff and other residents, and to maintain external friendships. One resident acknowledged that not all staff were a source of companionship: "Some of the staff are lovely, they come and have a chat to you. Some of them are a bit cross and you keep clear of them." Residents spoke about communicating with some staff where language was a barrier to engagement. One resident explained: "... I don't have much conversation with them. I'll sometimes ask them what country they come from and so on."

It was evident that fostering relationships with other residents relied on opportunities to meet, and while this could be difficult, some residents relished occasions to meet other residents. For one resident, meal times provided the perfect occasion for engagement: "Oh yes, it's nice being able to go up there [to the dining room] ... I can't always do it ... but it's nice and we meet some nice people." For others, communicating and engaging with other residents required some commonality. One resident explained: "Now they [three other residents] are nice ladies but they haven't done anything in their life like I've done. So once we get past the weather and the plants outside the window, we can't discuss many other things." Maintaining the connections outside LTC was a vital component of communication and engagement for some residents, and these "external" connections were either family ("I've got a very supportive family, and that is the backbone of my life") or friends ("We [external friends] still meet every 3 months ... [it's] very important. Yes, I like that").

As a platform for communication and engagement, residents discussed a desire for more meaningful activities in the facility. Perceptions of existing activities ranged from "... not enough social activities ..." or "... not enough mental stimulation" to "Loads of activity yes, a bit overwhelming at times ... ." A key factor in residents' desire for activities was reliance on staff to facilitate this process. As one resident explained, "... Well, the only thing is you have to be aware of all the activities that go on because they're [staff] not good at saying, do you want to go?"

A partner in care. From residents' responses, positive perceptions of staff, including being known by staff, related to positive perceptions of the care they received. Overall, staff were described as "... absolutely fantastic" and "... working very hard ... ." Residents' perceptions of staff appeared to be intrinsically linked to feeling that they were looked after, as one resident stated: "They [staff] are lovely, there's no doubt about it. They think the world of everybody, treat everybody the same and that's what I like." However, residents indicated that staff did not really know them, that is, their life before moving into LTC: "They haven't asked me about my life before and I haven't said anything. I think they just take us as we come and look after us."

In contrast to the positive perceptions of staff, the residents' assessment of the care they received varied. This was described as "alright," "satisfactory," and "reasonable," indicating a mediocre assessment of care: "I think what they're doing [care provision] is satisfactory to me and I can't think of anything that I need. I get what I want regarding showers and bed made, washing done." When asked about any changes in care they desired, indifference was evident in one resident's comment: "I don't have any objections. Not really [any changes] ... Not that it could make much difference."

Residents' Perceptions Following Implementation of the Model

Following implementation of the Model, residents' perceptions of partnership-centered care revealed three major themes: a dual reality of LTC, a partnership approach to care, and issues affecting a good experience. There was an overall understanding of living in LTC and the perceived work pressures staff were under. Residents highlighted more of a partnership approach to care, while still indicating areas for further improvement.

Dual reality of LTC. Although residents acknowledged missing some aspects of home life, there was an understanding and resigned acceptance of life in LTC: "Well, it's just like my own home. It is at the moment. You've got to make it that way." There was renewed satisfaction with staff and the care provided: "I think the staff are very caring. I think they're certainly excellent in the way in which they carry out their duties so I haven't got any complaints there."

A partnership approach to care. Residents perceived that their preferences were being considered. These preferences related to their care ("... Well, it [care] really is brilliant the way we're taken care of ... the way they focus on what you've asked for. They do a brilliant job from that perspective"); activities ("They don't force you to go. I feel I'm happier here sometimes than to go to some of the things that are on"); and general well-being ("Yes, they come and ask me—they know I'm always awake early, and they usually come in and say, 'now do you want to get up or do you want to have a lay in—it's your choice'"). In contrast, although some residents felt that choice was still lacking, especially with activities, there was a recognition that it might be difficult to meet everyone's choice in this regard:

> I'd say it would be pretty awkward trying to accommodate people doing the things [activities] that they choose ... It would be very hard for each one to put forward his ideas or wants or needs and everybody else accept it.

In addition, there was an understanding of staff's work pressures and the often task-orientated nature of their work, implying that this understanding was necessary in partnership-centered care. One resident expressed frustration at having to wait for staff, but at the same time acknowledged the strain staff were under: "I'm not an impatient person, but you do get a bit sick of, day after day, waiting and waiting and waiting. They're [staff] stressed out too by knowing that you're there waiting." As a partner in care, there appeared to be solidarity with staff, and their workload was presented as a reason for any delays in care. Residents commented on the "strain" staff were under: "You get some [days] where you feel you've been shunted around and I think generally it is because the staff have got too many things on their plate. I really do, so they can only do so—too much." For one resident this worried him: "There are times it has worried me, not as far as the care of me is concerned but I feel that the staff are under a strain."

Issues affecting a good experience. Residents highlighted two key issues that affected a good experience in LTC: staff's lack of knowledge about residents' life history and perceived staff shortages. Residents felt it was important for staff to know their past history, but this was still not commonly discussed between residents and staff, nor translated into personal care. However, although one resident mentioned that staff never asked about the family, this did not detract from the care provided: "No, they've never really queried me on my family I don't think, but yeah they look after us." For another resident, the longevity of some staff in the facility enabled this level of engagement:

> Well, some of them do [know about history], because they've been here for a long time and then they realise who I am, but they seldom ask you about ... your life and where you're from... .

Lack of staff was something many commented on, and despite the perceived impact on residents, their concern for staff in this regard was often mentioned: "It's got some drawbacks here and there. I think it's understaffed in places. I think they're overworked. I really can see that standing out... ."

Family Members' Perceptions Prior to Implementation of the Model

When an older person moves into LTC, the role that a family member has in the care relationship changes and for family members in this study, this change left them feeling "excluded." They wanted to be "involved" in the older person's care and life in LTC, including when decisions were made. Therefore, they sought to be "included" through being an "advocate" for the older person. Analysis of the interviews with family members prior to the implementation of the Tri-focal Model of Care revealed three major themes that represented their perceptions of partnership-centered care in LTC: a desire to retain control, communication and rapport with staff, and elements of partnership care.

A desire to retain control. Overwhelmingly, family members sought to retain the control they had in the older person's life prior to LTC. They wanted more than just to visit: "What we found is that we have to be involved, rather than just visit we actually have to be involved in her care." The desire for involvement was non-negotiable because they saw staff as not having the time to spend with residents. One family member stated,

> I feel as though I have to be here because no one's going to pick up on her pain and no one's going to take the time to feed her as I will ... they [staff] haven't got the time.

Family members recounted times when staff did not listen to them regarding aspects of an older person's care, leaving them feeling "fobbed ... off." One family member felt that the medical model of care did not allow for involvement.

> Because they're [staff] not used to a third party. They deal with the person involved and as far as they're concerned they've got blinkers [metaphor for being unreceptive to other influences] on, there's nobody else in their [older person] life, like I'm talking about the medical model . . . . So they do not include anyone else in that [decision] . . . I'm the one that needs to know, I'm the one that makes the decisions.

Consequently, this family member saw their role as an "advocate" and this meant they could retain some element of control in the older person's life through their active presence in the facility. These family members were regular visitors to the facility and sought to ensure they were included in all decisions related to the older person: "You have to be here to advocate on their behalf."

Communication and rapport with staff. For family members, having good communication and rapport with staff was important when their loved one was in LTC. It ensured shared decision making and good communication between all parties. However, it was acknowledged that this was difficult at times. In desiring to retain control, family members highlighted the challenges they experienced in communicating and building rapport with some staff. They noted it was most important to have a good rapport with the facility manager. One family member described "a heated argument" with the nurse in charge. After a series of staff changes in the manager role at one facility, one family member commented,

> With the new [nurse] manager that's come in, [I] have a very good rapport with her . . . It's monumental, it's everything. So now I don't feel like I have to keep drumming the drum, I can relax a little bit . . . .

In contrast, another relatively new family member in the facility had a different experience in developing a positive relationship with the new manager and this led to a feeling of vulnerability:

> I haven't been able to communicate with [manager]. I feel there's a barrier that I haven't been able to get through . . . it takes you time to get used to everything. So I'm vulnerable and I may be taking it too personally.

Although family members understood that having a good rapport with staff was important, they felt a lack of respect from some staff:

> I had been her primary carer for nearly 24 hours a day for three years and all of a sudden my opinion was—this is how I perceived it . . . all of a sudden my opinion was worth nothing and they were medical people or in the health industry and they know better.

Others expressed frustration and the " . . . great difficulty being heard." This did leave one family member very stressed: " . . . I get a thousand times stressed out because I've not got that communication, which I need . . . ." In desiring to retain control and have positive communication and rapport with staff, family members were faced with the dilemma of not expressing any concerns, or doing so and risking losing rapport with staff. As one family member deliberated,

> Well, I was worried for him anyway, but then I thought if I cause too much trouble it may backfire. I won't have the rapport that I have now and I won't be able to get the things that he needs.

Elements of partnership-centered care. Perceptions of partnership-centered care and how this was currently manifested in the facility was discussed by all participants, and it was clear they felt that " . . . family should be a little more involved . . . ." Overall, their responses suggested three important elements of partnership-centered care that would benefit residents: working with each other, continuity of care, and the importance of good care and carers. For one family member (a retired registered nurse), working together reflected integration of care: " . . . integrated care is very important. Family, staff, patient together."

Continuity of care was seen as important for building a bond: " . . . I think they should try to use the same staff . . . put the same carers . . . with the same residents so a bond is built up." However, their experience of lack of continuity of care was also revealed: "If you raise it with that one [staff member] it won't be her next morning doing it. They're always different, there's not a lot of continuity." In contemplating their perceptions of partnership-centered care, it was important for family members to know that residents were well cared for: "These people [staff] are so good to her [resident] and she just loves them and I love them for making her feel good." One family member relished the complete care staff gave:

> When you can't be here, the fact that somebody will give them a hug or what have you . . . there's a book she keeps, it's about her family. I know that they read that to her. That to me is a nice touch . . . .

Family Members' Perceptions Following Implementation of the Model

Family members' perceptions of partnership-centered care were also sought following implementation of the Model, and this highlighted two major themes: partnership through communication and taking control.

Partnership through communication. Responses indicated that family members saw evidence of the impact of the Tri-focal Model of Care in the facility, and this showed improved communication between staff and families: “Yes, I think it [the Model] has assisted the staff and also the nursing unit manager to adjust their responses to our concerns.” One family member described this change as related to communication, engagement, and aspects of the care:

> Being here every day, I notice how things work, and yes, I do think they have improved in the last 12 months, definitely ... I think the staff are a little bit more attentive, a bit more tuned in to how they do things. They’re very approachable, so if I think I’d like it to be done a little bit differently, they’re always happy to change it over to—and they’re open to suggestion, happy to talk with you ... They’re more open, I find ... that the level of care has lifted.

Another family member saw the benefits of focusing on all the stakeholders’ perspective as is done in the Model: “... We want the best for dad, or our loved one. But then thinking about the resident’s perspective, plus the staff perspective, plus the unit manager’s perspective, or the department manager’s perspective, was good... .” They spoke of more positive communication and aspects of partnership. Staff were said to be “approachable,” and others spoke of “the improvement in ... relationships with all the staff,” which one family member solely attributed to the Model:

> But there’s a real openness in terms of what’s going on, an openness about issues, an openness about improving, and my assumption is the fact that this Model has been running during this year has made a difference ... whereas before, they [staff] were a little bit defensive.

Also mentioned was the connection family members felt staff now had with some residents. They felt staff now “try to be more engaging [with residents] in passing.” One family member spoke of his father who could not communicate with staff:

> We have now got the staff to at least ... look at him ... some of them wave, or smile, or some might even say hello and that is a significant improvement to what it has been. I think that’s directly related to Tri-focal.

Taking control. Family members emphasized the need to be involved in residents’ care: “it’s important in an organisation like this that family members do participate, because nobody knows the resident as well as family members, so we’ll see things that the nursing staff can’t.” Consequently, they felt confident to assist staff as needed and even insist on some aspects of care:

> We had to insist and we finally got it, we got dad down to the physiotherapy room, we got him down there once. They said it wasn’t really appropriate for him, but we got him down there and with a bit of a push and a shove verbally, it got achieved, the result.

Discussion

In 2006, Bauer argued that a new model of care was required, where staff worked collaboratively with families “as a legitimate and necessary part” of their role (Bauer, 2006, p. 45). In 2008, the Tri-focal Model of Care was developed and included the concept of partnership-centered care to address the recommendations arising from research in this field. The findings of this study provide an important insight into residents’ and family members’ perspectives of partnership-centered care in association with implementation of the Tri-focal Model of Care and suggest a transition towards a partnership-centered approach to care was occurring as a result of implementation of the Model.

Prior to implementation of the Model, themes that emerged from residents’ interviews were consistent with findings reported in existing literature. Disempowerment, perceptions of loss of choice, and exclusion from decision making were associated with a perceived loss of power and control. These findings may, in part, relate to staff concerns and their duty of care to protect residents from harm, leading to a risk-averse environment. Acknowledging tension between promoting resident autonomy and resident protection, a recent report from the Agency for Healthcare Research and Quality states “nursing homes must find a balance between preserving person-centeredness and resident safety while ensuring safety, quality of care, and quality of life for residents” (Simmons et al., 2016, p. vi).

Resident participants highlighted the importance of communication and engagement, factors that have been previously identified as problematic for residents in LTC, with reports of communication between residents and staff being brief, infrequent, and focused primarily on physical care (Edwards, 2003; Ellis & Rawson, 2015; Oliver & Redfern, 1991). Additionally, building relationships with other residents has been identified as a challenge for older people residing in LTC facilities (Lee, Woo, & Mackenzie, 2002).

Following implementation of the Tri-focal Model of Care, the themes that emerged from interviews with residents presented a somewhat different picture with respect to: acceptance of LTC being home, despite still missing their previous home; acknowledgement that staff were attempting to address residents' preferences and an appreciation by residents for staffs' level of busyness; and the importance, to a resident's experience, of staff genuinely "knowing" the person and the person's life story, as well as having sufficient numbers of staff to provide quality care. In relation to aspects of care that residents considered important to their experience of partnering with staff, the findings of this study are congruent with the Eight Picker Principles of Patient-Centred Care (Picker Institute Europe, 2016). The principles considered central to an individual's experience of care are: respect for the person's values, preferences, and expressed needs; coordination and integration of care; information, communication, and education; physical comfort; emotional support and alleviation of fear and anxiety; involvement of family and friends; continuity and transition; and access to care.

Prior to implementation of the Model, family members articulated the importance of retaining a sense of control in relation to the older person's life within the facility and acting as an advocate on the older person's behalf. They also highlighted the need for a positive relationship with staff that went hand in hand with open communication. Family members also expressed a desire for families to work together with staff, to enable continuity in care so that relationships between staff and residents could be established and maintained, and the comfort for family members that was derived from knowing the staff were providing good quality care.

Following implementation of the Model, family members' description of their interactions with staff and involvement in residents' care provided the strongest indication of change towards partnership-centered care. They described more open communication between family members and staff and a marked change in the way that staff listened and attempted to consider and account for individual needs. Family members reinforced the importance for them to have some control in relation to the care of the older person, highlighted how they could contribute to care because they knew the older person better than staff, and described feeling more able to assert themselves with staff in advocating for the older person. The significance of family involvement in the care of older people in LTC settings is widely acknowledged (Petriwskyj et al., 2014). Specifically, importance of family in promoting resident well-being has been identified (Haesler, Bauer, & Nay, 2007). Additionally, the importance of accommodating the perspectives of stakeholders (the older person, family, and formal caregiver) involved in the daily life of the older person has been identified (Nolan, Davies, & Grant, 2001).

In interpreting the findings of this study, the limitations need to be considered. While the sample sizes were relatively small for both resident and family member groups, saturation of data was achieved. Additionally, as far as possible, an attempt was made to capture the views of the same participants at the two time points. It was difficult to achieve this because most residents that participated at baseline were deceased at the time of the follow-up interviews, over 12 months later. Family members of deceased residents were not contacted for follow-up interviews. Further, it is possible that baseline interviews influenced participant responses in the follow-up interviews. However, 12 months had elapsed before the follow-up interviews were conducted, and it is unlikely the participants remembered the questions asked at baseline. Additionally, for the reasons described above, few participants participated in both the baseline and follow-up interviews. Finally, given the amount of time that elapsed between the baseline and follow-up interviews, the passage of time may have resulted in changes in residents' and family members' perceptions, and thus, changes in perceptions may not be entirely attributable to the Model.

Conclusions and Implications

There is increasing recognition of the importance of genuine partnerships between health professionals and consumers of health services. As such, models of care that promote consumer engagement and partnerships between staff, residents, and their families provide a mechanism through which the roles, communication strategies, and processes to realize true partnerships can be established. The findings of this study highlight not only the desire for authentic partnerships from the perspective of residents of LTC facilities and their families, but also the potential for models that promote partnership-centered care to provide the foundations for such a relationship. Education programs directed towards assisting all stakeholders to understand the value and nature of partnership-centered care are important in facilitating the process towards adoption of this approach to care. Arising from this study are clear implications for nursing practice in that the Tri-focal Model of Care has the potential to foster partnership approaches to care of the older person, build staff capacity to meet residents' needs, and have positive engagement with family members, which may improve care environments and practices in LTC facilities. From a policy perspective, it may be useful for LTC accreditation standards to include a standard related to partnership-centered care, along with guidelines for achieving this approach to LTC. Further research is required to understand how such an approach to care can be nurtured and sustained. Based on our findings, further research is being conducted to ascertain family members' perspectives on the relevance and usefulness of the content of the Model to ensure that they can actively participate as partners in the care of residents in LTC facilities. In addition, in recognizing the importance of quality care for older people wherever they receive health care, we plan to adapt the Model for other settings such as in acute care. To conclude, the findings of this study suggest that implementation of a model of care that adopts a partnership-centered care approach has the potential to result in improved communication and interpersonal relationships among residents, family members, and LTC staff.

Acknowledgments

Implementation of the Tri-focal Model of Care was funded through the Teaching and Research Aged Care Services initiative of the Commonwealth Government of Australia. Development of the Model was funded by the JO & JR Wicking Trust.

Clinical Resources

- Centre for Innovation and Education in Aged Care—website for the Tri-focal Model of Care nine module education program: https://blogs.deakin.edu.au/cieac-online/sample-page/programs/online-program/
- Patient Centred Outcomes Research Institute: http://www.pcori.org/about-us
- The Picker Institute: http://www.pickereurope.org

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Supporting Information

Additional Supporting Information may be found in the online version of this article at the publisher's web site:

Table S1. Pre-Implementation Sample Interview Questions

Table S2. Post-Implementation Sample Interview Questions

Table S3. Residents' Demographic Characteristics ($n = 17$)

Table S4. Family Members' Demographic Characteristics ($n = 38$)

JOURNAL OF NURSING SCHOLARSHIP

NEW MODELS OF CARE IN RESIDENTIAL LONG-TERM CARE

Introducing Technology for Thriving in Residential Long-Term Care

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Key words
Care delivery system, geriatrics, information technology, long-term care, qualitative research

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Accepted October 9, 2016

doi: 10.1111/jnu.12268

Abstract

Purpose: To present an emerging innovative care model that supports participation and thriving by older adults in residential care, by introduction to new technology and mobilizing volunteer services.
Design: Qualitative, exploratory study, introducing tablet computers to 15 older adults in two municipalities.
Methods: The intervention encompassed weekly workshops over the course of 1 year with volunteer adolescents as personal tutors. Observations of workshops, interviews with nurses, and repeated semistructured interviews with older adult participants eliciting their perspective on use, experiences, perceived usefulness, and overall evaluation of the intervention.
Findings: A model of four components is suggested to support participation and thriving by older adults in residential care: (a) simplified tools: iPad—technology relatively easy to use; (b) person-centered process: one-to-one tutoring following each individual's own pace; (c) young volunteers to teach technology, establishing an intergenerational arena; and (d) being mindful of driving forces that encourage use and learning. We found that all kinds of use and all levels of mastery generated a sense of pride that supported thriving and enjoyment.
Conclusions: These findings support the use of new technology and use of volunteer services for sustaining thriving in older adults. The person-centered approach stimulates use of the tablet, and participants showed enjoyment, more social participation, and reported subjective experiences of thriving.
Clinical Relevance: Innovative models of care that prevent (or postpone) functional decline and support thriving in older adults are highly sought after in health care. A model that systematically involves volunteer services comes with potentials to alleviate nurses' workload, and then the intervention is seen as a manageable and low-cost initiative in residential care.

The growing numbers of older adults in the Western world is a mixed blessing. As a society, we applaud higher standards of living and technological advances leading to greater longevity. Simultaneously, we are presented with numerous challenges to remain active and healthy while aging. With age, individuals risk entering a vicious cycle with fewer social contacts, inactivity, reduced physical and mental functionality, increasing weight loss, and risk for falls, accidents, and severe complications (Rocchiccioli & Sandford, 2009). From a nursing perspective, we need to explore interventions and develop person-centered models that contribute to postponing or preventing failure to thrive and to promoting healthy aging by targeting the person's interests and resources.

A major future increase in number of older adults, leading to an aging population, has been projected (Ministry of Health and Care Services, 2005–2006). This will have significant implications for the repertoire of services health care will be able to offer. Nurses in community care already work according to a very tight time schedule, with few opportunities for additional or nondescribed tasks (Holm & Angelsen, 2014). Hence, many older adults spend a considerable amount of time on their own, at risk for decline and few opportunities to engage in subjectively perceived meaningful activities. To meet future challenges, policymakers suggest a change of focus to preventive work and mobilization of community resources (Ministry of Health and Care Services, 2012–2013). Herein is a call for novel approaches to complement already available services in community care.

Aging processes are somewhat modifiable. Efforts to prevent, slow down, or even stop unintended cascades of declines and losses are promising (Christensen, Doblhammer, Rau, & Vaupel, 2009). A major concern, however, is that few models of care go beyond the prevailing focus on compensatory care in the case of failures and declines, diseases, and impairing health problems (Kim, 2015). Person-centered processes should focus on older adults' abilities and resources for self-help and independence. Systematizing empirical experiences of how to capitalize on novel combinations of community resources can deepen our insights to models of care that are sustainable contributions to postpone overall dependency.

Person-centered strategies to sustain or improve thrive are pivotal for older adults to prevent loneliness or postpone the challenges of old age. We argue for new models in residential care that include opportunities to participate, mindful of personal capacities, preferences, and needs to socialize. Processes of deteriorating capacity, subtle signs of decreased functional capacity, weight loss, sensory loss, or declining cognitive and social skills are major causes leading to functional decline reported as the syndrome geriatric failure to thrive (GFTT; Robertson & Montagnini, 2004; Rocchiccioli & Sanford, 2009). Mobilizing potentials to activate energy to keep up and go on, and seeking improvements stabilizing physical, mental, or social well-being are important ingredients to maintain active aging (Bowling, 2008). The ability to activate personal and social resources in unfamiliar situations can lead to positive experiences and improvements physically, mentally, or socially (Bundick, Yeager, King, & Damon, 2010), and contribute significantly to reduce the number of years of dependency.

Lack of familiarity with new technological tools, limited user skills, and low digital literacy leave older adults behind (Olphert & Damodaran, 2013). Previous studies have demonstrated that increasing older adults' capacity to use new technology facilitates independence, autonomy, and social participation (Blazun, 2013). Evidence also suggests that opportunities to maintain and increase social contact or to engage in common everyday activities often decrease loneliness (Cotten, Anderson, & McCullough, 2013). However, older adults are unlikely to start using the Internet or tablet computers without some form of assistance (Zickuhr & Madden, 2012), and health care workers have limited time available to engage in such activities. The purpose of this article is to present an emerging innovative care model that supports participation and thriving for older adults in residential care, by introducing new technology and mobilizing volunteer services that could (a) increase older adults' self-care ability and thriving and (b) postpone increasing care needs, without (c) adding additional workload on nurses.

Design and Methods

We report empirical findings from a longitudinal study, ACTIVE (Active Aging Enabled by Services and Communication Technologies; 2012–2015). The study had an exploratory design (Polit & Beck, 2016), studying an intervention with tablet computers for older adults in long-term residential care in two larger, urban municipalities (hereafter referred to as Municipality A and Municipality B) in the same province in Eastern Norway. The intervention took place from October 2013 to October 2014. The total population of Municipality A is 33,100 citizens, while Municipality B is larger, with 122,300 citizens. We analyzed data from repeated observations and scheduled semistructured interviews with all participants. Additionally, we interviewed four nurses in Municipality B who cared for the participants. Field notes were taken during workshops describing progress, process, and interaction between participants and young volunteers.

Recruitment and Sample

Recruitment of the convenience sample was carried out in close collaboration with staff and leaders in the healthcare section of the municipalities. In Municipality A, participants were recruited through a rehabilitation program. In Municipality B, participants were recruited by the head nurse at the residential care facility (RCF). Our inclusion criteria were: older adults with little prior knowledge of tablets, living in a supported, senior apartment ($n = 3$) or RCF ($n = 12$). Older adults with advanced cognitive impairment and

Table 1. Participant Demographics

Gender	Male: 6	Female: 9	
Age (years)	Mean: 78.3	*SD*: 12.49	Range: 54–94
Type of residence	RCF: 12	Private home: 3	
Computer experience	Yes: 5	No: 10	
Participated in workshops	No: 3	Yes: 12	

Note. RCF = residential care facility.

Table 2. Timeline of and Focus in the Intervention in Municipality A

Time period	Focus of the intervention
October 2013–December 2013	Group 1: adolescents and researcher (E.R.G.): Weekly meetings, in total 6. Introduction to iPad and getting familiar with usage. Exploring interests, e.g., YouTube, Solitaire, digital Newspapers. Introduction to e-mail, Skype, and messaging (iMessage, text message). One-to-one instructions, following participant's individual interests. Handling of problems and answering ad hoc questions.
January 2014–May 2014	Group 1 follow-up: Meetings every other week (adolescents), in total 12 meetings. Researcher (E.R.G.) joined once a month. One-to-one instructions, following participant's individual interests. Handling of problems and answering ad hoc questions.
June 2014–October 2014	New pupils have their introductory course at school. Participants use their iPad on their own initiative.
October 2014–November 2014	Group 2: new adolescents and researcher (E.R.G.): Weekly meetings, in total 4. One-to-one instructions, following participant's individual interests. Handling of problems and answering ad hoc questions.

significantly reduced eyesight were not included. The intervention was explained to eligible participants by recruiters familiar to them. Those who expressed an interest to participate met the researchers, who explained the intervention in more depth. Voluntary participation and possibility to withdraw at any given time was emphasized. Those who chose to participate signed a consent form. Fifteen older adults agreed to participate in the study, six from Municipality A and nine from Municipality B. Most participants were in their upper eighties. Two participants were younger than 65 years, but their disabling chronic condition required supervised living and greatly limited participation and social contact. **Table 1** shows the demographics of the participants.

Of these 15 recruited participants, 10 had never used any information and communication technology (ICT) devices (computers as well as tablets). Among the five participants with some computer experience, their knowledge varied widely. Two owned a personal computer (PC) that they used occasionally. Another had used a PC for work. One participant owned a PC, had a Facebook and Netflix account, and some experience from online activities. Two participants withdrew from the study shortly after receiving the iPad due to illness and lack of interest. Another two participants died, and one was hospitalized through the duration of the study.

Key persons in the municipalities suggested local, relevant organizations in the vicinity of the RCFs as volunteers, explained the intervention, and established contact with the research team. As a result of discussions in the municipalities, we partnered with adolescent volunteers to teach participants how to use the tablets. Albeit initially unintended, this added the opportunity to explore intergenerational collaboration for regular follow-up in our study.

Description of the Intervention

We provided the older adults with an Internet-connected tablet (iPad with 3G or Wi-Fi connection), free of charge, to use as they liked for an unlimited period of time. The iPad was set up with an individual user account, including e-mail, Apple-ID, Skype-ID, passwords, and codes. This information was given in writing to each participant. To avoid overwhelming the participants, a carefully selected, smaller set of basic applications (apps) was installed when the intervention started. These were: Skype, a selection of digital Newspapers, Google, and a recipe app (MatPrat). Additionally, we installed one or two apps closely linked to the participants' interests according to the initial interview.

In Municipality A, the volunteers were 16-year-old high school pupils, specializing in health and social care. They had a structured plan for the workshops, but the tutoring was individually adjusted (**Table 2**).

In Municipality B, the volunteers belonged to an after school youth club. They were between 12 and 16 years of age. The intervention had a looser structure; the volunteers were given a list of possible subjects to focus on, in addition to follow the participants' interests and

Table 3. Timeline of and Focus in the Intervention in Municipality B

Time period	Focus of the intervention
January 2014 to mid-April 2014	First group of adolescents: 11 workshops Introduction to iPad and getting familiar with usage. Exploring and pursuing the individual's interests, e.g., YouTube, Solitaire, Newspapers. Introduction to e-mail.
April 2014–June 2014	Second group of adolescents: 6 workshops Exploring new apps together. Repeating navigation. Introduction to photography.
September 2014–November 2014	Third group of adolescents: 9 workshops Repeating functions and navigation. Handling of problems. Answering ad hoc questions.

wishes (**Table 3**). During the course of the year, the group of volunteers was replaced once in Municipality A and twice in Municipality B due to natural changes.

Data Collection

Observation. Focusing on the older adult, we followed the participants over the course of 1 year and met for regular observations and informal interviews, keeping field notes of their use and development. The group in Municipality A was observed in 16 out of 22 workshops, and the group in Municipality B was observed in 6 out of 26 workshops.

Interviews. An interview guide was developed to capture data according to the focus of this intervention: (a) experience with ICT, (b) activities and interests, and (c) social network and social interaction. Furthermore, we focused on each participant's individual process during the intervention to elicit more insights from early, exploratory work suggesting that older adults are not homogenous regarding interest, ability, and frequency in use of ICT (Gjevjon, Øderud, Wensaas, & Moen, 2014). Individual semistructured interviews were conducted by two of the researchers at baseline and after 6 and 12 months of use. The interviews were audio-taped, and later transcribed. Field notes taken during the interview were summarized directly afterward. The participants chose whether they wanted the interview conducted in their own apartment or a meeting room at the RCF. One of the participants had a family member present at the first interview; otherwise, the participants were alone when interviewed.

Analysis. We combined inductive and deductive approaches to analyze the empirical material (Fereday & Muir-Cochrane, 2006). The transcribed interview data were first screened inductively and were subjected to a broad selection of material according to relevance to the focus of the intervention: activity, social contact, communication, or technology. Selected data were subjected to a thematic analysis using the analysis tool NVivo version 10 (QSR International, Burlington, MA, USA). Four researchers (i.e., authors) read the transcripts ($n = 37$). We used open coding, assigning initial codes during first examination and exploration of the data. The properties of each code were discussed and agreed upon. Field notes supplemented interview data and were analyzed to further understand the processes that led digitally naïve people in residential long-term care to include an iPad in their opportunities to participate in, expand, or seek subjective experiences of thriving. These topics were compared to the findings from the analysis described above. Finally, we identified driving factors for use.

Ethical Considerations. The Norwegian Social Science Data Services approved the study's protocol (project number 31531/2012). In addition, the participating municipalities approved the study. All participants gave informed, written consent prior to interviews, and approved audio recording. Privacy was maintained by removing names and identifiable information from transcripts prior to any analysis. The young volunteers gave their informed consent to participate, and in Municipality B written permission from parents was also obtained before the start of the intervention, since their young age required co-signing by their guardian.

Results

We report on participants' use of services delivered through the iPad, pursuing interests, increasing social contact, and making transactions as e-citizens.

Introduction to the iPad and the First Workshops

To prepare for the intervention, we used experiences from initial exploratory workshops, observations, and interviews about ICT use among older adults (Gjevjon et al., 2014). We developed a booklet with simplified, process-oriented instructions, emphasizing the core functions of the iPad and the apps installed, such as turning on and switching off the tablet, navigation, description of the apps, and how to use them. The booklet was handed out with the iPad, and participants were paired with young volunteers for individual tutoring and support. The volunteers returned for workshops at a scheduled time and place weekly to guide the participants. They set the agenda together based on the questions or interests of the participant. Repetition of previously discussed and taught subjects frequently occurred, especially in the beginning.

Seeking Information and Entertainment, and Exploring Traditional Services on the iPad

Initially, many participants had doubts about their ability to use an iPad, but curiosity or motivation from relatives had convinced them to try. One female participant shared how doubt had changed into confidence after some time, much to her appreciation:

> To be honest, I didn't think I would be able to use it [the iPad], but now I can do it. I thought I was too old to learn something that I had never seen before. I thought I could not make it being almost 100 years old, but now I can and it is great fun!

The participants expressed pride as they acquired basic skills to operate an iPad. Volunteers guided them to expand their use of apps reflecting their interests, often as a source of information or for entertainment purposes. A female participant in her nineties, living alone and spending much time by herself, said:

> I use it [the iPad] every day. It's the first thing I do when I get up in the morning. I look at the headlines in the newspapers, and afterwards I sit with it [for a while]. Sometimes I'm thinking "Oh, my goodness it's dinnertime!" There's so much to look at, so I think having it [the iPad] is very entertaining.

Some were happy staying with the initially selected apps and did not explore or look for more possibilities. Others tried additional apps. The apps for weather forecasting caught much interest. A male participant explained how he could keep himself updated on the weather forecast at different locations he was interested in: "I follow the forecast for three to four locations: the village where I was born, for Telemark [another county], my current place of living, and for Karasjok [Northern Norway], that very cold place." Being updated on the weather is an example of how the possibilities of the iPad spiked curiosity and expanded perspective. Being able to independently manage apps fostered continuation in the study. All participants read newspapers on the iPad, expressing an interest to stay informed about major events and news from a local and a global perspective. To read news on the iPad before it was published on television or in the newspaper was much appreciated. The participants reported that they enjoyed themselves and felt more informed.

Pursuing Interests and Seeking Entertainment Through the iPad

Some participants sought out more apps. Several of our male participants shared an interest in music. On the iPad they started exploring music apps such as Spotify and YouTube. They found and listened to music every day or enjoyed watching music videos from a wide range of decades and genres. One of them expressed his enjoyment of using YouTube: ″I listen to a lot of music. I also use this YouTube and I enjoy listening and watching the music videos. I love Elvis. He is the best, I believe!″ Another explored and expanded his interest for classical music through YouTube by listening to how different artists, conductors, and orchestras performed masterpieces from the old classic composers. "I played the music with different sopranos singing and different orchestras and conductors. I was sitting for more than an hour listening to the same piece of music, but in different versions and artists." This participant gained new interests seeking knowledge about music. He started reading more about the history of the composers, and this triggered his interest in searching for information about other famous persons on the Internet. He explained: ″I was recommended to seek information by using Google, and I did so. It is very interesting and I am using the Internet as a reference book." Participants like him explored according to interests and gained new knowledge by the possibilities delivered by the Internet and the iPad.

Social Contact and Communication

While some used the iPad solely for entertainment purposes, others sought and tried to re-establish contact with relatives and friends. They tried out communication apps such as messaging, video conversation, and e-mail. Most of the participants communicated with close relatives and friends. This did not replace other forms of social contact, but came as an addition. As one of the female participants explained:

> It is about my children and grandchildren. I didn't see the need for e-mail or other type of online communication, but when they are on holiday or travelling, then I can feel the need for e-mail communication, and I send them an e-mail.

One female participant had not been able to travel and visit with her relatives for more than two decades due to illness. Using her iPad, she could communicate with her family and friends using Skype, e-mail, and Facebook:

> I receive photos from my sister's daughter and her children. It is very nice for me to see her children and grandchildren. I can see their new cozy home that they just bought, in the area of my hometown. I can see my brother's children, and they are all sending me messages. And my cousins, I can see them all being together at my childhood home. For me, this is incredibly nice to see.

Although her health condition prohibited travels to attend family gatherings, she could stay in touch and enjoy participation using the iPad. To her, access to social media opened up a whole new world where she could have contact with family and friends when her health condition permitted her to do so. From being almost totally isolated, she could be an active participant in the lives of her family. Although participants preferred face-to-face communication, online communication came as a supplement when that was impossible. The nurses experienced a change in social behavior in the participants using iPads, taking more initiative and being more socially active. One of the nurses reported: ″Some are not that anxious any more, they do not lock themselves in their rooms, and they are more socially active.″ Other nurses noted that the participants had more self-confidence and were very proud of their new skill:

> Those who have the iPads are very happy and they love their iPad. As soon as they managed one thing, they became very proud of themselves, some being more than 90 years old and still managing to operate an iPad.

The nurses observed that being able to use an iPad and the Internet facilitated thriving and social participation, regardless of level of performance.

Making Transactions as an e-Citizen

The e-citizen is an advanced user of the Internet that takes advantage of the full suite of available digital services to interact with civil society. This includes transactions such as online banking, shopping, buying tickets, communicating with the government or municipality, or accessing digital services. Only a few participants in this study used these opportunities during the study. A female participant unable to do her own shopping reported that previously she wrote a shopping list for groceries to give to someone who did her shopping. Online shopping would give her flexibility and make her gain independence. ″I would like to try this online shopping, because it gives you the possibility of being independent.″ In another example, a male participant, initially very reluctant, used the iPad for entertainment and communication the first 10 months, and then suddenly asked for help to learn how to use online banking services. ″Instead of going to the post office or the bank, I would like to do online banking.″ Then, two meetings later with one-to-one follow-up, the participant used online banking services. Then he spontaneously expressed that: "You have succeeded in your assignment—to make me positive instead of negative towards the iPad."

The process towards enthusiasm, mastering the iPad, and becoming an e-citizen was not a linear learning process. Some needed more time and assurance than others. Individual training carefully following the progress of the participant was a key factor to successful use of digital services in our study. Analysis of the observational data indicates that the experience of mastery and control is important to expand selection of apps and use more functionalities. Regardless of how they used the iPad, everyone expressed that it was an interesting and positive addition to their lives, and demonstrated pride and satisfaction in being able to master it on their own. Beginning from a similar starting point, the participants showed us different uses and appreciation of the digital opportunities. While some expanded their use and knowledge rather quickly, others learned more slowly and appreciated repetition, encouragement, and reassurance. For subjective experiences of thriving, finding good use of the iPad was most important, and mastering the functions and apps they enjoyed was most essential.

To sum up our experiences, our findings led to an emerging model, exemplifying person-centered processes to master and enjoy use of new technology. **Figure 1** illustrates that the core of the model is the older adults and their activities to use digital services, pursuing interests, and interactions to reach preferred level of proficiency. To facilitate comes the contributions from nursing staff, identifying users and supporting use, and the regular follow-up from young volunteers for encouragement, validation and problem solving. Success also requires collaboration and communication between all three parties. Much of the achievements should be attributed to the individualized follow-up and collaboration across generations.

Discussion

Providing means to maintain social relationships can contribute to independence, autonomy (Coyle & Dugan, 2012; Hauge & Kirkevold, 2012), and, hence, opportunity

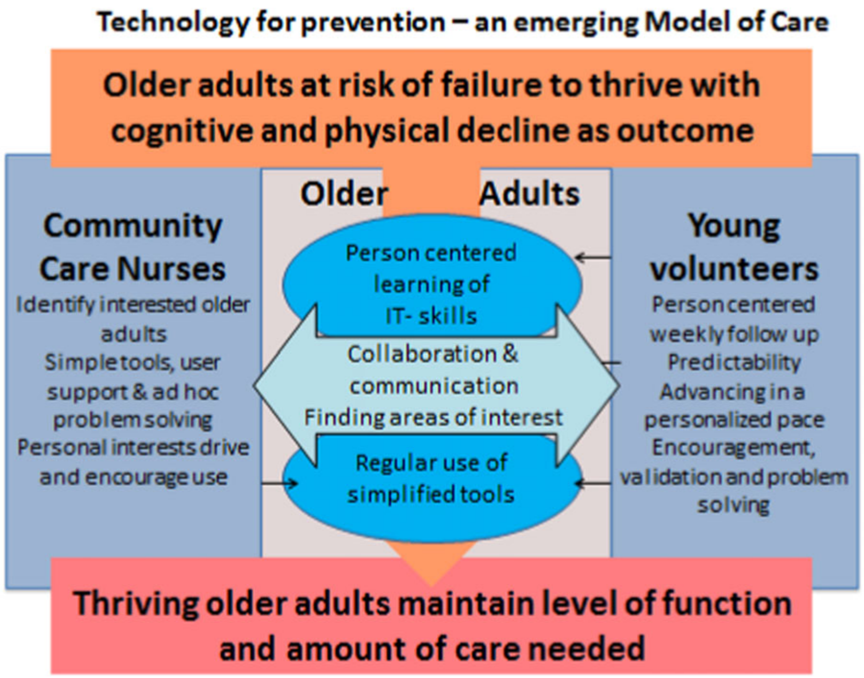

Figure 1. Presenting the model.

to remain in a preferred dwelling much longer. In our intervention, we were seeking out opportunities for participation by introducing older adults to tablets. Our results show that the recruited participants, all with some kind of functional decline, learned and became more skilled ICT users. The discussion focuses on driving factors for expanded ICT use, regular follow-up with a person-centered approach, and health promotion with ICT in nursing care.

During the 1-year intervention, some driving factors seemed pivotal for the participants' ability to use the iPad for different purposes. As expected, individual follow-up of the participants helped accommodate to different interests, concerns, needs, and burning questions. This was necessary for most of the participants (Gjevjon et al., 2014). The participants used the iPad to seek information and entertainment, to increase social contact, for exploration, or to make transactions. They could choose pace, type of activity, extent of use, and apps of interest individually. This is well in line with previous reports that interest and ability to learn how to use new tools, also among older adults, reflects perceived usefulness (Cotten et al., 2013). When gaining familiarity with technology, older adults tend to include Internet use as a routine part of their everyday life (Zickuhr & Madden, 2012).

An important dimension of our intervention was the scheduled, regular opportunities for follow-up that provided predictability, stability, and regularity to when support was available. Attending to the participants' specific questions, contributing to ad hoc problem solving, or showing how an interest could be pursued encouraged use of the iPad and learning, well in line with suggestions on how to advocate for older adults' learning (Merriam, 2001).

We selected apps with potentials for new forms of participation, such as Skype and local newspapers, anticipating that the participants would enjoy these opportunities. Including apps fitting the participants' interests, like the weather app or YouTube, spiked curiosity and expanded perspective. How the older adults used the iPad and chose to interact with the volunteers represented complementary approaches to increased societal participation. The basic introduction, access to individual follow-up, and prescheduled, regular workshops were offered to all participants. The possibility to pursue their individual interests from the beginning may have given them an additional incentive for use. This approach also eased acceptance and confidence to use the new tools (Nägle & Schmidt, 2012). We suggest this as an important dimension when introducing tablets to older adults.

Intergenerational collaboration is suggested as a promising, innovative strategy (Hagen & Ministry of Health and Care Services, 2011). For this study, the regular meetings with the young volunteers gave participants additional reasons to use the iPad, explore, and practice, and played an important part in the intervention. This arrangement may have prevented attrition among the participants, which is a problem often reported in previous studies (Eysenbach, 2005). We observed joy and excitement amongst our participants, especially when they found information, added apps, or mastered new things using the iPad. The young volunteers helped them, explained, and engaged patiently. The iPad was seen as a shared interest serving as a bridge across generations. We cannot underestimate the importance of intergenerational meetings and exchanges per se in relation to the subjective experiences of thriving among older persons. However, the mutuality in the appreciation of this opportunity and the regularity of meeting up provided predictable opportunities to meet and exchange.

Therefore, based on findings in our study, we suggest that interplay of (a) apps of interest on the iPad (i.e., simplified tools); (b) importance of predictability, personalized pace, supporting the person's interests, and access to a tutor for the participant (i.e., person-centered process); and (c) engaged young volunteers from the community is fundamental to the emerging model. This interplay augments the process as driving forces to enable use of the tablet for participation among older adults, encouraging thriving and social contact. Furthermore, we acknowledge that these dimensions may contribute differently in a model, and their relative importance should be investigated in later studies.

This intervention did not require much time or effort from the nurses at the RCF. Initially, they helped identify eligible participants. They also helped certain participants with physical disabilities to get to the weekly workshops. Some nurses were asked to help the participants when there was Wi-Fi trouble in the building. Still, the ones we interviewed expressed that they did not see the iPads as an extra burden, but rather as a possibility for making conversation and as a positive addition to the activities offered at the RCF. Health promotion strategies by nurses in clinical practice traditionally concern treatment and care on the basis of the patient's disease or low functional level (Kemppainen, Tossavainen, & Turunen, 2013). Nurses working with older people usually have a greater emphasis on minimizing the consequences of existing problems than on general health promotion or early intervention for postponing frequent health problems. Findings from this study exemplify an expansion of the focus.

Welfare technology is often associated with ambient assisted living technology, that is, technology especially developed for the purpose of monitoring personal environment or vital signs (sensors), or assisting persons or personnel (e.g., telemedicine). Our study supports the idea that easily available technology such as tablets are promising and less costly tools for promoting health and well-being, that can increase activity and engagement and prevent failure to thrive in older adults. Implemented in care facilities, nurses could play an important role in initiating and facilitating the use of ICT as a means for person-centered care.

Limitations

Limitations to our study include a relatively small sample of participants and the study's exploratory nature. More studies are needed in order to see if similar results could be found in other settings with a different sample of older adults. Although there are limitations, we argue that it strengthens the study that the intervention was carried out in two different municipalities, with different degrees of structure, hence suggesting that results are valid across settings. In addition, the study was longitudinal, with repeated meetings and continuous follow-up over the course of a year, which strengthens the trustworthiness of the results. Low attrition also supports the claim that the older adults found the intervention interesting over a long period of time.

Comparison With Prior Work

Most suggestions for "models of care" seek out strategies for compensatory care and self-care to cope with manifest health issues. Potentials to postpone dwindle (Egbert, 1996) and GFTT (Rocchiccioli & Sanford, 2009) and efforts to delay more resource intense care services are not common in such care models. Few studies focus on the potential for prevention and early interventions, taking advantage of tablets as a gateway to facilitate participation and thriving. To the best of our knowledge no prior studies have reported outcomes of actively engaged young volunteers to carry out and follow up on an intervention. This novel strategy contributes to new types of intergenerational interaction, beyond family ties, and contributes to closing the digital divides older adults are known to suffer from.

Conclusions

The ambitions for our intervention were twofold, as we introduced tablets to the older adults as a strategy to encourage participation and thriving. Firstly, we had an interest in better understanding how our participants could overcome barriers to digital inclusion (van Dijk, 2005). Secondly, we sought insight to assumptions that new tools for participation might contribute to vitality and thriving. Articulating models of care that focus on prevention and early intervention can help alleviate the anticipated challenges that come with longevity and increasing demands for care and treatment by older adults.

The intervention in this study suggests a model of four components: (a) simplified tools (iPad that is relatively easy to use to pursue personal interests); (b) person-oriented process (one-to-one tutoring according to each individual's own pace); (c) young volunteers to teach new technology; and (d) being mindful of driving forces that encourage use and learning.

Following the person-centered introduction, regular workshops, and follow-up during intervention, the participants expressed confidence and enjoyment of use of the iPad and the different apps. By supporting personal interests, different focus, tempo in the introduction, and finding apps that triggered curiosity, we could stimulate enjoyment, social participation, and subjective experiences of thriving.

Acknowledgments

This work was supported by Regionale Forskningsfond–Hovedstaden (grant number 217609/97231). We would like to give our sincere thanks to the 15 participants, the young volunteers, and all the staff in the two municipalities who helped recruit participants and facilitate the study.

Clinical Resources

- American Nurses Association. Resource for finding information about use of technology in nursing care: http://nursingworld.org/
- Failure to thrive in elderly adults: Evaluation: https://www.uptodate.com/contents/failure-to-thrive-in-elderly-adults-evaluation?source=search_result&search=failure-to-thrive-in-elderly-adults-evaluation&selectedTitle=1~150
- The FoNS Center for Nursing Innovation: http://www.fons.org/
- Geriatric Medicine and Gerontology. Health information technology: http://www.hopkinsmedicine.org/geriatric_medicine_gerontology/aging_research/health_services_research/health_information_technology.html

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JOURNAL OF NURSING SCHOLARSHIP

NEW MODELS OF CARE IN RESIDENTIAL LONG-TERM CARE

The Impact of Organizational Innovations in Nursing Homes on Staff Perceptions: A Secondary Data Analysis

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Key words
Care environment, job demands, job satisfaction, long term care, staff perception

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Accepted October 17, 2016

doi: 10.1111/jnu.12271

Abstract

Purpose: The shift in nursing home care for patients with dementia from traditional task-driven environments towards patient-centered small-scale environments has implications for nursing practice. Information about its implications for nursing staff is lacking, and only a few studies have addressed staff perceptions. We sought to explore staff perceptions of required skills and to determine differences in job satisfaction, motivation, and job characteristics of staff working in both care settings.
Design: A secondary data analysis was conducted. The data source used was drawn from a larger study testing the effects of small-scale living (Verbeek et al., 2009).
Methods: Nursing staff working on a permanent basis and who were directly involved in care were eligible to participate in the study. Data on job satisfaction, motivation, and job characteristics of nursing staff working in typical small-scale and traditional care environments were derived using a questionnaire. Data were analyzed using descriptive statistics. Differences between nursing staff job satisfaction, motivation, and job characteristics were tested using multilinear regression analysis.
Findings: In total, 138 staff members were included (81 staff members working in traditional nursing home wards and 57 staff members working in small-scale nursing home wards). The findings showed that in typical small-scale nursing homes, job satisfaction and job motivation were significantly higher compared to those in typical traditional nursing homes. Job autonomy and social support were also significantly higher, while job demands were significantly lower in these small-scale nursing homes. Social support was found to be the most significant predictor of job motivation and job satisfaction in both types of typical nursing homes. Nursing staff working in traditional care environments more often expressed the intention to switch to small-scale environments.
Conclusions: Based on the findings of this study, it can be concluded that nursing homes environments differ substantially in experienced job satisfaction and job motivation.
Clinical Relevance: To enable a balanced work environment for nursing staff, a clear understanding of the relation between living environments and experienced job satisfaction among nursing staff is required. Since social support seems to be one of the key contributors to a supportive beneficial work climate, managers should focus on enabling this in daily nursing home care.

In Western countries, healthcare delivery for people with dementia in institutionalized, long-term care facilities is changing as a result of organisational innovations (Verbeek, van Rossum, Zwakhalen, Kempen, & Hamers, 2009). In the past, institutional long-term care (ILTC) was based on the medical model, whereas care delivery was mainly supply driven (Van Nie, Hollands, & Hamers, 2010). As in other areas of health care, as well as in the business sector, there has been a large amount of development towards a demand-driven approach (Van Nie et al., 2010). With regard to dementia care, this resulted in the concepts of person-centeredness, client-centeredness, and resident-focused or individualized care, which relates to concepts that strongly focus on individual needs and preferences of the person to optimize well-being and improve outcomes (Brown, McWilliam, & Ward-Griffin, 2006; Edvardsson, Winblad, & Sandman, 2008; Mead & Bower, 2000). As a result of this development, new ILTC care environments, like small-scale living facilities (also known as group living), have emerged worldwide (Annerstedt, 1993; Sterns, Miller, & Allen, 2010; Te Boekhorst, Depla, de Lange, Pot, & Eefsting, 2007; Verbeek, van Rossum, Zwakhalen, Kempen, et al., 2009). Individualized care, well-being, and social participation are key characteristics of these small-scale living facilities (Verbeek, van Rossum, Zwakhalen, Kempen, et al., 2009). In these facilities, a limited number of persons with dementia live together in a homelike environment and form a household with staff (Te Boekhorst et al., 2007; Verbeek, van Rossum, Zwakhalen, Kempen, et al., 2009).

The impact and implications of these new care environments on resident outcomes (e.g., quality of life) have been studied (Funaki, Kaneko, & Okamura, 2005; Kane, Lum, Cutler, Degenholtz, & Yu, 2007; Te Boekhorst, Depla, de Lange, Pot, & Eefsting, 2009; Verbeek, van Rossum, Zwakhalen, Ambergen, et al., 2009), showing some beneficial outcomes for residents. However, research about the relationship between the ILTC care environment and nursing staff's well-being is very limited. Brownie and Nancarrow's (2013) review detected nine papers that addressed the relationship between the ILTC care environment and staff's well-being and showed that person-centered care was found to impact job satisfaction in a positive way. However, it must be mentioned that only De Rooij, Luijkx, Declercq, Emmerink, and Schols (2012) study included in this review was a randomized controlled trial (RCT). All other studies failed to use a strong design. Another review by Ausserhofer et al. (2016) investigating the effect of homelike residential models on staff-related outcomes found only three studies investigating staff-related outcomes, showing no significant benefits.

More specifically looking at outcomes of small-scale living on staff's well-being, some positive outcomes were found on health problems and burnout. Te Boekhorst, Willemse, Depla, Eefsting, and Pot (2008) found that job demands were lower and job control and social support were higher in small-scale, homelike nursing homes in comparison with traditional nursing homes. Evidence shows that it is not only the type of small-scale living environment that seems to impact the staff's well-being, but also the dose or level of small scaledness that seems to matter (Verbeek, 2011; Willemse, Depla, Smit, & Pot, 2014). Willemse and colleagues (2014) showed that if the long-term care facility more strictly adhered to the key principles of small-scale care, the staff perceived more decision-making authority and less work pressure.

Because of the specific characteristics and the different approach to providing care in these small-scale facilities, it is expected that working within these small-scale living environments also creates a change in the nursing staff's required personal skills. Verbeek, van Rossum, Zwakhalen, Ambergen, et al.'s (2009) previous study shows that skills have changed for nurses working in these small homelike ILTC facilities by demanding a more integrated way of working, in comparison to staff working in traditional ILTC facilities. However, until now it has remained unclear which skills are warranted in these new, small-scale living environments.

This study aims to (a) explore staff perceptions about skills warranted in both care environments and (b) determine differences in job satisfaction, motivation, and job characteristics of staff between the two care settings.

Methods

Design

This cross-sectional study used baseline data from a longitudinal quasi-experimental study on the effects of small-scale living facilities in dementia care (secondary data analysis, data collected between April 2008 and January 2010 in the Netherlands; Verbeek, van Rossum, Zwakhalen, Ambergen, et al., 2009). The study design and protocols of Verbeek, van Rossum, Zwakhalen, Ambergen, et al.'s (2009) study were approved by the Medical Ethics Committee of the University Hospital Maastricht and Maastricht University, and written informed consent was obtained from the participants.

Participants

Nursing staff (i.e., nursing aides, nursing assistants, certified nursing assistants, and registered nurses) working on a permanent basis and who were directly involved in dementia care (on small-scale and traditional wards) were eligible to participate in the study. Temporary staff (such as trainees), permanent nightshift workers, and team managers were excluded since they usually have different job tasks.

Nursing staff members from 28 small-scale facility wards were invited to participate. Small-scale was defined based on the following characteristics: (a) at most, eight residents per house or unit; (b) daily household duties centered around the residents' activities of daily life (e.g., all meals prepared in the unit's kitchen by nursing staff, together with the residents or their family caregivers); (c) staff performed integrated tasks (along with medical and personal care, they also carried out household chores and organized activities); (d) a small consistent team of staff members took care of the residents; (e) daily life was largely determined by the residents, family caregivers, and nursing staff; and (f) the physical environment resembled an archetypal house (Verbeek, van Rossum, Zwakhalen, Ambergen, et al., 2009).

Nursing staff members from 21 traditional wards were also invited to participate. Traditional wards in nursing homes were defined using the following criteria: (a) at least 20 residents or more per ward; (b) staff had specialized tasks and focused on the medical and personal care of residents; and (c) daily life was mainly organized by the routines of the nursing home, with little influence by the residents, their family caregivers, and staff. The facilities were located in the southern part of the Netherlands.

Theoretical Framework

The Job-Demand-Control (JDC) model developed by Karasek (1979) and the Job Demand-Control-Support (JDCS) model developed by Johnson and Hall (1988) are the most prominent models on occupational stress (Van der Doef & Maes, 1999). These models have studied job-related outcomes (Van der Doef & Maes, 1999), such as burnout symptoms and job satisfaction. The JDC model acknowledges two essential factors of the work environment: job demands and job control. According to the JDC model, staff that experience high job demands (workload) and low job control (influence over tasks) experience low well-being related to their work (Van der Doef & Maes, 1999).

In 1988, Johnson and Hall proposed an extended model. They added the factor "social support," referring to support experienced by colleagues or managers. Job demands, job control, and workplace social support are defined in the JDCS model as factors that interact with and influence the personal outcome behavior (De Jonge, 1995). Staff who experience high demands, low control, and low social support are at the highest risk for poor well-being. While the most favorable outcomes can be expected in the activation hypothesis, which states that a high level of job control (even with a high level of job demand and a low level of social support) leads to learning (De Jonge & Kompier, 1997; Te Boekhorst et al., 2008). It is likely that the influence of the JDCS model on job outcomes also changes in small-scale homelike nursing homes in comparison with traditional nursing homes, given the possible differences in perceived demands, control, and support. The measures used in this study build on the JDCS model.

Measures

Background variables assessed included age, gender, education level, weekly working hours, months of employment in the same department, and years of experience. In addition to the background information, the nursing staff members were asked two additional open-ended questions. The first was related to two skills that they felt were essential in their working environment. The second question asked if the employees would like to switch to another type of nursing home. The intention to switch to another type of nursing home is an indication of a certain fit. Nurses with the intention to switch to another type of nursing home are likely to perceive their person and organization fit with their current type of nursing home as being low (O'Reilly, Chatman, & Caldwell, 1991).

Job satisfaction was measured with four items (De Jonge, 1995). The items were assessed using a 5-point Likert scale ranging from *totally disagree* to *totally agree* (Verbeek, 2011). A sample item is: "I am satisfied with my current work." Higher scores indicate a more optimal job satisfaction. Cronbach's alpha, based on the current study data, was .90.

Job motivation was measured with two items adopted from De Jonge (1995). The items were assessed using a 5-point Likert scale ranging from *totally disagree* to *totally agree* (Verbeek, 2011). A sample item is: "I have a challenging job." Higher scores indicate higher job motivation. Cronbach's alpha, based on the current study data, was .62.

Job autonomy was measured using the 10 items of the Maastricht Autonomy Questionnaire (MAC; De Jonge, 1995). The validity, as well as reliability, of the MAQ (De Jonge, 1995) was confirmed, including a Cronbach's alpha coefficient of 0.86. Cronbach's alpha, based on the current study data, was .88. Items related to job control and job freedom were measured on a 5-point Likert scale ranging from *very little* to *very much* (Verbeek, 2011). A sample item is: "My work offers me the opportunity to choose my own working method." Higher scores indicate a higher level of autonomy.

Workplace social support was measured with the eight-item scale from the Job Content Questionnaire (De Jonge, Reuvers, Houtman, Bongers, & Kompier, 2000; Karasek, 1985). International comparisons of the scale demonstrated acceptable-to-good levels of internal consistency, ranging from .68 to .84 (Karasek et al., 1998). Cronbach's alpha, based on the current study data, was .81. The items are measured using a 4-point Likert scale, ranging from *completely disagree* to *completely agree* (Verbeek, 2011). A sample item is: "My colleagues help me to get the job done." Higher scores indicate more support.

Workload (job demands) was measured with eight items, which are widely used and validated (De Jonge, Mulder, & Nijhuis, 1999; Verbeek, 2011). Cronbach's alpha, based on the current study data, was .93. The items were assessed using a 5-point Likert scale ranging from *never* to *always*. A sample item is: "In my department, there is significant pressure to get the job done in a limited amount of time." Higher scores indicate higher demands. Cronbach's alpha, based on the current study data, was .9.

The level of small-scale homelike care was measured using an 18-item observational questionnaire. Items relate to a unit's organizational, social, and physical environment. A sample item is: "Does the staff wear a uniform?" The items were assessed using a 5-point scale, ranging from 1, *not at all*, to 5, *completely* (total scoring range 18–90); higher scores indicated more adherence to the key features of small-scale living.

Data Analysis

Data from the study were analyzed using SPSS software (IBM Corp., Armonk, NY, USA). To contrast the groups, two subgroups were derived based on the score on the observational questionnaire that measured organizational, social, and physical environment. Most small-scale nursing homes were categorized as having a median score on the questionnaire of above 66, and most traditional nursing homes were categorized as having a score of below 40. These subgroup analyses were used for comparing the most typical small-scale living facilities with most typical traditional wards. Open-ended questions about skills were first analyzed using descriptive statistics. A chi-square test was used to test for significant differences in the intention to switch. Differences between traditional and small-scale nursing homes were tested using multilinear regression analysis. Assumptions, including multicollinearity, were checked. The influence of the JDCS model was tested in three models per type of nursing home. First, a regression analysis was conducted with only (sociodemographic) control variables. Second, the variables job demand, job control, and social support were introduced into the regression analysis. Third, the interactional variables of the JDCS model were separately introduced to determine the difference of their influence and the benefits of the JDCS model. An alpha level of .05 was used for all statistical tests.

Results

Sample Characteristics

Questionnaires were sent out to a total of 581 members of the nursing staff, of whom 302 responded, resulting in an overall response rate of 52%. Response rates varied across the participating settings: 62% ($n = 110/178$) nursing staff in small-scale living environments and 48% ($n = 192/403$) in traditional wards. For subgroup analyses, two groups were created based on the contrast questionnaire that assessed the level of how small scale and homelike the nursing home was. In total, 138 staff members were included: 81 staff members working in the most traditional wards (lowest scoring on adherence to principles of small-scale living) versus 57 staff working in the most small-scale wards (highest scoring on adherence to principles of small-scale living). The participants' characteristics are presented in Table 1. Information about the intention to switch to the other care environment is included in the characteristics of the participants, showing a higher intention to switch for staff currently working in a more traditional care setting. While no nursing staff had the intention to switch to a traditional care environment, about 22% of the valid responses from nursing staff working in traditional care environments expressed the intention to switch to a small-scale environment ($p < .01$).

Staff Perceptions About Skills Warranted in Care Environments

A deviation was made between essential skills that are warranted in both care environments in cases where there was an intention to switch. Table 2 shows findings about essential skills mentioned per type of ILTC facility of nursing staff who expressed the intention to switch to another care environment and those who did not express the intention to switch. In almost all nursing homes, patience was perceived as being the most essential skill. Autonomy was only regarded as being important in small-scale facilities, together with having a greater level of social communication skills. In traditional care

Table 1. Participants' Characteristics in Relation to the Intention to Switch

	Staff members working in typical traditional facilities (*n* = 81)				Staff members working in typical small-scale facilities (*n* = 57)				
Variables	Mean	*SD*	Range	*n* (%)	Mean	*SD*	Range	*n* (%)	*t*
Age	42.3	10.4	23–60		38.8	11.4	19–64		−1.860
Gender				72 (88.9)				54 (94.7)	
Female				9 (11.1)				3 (5.3)	
Male									
Educational level									
Level 1				3 (3.7)	1			1.8%	
Level 2				12 (14.8)	9			15.8%	
Level 3				47 (58)	31			54.4%	
Level 4				15 (18.5)	14			24.6%	
Level 5				3 (3.7)	1			1.8%	
Unknown				1 (0.0)	1			1.8%	
Weekly hours of work	28.2	6	16–40		26.8	6.4	14–40		
Months of employment	83.6	66.7	1–240		31.4	22.4	1–83		−6,473
Intention to switch to small-scale setting									
No				10 (12.3)					
Yes				18 (22.2)					
Perhaps				3 (3.7)					
Missing				50 (61.7)					
Intention to switch to traditional setting									
No								29 (50.9)	
Yes								0 (0)	
Perhaps								2 (3.5)	
Missing								26 (45.6)	

Table 2. Most Mentioned Skills

Want to change to another care environment						Do not want to change to another care environment					
Traditional nursing homes (*n* = 101)			Small-scale nursing homes (*n* = 22)			Traditional nursing homes (*n* = 64)			Small-scale nursing homes (*n* = 111)		
Variables	%	*n*	Variables	%	*n*	Variables	%	*n*	Variables	%	*n*
Patience	17	17	Professional/ competent	30	7	Patience	17	11	Patience	17	19
Professional/ competent	15	15	Autonomy	17	4	Empathy	17	11	Attention for residents	17	19
Empathy	14	14	Communication skills	13	3	Professional/ competent	11	7	Empathy	14	15
Collaboration/ collegiality	7	6	Attention for residents	9	2	Collaboration/ collegiality	11	7	Professional/ competent	8	9

environments, collaboration was mentioned as being an important skill.

Differences in Job Satisfaction, Motivation, and Job Characteristics of Staff

Table 3 presents the mean scores for each group of nursing staff working in the two types of ILTC facilities in terms of job characteristics, job satisfaction, and motivation of staff. The findings show that job satisfaction (mean difference = 0.5) and job motivation (mean difference = 0.3) are significantly higher in typical small-scale nursing homes. Job autonomy (mean difference = 0.6) and social support (mean difference = 0.2) are also significantly higher in typical small-scale nursing homes. Job demands (mean difference = 0.9), on the other hand, are perceived as being significantly lower in typical small-scale nursing homes.

Table 3. Descriptive Statistics for Job Satisfaction: Motivation and Three Job Characteristics

	Typical traditional ($n = 81$)		Typical small scale ($n = 57$)			
Variable	Mean	*SD*	Mean	*SD*	*t*	*p*
Satisfaction	3.9	0.7	4.4	0.5	4.5	<.001
Motivation	4.0	0.7	4.3	0.7	2.1	.01
Job autonomy	2.6	0.7	3.3	0.6	5.4	<.001
Social support	3.0	0.4	3.2	0.4	3.0	.003
Job demands	3.6	0.6	2.5	0.7	−9.4	<.001

Table 4. Regression Analyses of Job Satisfaction in Typical Small-Scale Nursing Homes

Independent variables		*B*	Beta	*t*	*P*
Sex		−0.4	−0.2	−1.5	NS
Age		−0.1	−0.2	−1.0	NS
Education	Level 1	0.4	0.1	0.7	NS
	Level 3	0.04	0.03	0.2	NS
	Level 4	−0.1	−0.1	−0.5	NS
	Level 5	0.1	0.03	0.2	NS
Months worked in same department		−0.006	−0.2	−2.0	.05
Weekly working hours		−0.009	−0.1	−0.8	NS
Years of experience		0.01	0.2	1.2	NS
Job autonomy		−0.02	−0.02	−0.1	NS
Social support		0.7	0.5	3.6	.001
Job demands		−0.2	−0.311	−2.0	.05

Note. $R^2 = 0.6$; adjusted $R^2 = 0.5$; $F = 4.3$. NS = not significant.

Influence of the JDCS Model

Tables 4 and 5 present the regression analyses of the influence of the JDCS model on job satisfaction in typical small-scale and traditional nursing homes. When comparing the results, there was only one difference found between typical small-scale and traditional nursing homes when studying the influence of the JDCS model. The interactional influence of job autonomy and social support is only found in traditional nursing homes. In small-scale nursing homes, social support has a positive influence, independent of the level of autonomous experiences.

Tables 6 and 7 present the regression analyses of the influence of the JDCS model on job motivation in typical small-scale and traditional nursing homes. When comparing both regression analyses, no differences were found in the influence of the JDCS model. Only social support is a significant predictor of the JDCS model in both types of typical nursing homes.

Table 5. Regression Analyses of Job Satisfaction in Typical Traditional Nursing Homes

Independent variables		*B*	Beta	*t*	*p*
Sex		−0.6	−0.3	−2.8	.007
Age		0.02	0.3	2.9	.005
Education	Level 1	−0.6	−0.1	−1.1	NS
	Level 3	−0.2	−0.1	−0.8	NS
	Level 4	0.02	0.01		NS
	Level 5	−1.8	−0.5		<.001
Months worked in same department		0.003	0.3	2.3	.025
Weekly working hours		0.007	0.05	0.5	NS
Years of experience		−0.4	−0.6	−4.1	<.001
Job autonomy		1.8	1.8	1.6	NS
Social support		3.5	1.8	2.2	.029
Job demands		1.1	0.8	1.1	NS
Job autonomy ∗ social support		−0.5	−2.0	−2.4	.020

Note. $R^2 = 0.6$; adjusted $R^2 = 0.5$; $F = 7.3$. NS = not significant.

Table 6. Regression Analyses of Job Motivation in Typical Small-Scale Nursing Homes

Independent variables		*B*	Beta	*t*	*p*
Sex		−0.6	−0.2	−1.5	NS
Age		−0.006	−0.1	−0.5	NS
Education	Level 1	−0.4	−0.1	−0.6	NS
	Level 3	0.03	.03	0.1	NS
	Level 4	−0.2	−0.1	−0.7	NS
	Level 5	0.05	0.01	0.1	NS
Months worked in same department		−0.009	−0.3	−2.2	.035
Weekly working hours		−0.02	−0.2	−1.0	NS
Years of experience		0.004	0.1	0.3	NS
Job autonomy		0.001	0.001	0.007	NS
Social support		0.8	0.5	3.1	.003
Job demands		−0.1	−0.1	−0.9	NS

Note. $R^2 = 0.5$; adjusted $R^2 = 0.3$; $F = 2.9$. NS = not significant.

Table 7. Regression Analyses of Job Motivation in Typical Traditional Nursing Homes

Independent variables		*B*	Beta	*t*	*p*
Sex		−0.1	−0.1	−0.5	NS
Age		0.02	0.4	2.4	.019
Education	Level 1	−0.2	0.002	−0.3	NS
	Level 3	−0.1	−0.03	−0.5	NS
	Level 4	0.2	0.1	0.7	NS
	Level 5	−0.8	−0.2	−2.0	.05
Months worked in same department		0.002	0.2	1.6	NS
Weekly working hours		0.01	0.1	0.9	NS
Years of experience		−0.06	−0.8	−5.2	<.001
Job autonomy		0.02	0.02	0.1	NS
Social support		0.5	0.3	2.4	.022
Job demands		−0.1	−0.1	−0.8	NS

Note. $R^2 = 0.7$; adjusted $R^2 = 0.5$; $F = 4.3$. NS = not significant.

Discussion

Findings of the current study showed that in typical small-scale nursing homes, nursing staff experienced a significantly higher job satisfaction and job motivation compared with typical traditional nursing homes. In addition, nursing staff perceived their job autonomy and social support also as significantly higher, while job demands were perceived significantly lower in these small-scale nursing homes. These results are in line with previous work on typical small-scale, homelike nursing homes (Alfredson & Annerstedt, 1994; Te Boekhorst et al., 2008; Willemse et al. 2014), while effects were not found in the total population small-scale nursing homes (Verbeek et al., 2010) or other homelike, residential models (Ausserhofer et al., 2016). This suggests that a dose–effect relationship may exist.

In this study, most of the proposed influences of the JDCS model were not found; only limited significant influences were detected. Although most influences were not significant, the introduction of the JDCS model into the regression analyses increased the explained variances by 20% to 50%. Support of the strain and activation hypothesis was also limited in typical nursing homes. Only job autonomy and social support demonstrated interactional influences on typical traditional nursing homes. The influence of the JDCS model on job satisfaction and job motivation did not differ between living environments.

Social support was found to be the most significant predictor of job motivation and job satisfaction in both types of typical nursing homes. This can be related to the strain and activation hypothesis. More social support could lead to less strain and, therefore, more job satisfaction and motivation. De Rooij and colleagues (2012) also emphasized this. In addition, social support can lead to more learning and, therefore, more job satisfaction and motivation.

The only difference found was the interaction influence of job autonomy and social support in typical traditional nursing homes. The results showed that the more social support present, the stronger the positive influence of having more job autonomy on job satisfaction. In typical small-scale nursing homes, this interactional influence was not found. It might be that in small-scale nursing homes, the working methods are more adapted to their own particular group of residents, thus presenting differently than the working methods of colleagues in a different small-scale home with a different group of residents. In addition, Te Boekhorst et al. (2008) also stated that small-scale nursing homes are less formally organized because the organization is designed according to the individual needs of the residents. Therefore, more job autonomy will not have a stronger influence when more social support is perceived.

The results of the study show that most employees on the nursing staff explicitly chose one type of nursing home and do not want to switch to another type of nursing home. This could indicate that the nursing staff perceive a good fit between the personal and organizational goals of this type of nursing home match. Perceived personal organizational fit is seen as a more important predictor of behavior than is actual fit (Cooper-Thomas, Van Vianen, & Anderson, 2004). The intention to switch to another type of nursing home could be an indication that an employee does not perceive a high personal organizational fit in his or her current nursing home. The staff included differed in educational level, which may have influenced their perceptions. In the current study, the majority of participants (54% of the staff in small-scale facilities and 58% of the staff in regular wards) were level 3 educated staff members. The other groups (nursing levels 1, 2, 4, and 5) were small and unequally distributed. Therefore, (subgroup) comparisons between educational levels could not be explored in this study.

Furthermore, less bureaucratic and more innovative organizations have a negative influence on the intention of employees to leave the organization (Alvi, Hanif, Adil, Ahmed, & Vveinhardt, 2014). A small-scale nursing home can be considered as being less bureaucratic and more innovative; therefore, this could be a possible explanation for the fact that intention to switch to another type of nursing home was lower in typical small-scale nursing homes.

This study has several limitations that need to be addressed. First, the sample size that was used was limited and could possibly have influenced findings. Second, nursing home settings vary widely across and within countries. Given this enormous variation, study findings are limited in their generalizability. Third, a selection bias could have occurred, resulting in the inclusion of a certain type of nursing staff. Furthermore, the staff that was included differed in educational level, which may have influenced their perceptions.

Our results have important implications for nursing practice and policy. It is possible that the small-scale homelike model will attract more people who want to begin work, and remain working, in health care due to the differences in perceived job demands, control, and support. Ensuring that they stay satisfied, motivated, and do not leave the healthcare field is of major importance for the near future, given the current staffing shortages. Social support seems to be one of the key contributors to a beneficial work environment. In addition, this information is also important for human resource managers. They can use the mentioned skills to select new employees according to the type of nursing home. Potential employees who show high levels of social skills and who have a high level of client focus would find a more appropriate fit in the small-scale nursing home setting. Most nurses perceive these skills as being more important in small-scale nursing homes than in traditional nursing homes. Therefore, employees who have a lower level of client focus, fewer social skills, and are more comfortable with specialized tasks may find a better fit in a traditional nursing home.

There are several suggestions for future research. This study incorporated parts of the personal organizational fit literature. However, personal organizational fit itself was not measured. By measuring the personal and organizational variables in different types of nursing homes, a comparison can be made and their influences on behavioral outcomes can be tested.

Conclusions

Based on the findings of this study, it can be concluded that nursing home environments differ in experienced job satisfaction and job motivation. In small-scale nursing homes, job autonomy and social support were significantly higher, while perceived job demands were significantly lower compared with traditional nursing homes. For policymakers, this has important implications. Taking staff shortages into account, it is important to create an appealing nursing home and work environment. Social support seems to be one of the key contributors to a beneficial working environment.

Clinical Resources

- Alzheimer Europe. A nongovernmental organization aimed at raising awareness of dementia: http://www.alzheimer-europe.org
- Alzheimer's Disease International: https://www.alz.co.uk
- Interdem. A European network of researchers collaborating in research on and dissemination of early, timely and quality psychosocial interventions in dementia aimed at improving the quality of life of people with dementia and their supporters, across Europe: http://interdem.org

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JOURNAL OF NURSING SCHOLARSHIP

CLINICAL SCHOLARSHIP

Frailty Is a Major Related Factor for at Risk of Malnutrition in Community-Dwelling Older Adults

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Key words
Body composition, frailty, geriatric syndrome, nutritional assessment, older people, physiological functions

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Accepted September 4, 2016

doi: 10.1111/jnu.12258

Abstract

Purpose: We investigated the relationships among geriatric syndrome, physiological functions, and body composition in community-dwelling older people with varying nutritional statuses. Other factors correlated with nutritional status in community-dwelling older people were also explored.
Background: The World Health Organization has initiated preventive programs for addressing malnutrition. However, few studies have focused on the correlations among geriatric syndrome, physiological functions, and body composition in older people at risk of malnutrition.
Design: We conducted a cross-sectional study.
Methods: Older people who lived in an urban Taiwanese community were recruited for this research study. The inclusion criteria were age 65 years or older, ability to communicate in Taiwanese, clear consciousness, and ability to communicate independently. The nutritional status of participants was evaluated with the Mini Nutritional Assessment-Short Form. The frailty status was assessed with the Study of Osteoporotic Fractures (SOF) index. The SOF index included the following three items: body weight loss of >5% within 1 year, difficulty in standing from a sitting position in a chair without an armrest five times, and feeling deprived of energy. Participants over 65 years of age, living in a community and without mental illness or acute disease were included in the study.
Findings: Compared with well-nourished older adults, those at risk of malnutrition were predominantly male; presented with lower body weight, lower body mass index values, lower skeletal mass indices, and poorer muscle strength; and were unable to rise from a seated position in a chair without using the armrest five times. Subjects at risk of malnutrition were less energetic, were more commonly characterized as being sarcopenia, and demonstrated frailty. Body composition analysis demonstrated that a skeletal muscle index of approximately 9.93 and a body fat mass of less than 12.25 kg were related to an increased risk of malnutrition. Older people who were frail exhibited a particularly high risk of malnutrition.
Conclusions: The results revealed that the evaluation of malnutrition risk should be conducted in older persons living in the community. Frailty in particular was identified as a major risk factor for malnutrition in community-dwelling elderly persons.
Clinical Relevance: Community nurses should pay attention to the nutritional conditions of community-dwelling elderly persons. Community nurses should assess the at-risk population and provide effective preventive strategies and programs to reduce the prevalence of malnutrition and frailty.

Journal of Nursing Scholarship, 2017; 49:1, 63–72.

Geriatric syndrome refers to clinical manifestations observed in older adults that cannot be characterized as a single disease, such as frailty, sarcopenia, gait instability, malnutrition, inability to move, and cognitive impairment (Ahmed, Mandel, & Fain, 2007; Chang & Lin, 2016). Scholars have indicated that as people age and decrease their food intake, their body composition changes, which critically affects their health and leaves them vulnerable to developing various diseases (Huhmann, Perez, Alexander, & Thomas, 2013). Kaiser et al. (2010) estimated that approximately 6% of older adults living in communities, 15% of older adults living in nursing homes, and 40% of older adults in hospitals were malnourished.

As the percentage of aging people in the population continues to increase and because people's dietary habits and nutritional intake continually change, providing older adults with appropriate nutritional care has become increasingly challenging for the public health sector. For community-dwelling elderly people, the risk factors for malnutrition are considerable (Bollwein et al., 2013). The essential first priority in the identification of older people who are potentially at risk of malnutrition is the assessment of nutritional status. There is a consensus that undernourished people are at considerable risk of developing illness, recover poorly from illness, and experience poor quality of life (Elia, 2001). Additionally, the nutritional status of older adults has been proposed as one of the indicators in comprehensive geriatric assessments (Huhmann et al., 2013).

Previous studies have revealed that malnutrition or risk of malnutrition was apparent in 38% to 50% of community-dwelling older adults around the world (Chang & Lin, 2016; Kaiser et al., 2010). Bollwein et al. (2013) reported that approximately 66% of community-dwelling older people were at risk of malnutrition. In addition, Kaiser et al. (2010) examined an international database and revealed that the prevalence of malnutrition was 23%. Malnutrition exacerbates the age-related decline in muscle mass and strength. These factors are crucial in the development of physical disability and sarcopenia (Cereda, Valzolgher, & Pedrolli, 2008), both of which can contribute to frailty.

Fairhall et al. (2011) mentioned frailty was a common syndrome that is related to poor health results. In addition, Boulos, Salameh, and Barberger-Gateau (2016) also pointed out that frailty and malnutrition are closely related concepts with common determinants in older persons. Recently, Chang and Lin (2016) determined that prefrailty was correlated to the nutrition status of community-dwelling older people. Therefore, Bollwein et al. (2012) suggested that clarification of the relationship between frailty and quality of dietary was necessary.

Because previous studies have rarely compared the factors influencing geriatric syndrome, physiological functions, and body composition of older adults at risk of malnutrition with those of well-nourished older people, these variables were examined in the current study. The results can serve as a crucial reference for those providing nutritional care to older adults.

Aims

The purpose of this research was, first, to compare differences in demographics, geriatric syndrome, physiological functions, body composition, and nutritional status in community-dwelling older adults. Second, this study analyzed the cut-off value of body composition (including muscle mass and body fat) in defining malnutrition risk among older people. Finally, this study explored the risk factors for malnutrition in community-dwelling elderly persons.

Background

Taiwan is a rapidly aging society. Chiu, Lin, Chang, and Lee (2015) surveyed 2,000 residents of Taiwan 65 years of age or older and found that 47.47% of male respondents did not engage in exercise and that 53.74% of female respondents had not developed exercise habits. Among the respondents, 37.16% of men and 31.30% of women engaged in three exercise sessions weekly, with each session lasting at least 20 min. Another study demonstrated that the age, education level, health status, and financial and employment status of community-dwelling older adults in Taiwan were critical factors influencing lifestyle (Chang & Lin, 2016). Tang and Sung (2003) found that older adults living with their spouse were more willing to adopt an active recreational lifestyle than older adults not living with their spouse. Meanwhile, older adults with a higher level of education and higher income were more likely to engage in positive health-promoting behaviors. Chang, Yang, Nieh, and Wen (2015) demonstrated that gender, age, education level, number of chronic conditions, ability to perform instrumental activities of daily living, and food choices were correlated with nutrient intake in community-dwelling older adults.

Nutritional problems are widespread among community-dwelling older adults. Studies have identified close relationships among frailty phenotype, geriatric syndrome, physiological functions, body composition, and nutritional status in older persons (Bollwein et al., 2013; Bonnefoy et al., 2015). Therefore, the assessment of nutritional needs in older adults could help prevent malnutrition. Few studies have examined the correlations between risk factors for malnutrition and nutritional status in older people in Asia. Therefore, the risk factors for malnutrition among community-dwelling elderly persons must be explored.

Methods

Study Design and Participants

This was a cross-sectional study. For this representative, population-based research study, inhabitants of Taipei, Taiwan, who were older than 65 years, were recruited. The accessible group consisted of 69,286 elderly persons living independently. The participants were recruited through the use of posters, advertisements, and flyers publicizing this research. With a 95% confidence level and a 5% confidence interval (CI), the necessary sample size was determined to be 432.

Inclusion and Exclusion Criteria

Participants 65 years of age or older, with the ability to communicate in Mandarin and Taiwanese, of clear consciousness, and the ability to communicate independently (including people who were visually or hearing impaired but could communicate through family members) were recruited. Potential participants with conditions that prevented the successful completion of study outcomes were excluded (i.e., people with serious mental or cognitive disorders, people who were unable to communicate clearly on their own, people who exhibited severe visual or hearing impairment, or people with limited lower limb activity, acute injuries, or a bone fracture that required a plaster cast).

Instrumentation

Interrater reliability. To ensure that relevant indices were measured in the same manner by different raters, we tested the indices' interrater reliability. Two research assistants were asked to record index measurements, and the results were subjected to a correlation test. The test results demonstrated that the interrater reliability ranged from 0.81 to 0.93.

Mini Nutritional Assessment-Short Form. The original Mini Nutritional Assessment (MNA) is an effective tool for assessing nutritional status in older people. However, due to the length of the MNA, it is less effective in screening people in the community setting. Therefore, Rubenstein, Harker, Salvà, Guigoz, and Vellas (2001) developed the Mini Nutritional Assessment-Short Form (MNA-SF). The MNA-SF features only six questions, with an overall score ranging from 0 to 14; those who attain scores of 12–14 points, 8–11 points, or 0–7 points are described as *well nourished*, *at risk of malnutrition*, or *malnourished*, respectively. Analysis of results from the MNA-SF and the original MNA demonstrated that the two methods were highly correlated ($r = .945$, $p < .05$). In addition, the MNA-SF is accurate in identifying well-nourished people, and the sensitivity and specificity of the questionnaire are 97.9% and 100%, respectively. The diagnostic accuracy of the MNA-SF in identifying people at risk of malnutrition is 98.7%.

Geriatric Syndrome Measures

Frailty. Because of the need to develop a simple, convenient, and reliable tool for assessing frailty and for screening people living in communities, Ensrud et al. (2008) proposed the Study of Osteoporotic Fractures (SOF) index to identify frailty. The SOF consists of three questions: (a) Over the past year, have you experienced unintentional weight loss of 3 kg (or above) or 5% of your body weight (or above)? (b) Are you able to rise from a chair without support five times? (c) Do you feel that you lack energy? People who answer "yes" to all three questions, two of the three questions, or one of the three questions are characterised as "robust," "frail," or "presarcopenic," respectively. Ensrud et al. (2009) found that, compared to the five complex frailty indicators of the Cardiovascular Health Study (CHS), the SOF index was more effective at predicting falls, disability, nonspinal fractures, and even death. The study results demonstrated minimal differences between SOF indicators and CHS indices for disability, falls, nonspinal fractures, and death.

Sarcopenia. We identified sarcopenia based on the consensus definition of the European Working Group on Sarcopenia in Older People (Cruz-Jentoft et al., 2010). Participants were identified as having sarcopenia if three of the indices were apparent; those with low muscle mass but without poor handgrip strength or slow gait speed were defined as having presarcopenia. Muscle mass was assessed with a bioelectrical impedance analysis (BIA) device with an eight-contact electrode (Tanita BC-418, Tanita, Tokyo, Japan) according to standard procedures and the manufacturer's instructions.

Handgrip strength was evaluated with the use of standard calibrated hand dynamometers (Lin et al., 2011). We measured the average grip strength of each hand, and the mean grip strength of the strongest hand was used in the study. We evaluated and stratified handgrip strength based on gender-specific body mass index (BMI) quartiles. Participants with the lowest 20% of gender- and BMI-specific handgrip strength measurements were classified as exhibiting low handgrip strength (Cruz-Jentoft et al., 2010).

We also examined muscle performance in participants. The "get up and go" test evaluated each participant's speed, agility, and balance. The participants began the test in a seated posture, with hands placed on the knees and feet flat on the ground. On the order of "go," the timer was started. Participants were asked to stand, walk without running as quickly as possible to a cone, circle around the cone, return to the chair, and sit down. Participants with the lowest 20% of gender- and height-specific scores were classified as having poor gait speed (Cruz-Jentoft et al., 2010; Fried et al., 2001).

Measures of Physiologic Function

Back Scratch Flexibility Test. We conducted the back scratch flexibility assessment to evaluate upper body flexibility in older people. The back scratch flexibility assessment is carried out in a standing posture to evaluate upper body flexibility. Participants were first instructed to lift one hand over their shoulder and behind their head before reaching as far down the middle of their back as possible with their palm touching their back and their fingers pointing down. The participants were then instructed to reach behind their back at the waist with their other arm. With their fingers pointing upward, they were asked to touch or clasp the middle fingers of both hands (Santana-Sosa, Barriopedro, López-Mojares, Pérez, & Lucia, 2008).

Eight-Foot Up-and-Go Test. The "get up and go" evaluation assesses speed and balance in participants when they are moving. Participants begin the assessment with their hands on their knees. On the order "go," the timer is started. Participants are not dependent on the assistance of a support device for walking. Participants are required to stand and walk as quickly as possible to a cone, walk around the cone, and then come back to their chair and sit down. When the participant is seated, the timer is stopped. Normal healthy older persons usually finish the assessment in less than 9 s (Jones & Rikli, 2002).

Thirty-Second Chair "Sit to Stand" Test. The 30-s chair "sit to stand" test evaluates a person's lower body strength with a focus on leg strength. Leg strength is correlated with the ability to perform lifestyle tasks such as climbing stairs and getting in and out of a car or a bathtub. On the signal to begin, the stopwatch is started, and the number of times that participants can come to a standing position in 30 s is calculated (Iersel, Munneke, Esselink, Benraad, & Olde Rikkert, 2008).

Measurement of Body Composition

The BIA (Zeus 9.9, Jawon Medical Co, Ltd, Korea), a noninvasive method, was used to determine body composition in participants, including measurements of body fat mass and ASM.

Ethical Considerations

In this study, community-dwelling adults 65 years of age or older were recruited. To ensure the protection of this vulnerable population, the current study was reviewed by the Social Sciences Ethics Committee at National Taiwan University (201308EM022). All participants signed an informed consent document in this study. The rights of the older adults were rigorously protected, including the right to decide whether to participate in the study and the right to withdraw from the research study without providing a reason at any time and without negative consequences.

Statistical Analysis

Continuous variables were presented as the means ± standard deviations, and categorical variables were presented as numbers and percentages. The independent-sample *t* test was employed to investigate differences between continuous variables (i.e., demographics and test scores) in the "normal" group and in the group "at risk of malnutrition." Additionally, the chi-squared test was used to identify differences between the categorical variables in the two groups.

To examine correlations between various risk factors and the risk of malnutrition, variables that reached a significance level in the univariate analysis from the previous stage were set as the covariate or control variables in the subsequent stage. The multivariable logistic regression method was used to calculate the odds ratio (OR) and CI between each risk factor and the risk of malnutrition. Subsequently, receiver operating characteristic (ROC) curve analysis was used to determine the optimal cut-off point for body composition, thus effectively discriminating well-nourished older adults from those at risk of malnutrition. All statistical analyses were performed using SPSS Version 15 software (IBM Corp., Armonk, NY, USA) with the significance level set at .05.

Results

Differences in Demographics, Geriatric Syndrome, Physiological Functions, and Body Composition in Well-Nourished Older Adults and Those at Risk of Malnutrition

Four hundred and thirty-two participants were recruited; 300 and 132 were classified as belonging to the "normal nutritional status" group and the "risk of malnutrition" group, respectively, based on the results of the MNA. None of the participants were classified as malnourished. The prevalence of those at normal nutritional status was about 70% (300/432). **Table 1** shows that, compared with well-nourished older adults, those at risk of malnutrition were predominantly male; exhibited lower body weights, a lower body fat mass, and a lower BMI; were unable to rise from a seated position in a chair five times without using arm support; were less energetic; were more commonly characterized as being sarcopenic and frail; and exhibited weaker muscle strength. In addition, these participants reported more unintentional weight loss, spent more time completing the eight-foot up-and-go test, completed fewer sit-and-stand sets in 30 s, and demonstrated lower body composition values ($p < .001$).

Comparisons Between MNA-SF Results Used to Assess Well-Nourished Older Adults and Those at Risk of Malnutrition

The results in **Table 2** show that, compared to well-nourished older adults, those at risk of malnutrition reported a greater loss of appetite, with most participants describing weight loss of approximately 3 kg. In addition, most of these participants were unable to walk freely outside (despite being able to get out of bed and walk momentarily without a wheelchair), had endured psychological trauma or acute illness within the past 3 months, exhibited mild depression, and displayed a BMI of less than 19 ($p < .001$).

Analysis of the Body Composition Cut-Off Point Used to Assess Older People at Risk of Malnutrition

The ROC analysis was used to identify effective variables for discriminating well-nourished older adults from those at risk of malnutrition. The results indicated that skeletal muscle index (SMI) and body fat mass were most effective: the optimal cut-off points, determined from the Youden index, were 9.93 and 12.25 for SMI and body fat mass, respectively. In addition, the prevalence of older adults at risk of malnutrition (i.e., 38%) indicated by Huhmann et al. (2013) was used to calculate the sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV) when the SMI value equalled 9.93, which were 76.2%, 37.9%, 43.0%, and 72.2%, respectively. The sensitivity, specificity, PPV, and NPV when body fat mass equalled 12.25 kg were 45.4%, 90.3%, 74.1%, and 73.0%, respectively. These results indicated that when the SMI value was lower than 9.93 or when the body fat mass was lower than 12.25 kg, older adults were at a greater risk of malnutrition (**Table 3**).

Related Risk Factors for Older Adults at Risk of Malnutrition

Results of multivariable logistic regression analysis showed that female gender (OR = 2.54, CI = 1.201–5.355; $p < .05$) and prefrail or frail (OR = 8.778, CI = 4.279–18.006; $p < .001$) were associated with higher risk of malnutrition. Ability to rise from a chair five times without using arm supports (OR = 0.333, CI = 0.124–0.894; $p < .05$), higher level of body fat mass (OR = 0.864, CI = 0.815–0.916; $p < .001$), and higher level of SMI (OR = 0.708, CI = 0.572–0.875; $p < .01$) were associated with lower risk of malnutrition (**Table 4**).

Discussion

To our knowledge, this is the first study to examine the differences in geriatric syndrome, body composition, and physiological functions in community-dwelling older people with varying nourishment statuses. Therefore, this study is innovative and provides valuable information. We found that older adults at risk of malnutrition exhibited lower body weights and lower BMI; Soenen and Chapman (2013) asserted that unintentional weight loss in elderly persons may be a result of malnutrition or cachexia, the physiological anorexia of aging. However, some researchers have indicated that elderly adults at risk of malnutrition exhibited higher body weights and higher BMI values. Winter, Flanagan, McNaughton, and Nowson (2013) reported that one third of at-risk people were overweight or obese, indicating that elderly persons can be at risk of malnutrition despite being overweight or obese. Because of these conflicting results, we recommend that these concerns be addressed in future studies.

We found that, compared to well-nourished older adults, those at risk of malnutrition were more likely to develop geriatric syndrome (e.g., frailty syndrome or sarcopenia) and exhibited poor physiological functioning. Bollwein et al. (2013) and Chang and Lin (2016) indicated that people most at risk of malnutrition exhibited a prefrail or frail status. Biolo, Cederholm, and Muscaritoli (2014) reported that older adults who are

Table 1. Differences Between the Demographics, Geriatric Syndrome, Physiologic Functions, and Body Composition of Well-Nourished Older Adults and Those at Risk of Malnutrition ($N = 432$)

Variable	Normal ($n = 300$)	At risk of malnutrition ($n = 132$)	*p*
Sex			< .001
Male	107 (35.7)	107 (53.8)	
Female	193 (64.3)	71 (46.2)	
Age, year ($M \pm SD$)	71.55 ± 10.64	72.95 ± 9.28	.189
Height, cm ($M \pm SD$)	156.23 ± 7.09	157.06 ± 7.86	.281
Weight, kg ($M \pm SD$)	59.25 ± 9.42	52.98 ± 10.61	< .001
BMI ($M \pm SD$)	24.39 ± 3.21	21.58 ± 4.13	< .001
Education level			.237
Elementary or below	159 (53.0)	61 (46.2)	
Junior or senior high	94 (31.3)	52 (39.4)	
College or above	45 (15.0)	17 (12.9)	
Missing data	2 (0.7)	2 (1.5)	
Chronic disease			
Stroke	9 (3.0)	2 (1.5)	.367
Cardiovascular disease	138 (46.0)	68 (51.5)	.290
Bone and joint diseases	57 (19.0)	24 (18.2)	.841
DM	50 (16.7)	30 (22.7)	.135
Asthma	12 (4.0)	9 (6.9)	.206
COPD	2 (0.7)	1 (0.8)	.919
Number of chronic diseases ($M \pm SD$)	0.89 ± 0.85	1.02 ± 0.90	.179
Fall in 1 year ($M \pm SD$)	0.57 ± 1.01	0.74 ± 1.48	.167
Bone fracture in 1 year ($M \pm SD$)	0.17 ± 0.48	0.15 ± 0.42	.709
Geriatric syndrome			
Frailty indicators			
Unintentional weight loss of more than 5% in the past year			< .001
Yes	21 (7.0)	34 (25.8)	
No	277 (92.3)	97 (73.5)	
Missing data	2 (0.7)	1 (0.8)	
Inability to rise from a chair five times without using arm supports			< .001
Yes	36 (12.0)	34 (25.8)	
No	264 (88.0)	98 (74.2)	
Do you feel full of energy?			< .001
Yes	269 (89.7)	85 (64.4)	
No	30 (10.0)	47 (35.6)	
Missing data	1 (0.3)	0 (0.0)	
Frail phenotype			< .001
Normal	228 (76.3)	56 (42.4)	
Prefrail	57 (19.1)	45 (34.1)	
Frail	14 (4.7)	31 (23.5)	
Sarcopenia indicators			
Muscle mass	9.65 ± 1.74	9.15 ± 1.57	.004
Muscle power	20.77 ± 7.31	19.52 ± 7.28	.112
Muscle performance	6.39 ± 3.07	8.01 ± 5.76	.008
Sarcopenia phenotype			< .001
Robust	252 (85.4)	83 (64.3)	
Presarcopenia	31 (10.5)	27 (20.9)	
Sarcopenia	12 (4.1)	19 (14.7)	
Physiologic functions			
Back scratch flexibility test, cm	−12.88 ± 16.54	−10.25 ± 15.85	.171
Eight-foot up-and-go test, seconds	6.39 ± 3.07	8.01 ± 5.76	.008
Thirty-second chair "sit to stand" test, number of times	16.74 ± 6.73	13.79 ± 7.15	< .001
Body composition			
Body fat mass (kg)	18.06 ± 5.13	13.91 ± 6.50	< .001
ASM (kg)	23.71 ± 5.41	22.75 ± 5.01	.084
SMI (ASM/m^2)	9.65 ± 1.74	9.16 ± 1.57	.004

Note. Categorical variables were presented as number (percentage) and continuous variables were presented as mean ± standard deviation. ASM = appendicular skeletal mass; BMI = body mass index; DM = diabetes mellitus; COPD = chronic obstructive pulmonary disease; SMI = skeletal muscle index; SOF = Study of Osteoporotic Fractures.

Table 2. Comparison of the Mini Nutritional Assessment-Short Form Indicator Results for Well-Nourished Older Adults and Those at Risk of Malnutrition

Variable	Normal (*n* = 300)	At risk of malnutrition (*n* = 132)	*p*
Have you reduced your food intake over the past 3 months because of loss of appetite, digestive problems, difficulty in chewing, and/or difficulty in swallowing?			< .001
Severe reduction in food intake	3 (1.0)	6 (4.5)	
Moderate reduction in food intake	7 (2.3)	24 (18.2)	
No change in food intake	290 (96.7)	102 (77.3)	
What has your weight loss situation been over the last 3 months?			< .001
Approximately 3 kg	0 (0)	27 (20.5)	
Do not know	13 (4.3)	24 (18.2)	
Between 1 and 3 kg	38 (12.7)	23 (17.4)	
No weight loss	249 (83.0)	58 (43.9)	
How mobile are you?			< .001
Must remain in bed or in a wheelchair	0 (0)	3 (2.3)	
Unable to walk freely outside (despite being able to get out of bed and walk momentarily without a wheelchair)	0 (0)	7 (5.3)	
Able to walk freely outside	300 (100)	122 (92.4)	
Have you endured any psychological trauma or acute illnesses over the past 3 months?			< .001
Yes	17 (5.4)	39 (29.5)	
No	283 (94.3)	93 (70.5)	
What is your psychological condition?			< .001
Severe depression	3 (1.0)	11 (8.3)	
Mild depression	6 (2.0)	14 (10.6)	
No psychological problems	291 (97.0)	107 (81.1)	
What is your body mass index?			< .001
<19	0 (0)	41(31.5)	
19–21	35 (11.7)	22 (16.9)	
21–23	71 (23.7)	33 (25.4)	
>23	194 (64.7)	34 (26.2)	

Table 3. Body Composition Cut-Off Point Used to Assess Older Adults at Risk of Malnutrition

Test and cut-offs	Sensitivity	Specificity	AUC (95% CI)	PPV[a]	NPV[a]
Body fat mass			0.72 (0.66–0.77)		
12.15	0.446	0.903		0.738	0.727
12.25	0.454	0.903		0.741	0.730
12.35	0.454	0.899		0.734	0.729
SMI			0.57 (0.51–0.63)		
9.90	0.754	0.390		0.431	0.721
9.93	0.762	0.379		0.429	0.722
9.95	0.762	0.376		0.428	0.720

Note. AUC = area under the (receiver operating characteristic) curve; CI = confidence interval; PPV = positive predictive value; NPV = negative predictive value; SMI = skeletal muscle index.

[a] According to the prevalence of 38% reported by Huhmann et al. (2013); the cut-off point was judged according to Youden index.

malnourished register lower SMI values and experience a loss of muscle mass and strength, which leads to sarcopenia and physical impairment. Sarcopenia and physical impairment are also two crucial criteria used in defining frailty syndrome. The results of this research support those of previous studies demonstrating that malnutrition risk is positively correlated with the presence of existing manifestations of geriatric syndrome, including functional dependence and multiple comorbidities (Saka, Kaya, Ozturk, Erten, & Karan, 2010). Tasar et al. (2015)

Table 4. Related Risk Factors for Community-Dwelling Older Adults at Risk of Malnutrition

Predictor	OR	95% CI of OR	*p*
Sex (1: Female/0: Male)	2.54	1.201–5.355	.015
Frail status (1: Prefrail or frail/0: Robust)	8.778	4.279–18.006	< .001
Ability to rise from a chair five times without using arm supports (1: Ability/0: Inability)	0.333	0.124–0.894	.029
Body fat mass (kg)	0.864	0.815–0.916	< .001
Skeletal mass index (%)	0.708	0.572–0.875	.001

Note. CI = confidence interval; OR = odds ratio.

indicated that sarcopenia was present at a high frequency in people at risk of malnutrition but was less prevalent in obese people. Chang and Lin (2016) determined that prefrailty and BMI were correlated to the nutrition of community-dwelling people independently. Cereda et al. (2008) also observed that the loss of muscle mass and weight indicated a positive relationship between nutritional intake and the Barthel Index. Therefore, older adults at risk of malnutrition are prone to develop geriatric syndrome and poor physiological functioning.

Our study also demonstrated that, compared to well-nourished older adults, those at risk of malnutrition presented with poor appetite, lower body weight, limited ambulation, more episodes of psychological trauma or acute illness, severe depression, and lower BMI values. Van der Pols-Vijlbrief, Wignhoven, Schaap, Terwee, and Visser (2014) systematically reviewed previous studies and asserted that malnutrition is a multifactorial issue that includes poor appetite, hospitalization, and poor self-reported health and that different factors may play a role in the development of malnutrition. In addition, we found that the risk of malnutrition was higher in females than in males, a result supported by previous studies. Charlton, Ferreira, and Fourie (2016) and Torres et al. (2014) reported that poor nutritional status was commonly found in older persons living in the community. Meanwhile, female gender was demonstrated to be independently related to poor nutritional status.

We demonstrated that body fat mass and SMI could effectively discriminate well-nourished older adults from those at risk of malnutrition; when the SMI value is lower than 9.93 or when the body fat mass is lower than 12.25 kg, older people are at a higher risk of malnutrition. In particular, the specificity values of body fat mass were above the sensitivity values, indicating that these tests can be carried out to eliminate the risk of malnutrition in older people. In addition, a low PPV value indicates that an SMI value was likely misclassified. In the current study, a high NPV was obtained because the primary purpose of our study was to minimize failure to identify those at risk of malnutrition. The PPV in the current study therefore indicated that older persons who were not at risk of malnutrition were likely to be confirmed.

We found that the risk of malnutrition was higher in older people who were prefrail or frail than in those who were robust, which was consistent with the results of previous studies. Boulos et al. (2016) and Artaza-Artabe, Sáez-López, Sánchez-Hernández, Fernández-Gutierrez, and Malafarina (2016) indicated that the proportion of individuals suffering from poor nutritional status increased with increasing frailty. Both malnutrition and the risk of malnutrition were related to a significantly increased risk of frailty in the current study. Bollwein et al. (2013) noted that 90% of those at risk of malnutrition were either prefrail or frail, which underlines the close relationship between frailty and nutrition in elderly people. In addition, our results emphasized the close relationship between muscle mass and nutritional status in elderly people. Soenen and Chapman (2013) indicated that elderly persons lose weight, possibly due to a decline in skeletal muscle tone. The loss of lean muscle tissue results in sarcopenia, which is related to poor health outcomes.

Conclusions

This research investigated the risk factors and cut-off points for older people at risk of malnutrition. The results demonstrated that geriatric syndrome, physiological functions, and body composition are critical factors for determining nutritional status in older people. These findings possess reference value for nutrition assessments, specifically for older persons in Taiwan. These results can assist community nurses in the identification of older persons at risk of malnutrition in populations similar to those in East Asian countries.

Limitations

In spite of these contributions, this research involved certain limitations. First, although it was based in the community, the study was only representative of an urban environment. Thus, the results cannot be extrapolated to people living in a rural setting. Second, the participants were recruited using a nonrandom method. Therefore, the conclusions cannot be generalized to other populations. Nevertheless, despite these limitations, the cut-off values determined in this study can assist healthcare providers in the early identification of community-dwelling elderly people at risk of malnutrition and may serve as a reference for future intervention studies.

Nursing Implications

The results of this study provide reference values related to geriatric syndrome, physiological function, and body composition specific to community-dwelling older adults. Community nurses could use the cut-off points described herein to objectively detect nutritional status in the early stages of malnutrition. In other words, community nurses should develop effective strategies (e.g., providing consultation services for nutrition and planning resistance exercise programs) to enact when the body fat mass or skeletal muscle index of older adults drops below the cut-off points to reduce the likelihood of these older adults undergoing malnutrition. If these approaches were employed, then complications and mortality would be reduced, and the nutritional status of elderly people would be improved.

Acknowledgment

The author thanks the National Science Council of the Republic of China, Taiwan, for financially support this research under contract no. 2314-B-227-001.

Clinical Resources

- National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention: http://www.cdc.gov/chronicdisease/
- Nestlé Nutrition Institute. Quickly screen for malnutrition: http://www.mna-elderly.com/
- World Health Organization: http://www.who.int/mediacentre/factsheets/fs404/en/

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JOURNAL OF NURSING SCHOLARSHIP

CLINICAL SCHOLARSHIP

Better Nurse Autonomy Decreases the Odds of 30-Day Mortality and Failure to Rescue

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Key words
Autonomy, nursing, surgery, teamwork

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Accepted October 20, 2016

doi: 10.1111/jnu.12267

Abstract

Research Purpose: Autonomy is essential to professional nursing practice and is a core component of good nurse work environments. The primary objective of this study was to examine the relationship between nurse autonomy and 30-day mortality and failure to rescue (FTR) in a hospitalized surgical population.

Study Design: This study was a secondary analysis of cross-sectional data. It included data from three sources: patient discharge data from state administrative databases, a survey of nurses from four states, and the American Hospital Association annual survey from 2006–2007.

Methods: Survey responses from 20,684 staff nurses across 570 hospitals were aggregated to the hospital level to assess autonomy measured by a standardized scale. Logistic regression models were used to estimate the relationship between nurse autonomy and 30-day mortality and FTR. Patient comorbidities, surgery type, and other hospital characteristics were included as controls.

Findings: Greater nurse autonomy at the hospital level was significantly associated with lower odds of 30-day mortality and FTR for surgical patients even after accounting for patient risk and structural hospital characteristics. Each additional point on the nurse autonomy scale was associated with approximately 19% lower odds of 30-day mortality ($p < .001$) and 17% lower odds of failure to rescue ($p < .01$).

Conclusions: Hospitals with lower levels of nurse autonomy place their surgical patients at an increased risk for mortality and FTR.

Clinical Relevance: Patients receiving care within institutions that promote high levels of nurse autonomy have a lower risk for death within 30 days and complications leading to death within 30 days. Hospitals can actively take steps to encourage nurse autonomy to positively influence patient outcomes.

Autonomy is central to both professional and interprofessional practice in health care. For nurses, autonomy translates into the ability to act on professional knowledge to exercise judgment over patient care and clinical decision making (Kramer & Schmalenberg, 2003; Traynor, Boland, & Buus, 2010; Wade, 1999). Nurses working in settings supporting greater nurse autonomy, in comparison to those in settings with less autonomy, are more satisfied in their jobs, are less likely to be burned out, and are more likely to plan to continue working in their hospitals; they also report greater teamwork and better quality of care (Rafferty, Ball, & Aiken, 2001). Despite clear benefits to nurses, empirical evidence demonstrating the relationship between nurse autonomy and patient outcomes is limited (Kramer, Maguire, & Schmalenberg, 2006; Traynor et al., 2010).

Given their continuous presence at the bedside, nurses have a central role in the care of hospitalized patients and are well positioned to provide clinical and operational insight that influences patient care. As such, in hospitals where nurse autonomy is fostered to leverage nursing knowledge and insight, leaders might expect improved patient outcomes. This study tests this expectation, aiming to examine if patient outcomes, 30-day mortality, and failure to rescue (FTR) are better when patients receive care in hospitals where nurses report greater levels of autonomy.

Background and Significance

In the simplest terms, nurse autonomy is defined as the nurse's freedom to act upon what he or she knows (Kramer & Schmalenberg, 1993). Nurse autonomy is not, however, an individual characteristic; rather, it is a function of the complex and dynamic decision-making authority nurses are granted within their hospitals. This decisional authority unfolds at three distinct levels—clinical, operational, and professional (Kramer et al., 2006; Varjus, Leino-Kilpi, & Suominen, 2011; Wade, 1999). Each of these levels is tied to discrete conceptions of autonomy. First, clinical autonomy refers to nurses' application of independent and interdependent clinical judgment to make patient care decisions (Kramer et al., 2006). Second, job autonomy refers to operational decisions nurses make in collaboration with managers employing participatory approaches. Third, control over nursing practice refers to shared decisions nurses make to govern their professional practices and policies within an organization. Clinical autonomy relies on nurses' clinical knowledge and judgment and serves to benefit patients directly, while job autonomy and control over nursing practices rely on nurses' organizational knowledge and influence (Kramer et al., 2006).

The importance of nurse autonomy has been established in foundational research examining characteristics of healthy professional work environments (Grindel, Peterson, Kinneman, & Turner, 1996). In particular, research documenting the advantageous work conditions within Magnet hospitals point to autonomy as a key feature of work environments that promote high-quality nursing practice and patient care. Nurses practicing in Magnet hospitals demonstrate greater autonomy and experience higher job satisfaction (Rafferty et al., 2001). In this vein, nurse autonomy has traditionally been studied in relation to job satisfaction (Varjus et al., 2011), and research has confirmed that nurse autonomy, as a feature of the work environment, leads to better outcomes for nurses (Aiken, Clarke, Sloane, Lake, & Cheney, 2008). Yet, the direct relationships between nurse autonomy and patient outcomes have not been fully explored.

In an increasingly complex healthcare environment, clinicians' appeal for professional autonomy must be negotiated amidst pressures to comply with regulations and strengthen interprofessional practice. Given these pressures, understanding the extent to which nurse autonomy may influence patient outcomes is critical to conveying the value of nursing; establishing a relationship between these concepts would cement the notion that nurses' professional judgments directly contribute to improved patient outcomes. In this article, nurse autonomy is operationalized at the organizational level, composed of three constructs—clinical autonomy, job autonomy, and control over nursing practice. Operationalizing nurse autonomy as an organizational characteristic accounts for the full breadth of the concept. As such, this study makes a unique contribution to the literature because it articulates the value of nurses in improving patient outcomes, not only via clinical decision making based on clinical knowledge, but also through operational and professional decision making based on nurses' knowledge of and empowerment within the organizations where they provide care.

Methods

Design

This study was a secondary analysis of cross-sectional data of adult, general nonfederal acute care hospitals from four states (California, Florida, Pennsylvania, and New Jersey) in 2006–2007. The data sources included: the Multistate Nursing Care and Patient Safety Survey; the American Hospital Association (AHA) Annual Survey; and general, orthopedic, and vascular surgical patient discharge data from state administrative databases.

Data and Sample

Data pertaining to nurses' perceptions of autonomy were collected via a survey of nurses fielded as part of the Multistate Nursing Care and Patient Safety Study (Aiken et al., 2011). Over 100,000 registered nurses were randomly sampled from nurse licensure lists in the four study states. They were surveyed by mail at their homes based on a successful protocol that was carried out in both 1999 and 2006–2007 (Aiken et al., 2011; Aiken, Clarke, Sloane, Sochalski, & Silber, 2002). A survey of nonresponders with a 91% response rate was also conducted and established that there were no concerns related to response bias, particularly in relation to the variables of interest for this work.

Nurse respondents provided detailed information on features of their work environments and identified their employing institutions, allowing for the creation of aggregate measures of autonomy, nurse staffing, and the percentage of nurses with a bachelor's of science in nursing (BSN) degree in each hospital. This approach, based on the sociology of organizations, gathers information on hospitals from the perspective of frontline workers. It has been applied to study outcomes and modifiable institutional features, like autonomy, that have the potential to influence outcomes (Aiken & Patrician, 2000). With this approach, nurses act as key informants, reporting on specific characteristics of the hospitals in which they work (Aiken & Patrician, 2000). Therefore, the measure of autonomy employed in the study effectively reflects the extent to which nurses perceive autonomy within each of the studied hospitals.

Hospitals with 10 or more nurse respondents were included in the study sample; the average number of nurse respondents per hospital was 47, with 250 or more in some institutions, and virtually all of the hospitals with 100 beds or more in the four states were represented. Additional structural data on hospital characteristics, such as teaching status and size, which have been associated with differences in patient outcomes, were drawn from the 2006 and 2007 AHA annual surveys.

Patient outcomes data for patients 18 to 85 years of age were drawn from hospital discharge databases from the four states. The study focus was limited to patients who underwent general, orthopedic, or vascular surgery because they are common in virtually all general acute care hospitals and established risk-adjustment methods exist for these populations (Elixhauser, Steiner, Harris, & Coffey, 1998; Silber et al., 2009). Discharges against medical advice were excluded.

Measures

Autonomy. The hospital-level measure of autonomy utilized in this study was derived from the autonomy scale of the Nursing Workload Index-Revised (NWI-R; Aiken & Patrician, 2000). The original NWI was developed based on findings from early Magnet hospital research (Kramer & Hafner, 1989); the NWI-R is composed of 55 items assessing the presence or absence of factors that characterize unit or institutional features related to the professional work environment (Aiken & Patrician, 2000). From the 55 items in the NWI-R, 5 items were employed to create the autonomy subscale, including: "freedom to make important patient care and work decisions," "support for new and innovative ideas about patient care," "nursing controls its own practice," "not being placed in a position of having to do things that are against my nursing judgment," and "involvement of staff nurses in the internal governance of the hospital" (Rafferty et al., 2001). Each of these items were measured on a 4-point Likert scale ranging from 4 (*strongly agree*) to 1 (*strongly disagree*) and indicating a respondent's level of agreement that each feature was present in their current job. Nurses' responses to each item were aggregated to the hospital level, and the hospital-level items were then averaged to create the hospital-level autonomy subscale score.

Hospital structural characteristics. The analytic models also included variables characterizing the hospitals in which the nurses worked, and the patients received care in order to account for potentially confounding associations between these factors and the independent or dependent variable. Specifically, hospital size was measured as the number of staffed and licensed beds and subsequently categorized as small (fewer than 100 beds), medium (100–250 beds), or large (more than 250 beds). Teaching intensity was measured as the ratio of physician residents and fellows to hospital beds. Hospitals were then categorized as major teaching, minor teaching, or nonteaching hospitals. Major teaching hospitals had a resident-to-bed ratio higher than 1:4; minor teaching hospitals had a resident-to-bed ratio less than or equal to 1:4; and nonteaching hospitals did not have postgraduate trainees. In addition, hospitals were designated as high (vs. low) technology if they performed open heart surgery, organ transplantation, or both.

Patient outcomes and characteristics. The patient outcomes examined in this study were 30-day inpatient mortality and FTR, an indicator of death within 30 days following one of 39 defined complications in a surgical patient population (Silber, Williams, Krakauer, & Schwartz, 1992). Clinical events indicative of complications were identified using ICD-9 codes. Patient characteristics for risk adjustment included comorbidities based on the Elixhauser approach (Elixhauser et al., 1998), as well as sex, age, and 61 dummy variables indicating the various surgery types (Silber et al., 2009).

Analysis

After linking the data using a common hospital identifier, descriptive analyses of the hospitals and the general, orthopedic, or vascular surgery patients treated in them were conducted. Subsequently, the relationships between hospital-level nurse autonomy and patient mortality and FTR were examined using a series of logistic regression models, beginning with examining the unadjusted bivariate relationship between autonomy and the outcomes (separately). Covariates accounting for the various patient characteristics, structural hospital characteristics, and other hospital nursing characteristics (staffing and percentage of BSN nurses) were included. We estimated standard errors and significance using procedures that corrected for heteroscedasticity and accounted for clustering patients within hospitals. All analyses were conducted with Stata version 14 (StataCorp LP, College Station, TX, USA).

Results

The final study included 570 adult, nonfederal, acute care hospitals within the four states. Autonomy levels varied across hospitals (**Table S1**). Although the mean level of autonomy was 2.81, levels ranged from 2.03 to 3.56 with a standard deviation of 0.23. **Figure S1** displays the distribution of nurse autonomy scores across all 570 hospitals. This variation was not, however, systematically associated with structural characteristics of hospitals except that small hospitals had higher levels of reported autonomy than medium and large hospitals ($p = .007$).

Table S1 presents the extent to which hospital-level autonomy scores varied specifically with respect to size and teaching status. The results demonstrate that nurses practicing in small (<100 beds) and nonteaching hospitals reported the highest levels of autonomy (2.87 and 1.82, respectively), followed by nurses in large (>250 beds; 2.83) and major teaching hospitals (2.83). Nurses in medium (101–250 beds) and minor teaching hospitals, on the other hand, reported the lowest levels of autonomy (2.77 and 2.78, respectively). These results likely reflect the reduced complexity and bureaucracy in small and nonteaching hospitals that enable nurses to interface more directly with interprofessional and administrative colleagues to contribute to clinical and organizational decisions. Conversely, large and major teaching hospitals are highly complex; for example, working alongside medical residents who frequently turn over can complicate communication and, in turn, the collaborative decision-making that might otherwise be achieved among well-established, highly familiar teams.

Table S2 displays characteristics of the 1,222,870 surgical patients represented in the study hospitals. The majority of patients were orthopedic (52%) compared to general (43%) and vascular (6%) surgery patients. The distribution of comorbidities is consistent with other literature using a similar patient group.

Table S3 examines the association between nurse autonomy at the hospital level and the odds of 30-day all-cause mortality and FTR for patients in those hospitals. The final column represents results from models that were fully adjusted for patient characteristics, hospital characteristics, and hospital nursing characteristics. Each additional point on nurse autonomy was associated with approximately 19% lower odds of 30-day mortality (p < .05) and 17% lower odds of FTR ($p < .05$).

Discussion

Over the past 50 years, a robust body of literature exploring the value of autonomy in the workplace has emerged. Still, empirical evidence examining the impact of nurse autonomy on patient outcomes has not yet been explored. This study is the first to directly investigate this link, building upon a strong body of previously published literature that documents how the organization of hospital nursing affects patient outcomes. Our findings reveal that nurse autonomy varies significantly across hospitals. More significantly, it reveals a clear relationship between nurse autonomy and patient outcomes; greater nurse autonomy is associated with lower odds of 30-day mortality (19%) and lower odds of FTR (17%).

Previous studies have established the influence of BSN-prepared nurses, positive work environments, and optimal nurse staffing levels on improved outcomes such as mortality, FTR, nurse burnout, job satisfaction, and patient satisfaction (Aiken et al., 2011; Aiken, Clarke, Cheung, Sloane, & Silber, 2003; Aiken et al., 2008; Kutney-Lee et al., 2009). In these studies, nurse autonomy is conceptualized as an organizational feature that, in conjunction with several other factors, contributes to nursing clinical care. This evidence alludes to the likelihood that nurse autonomy influences patient outcomes but does not empirically demonstrate a clear relationship. Our study bridges this gap in the literature, demonstrating that both mortality and FTR are improved in hospitals where nurses report greater levels of autonomy even when we account for nurse staffing and education. Given the association between nurse autonomy and education, disentangling their influence on patient outcomes is challenging. Yet the relationships uncovered in this study suggest that BSN-preparation results in improved outcomes due, in part, to the nurses' enhanced predisposition toward exercising their professional judgment in decision making. To achieve these advantageous outcomes, hospital administrators must empower nurses to apply their knowledge in autonomous practice.

Hospital leaders can promote autonomy by creating structures and processes that involve nurses in decision making at multiple levels (Kanter, 1993; Varjus et al., 2011). Most often, nurses report greater autonomy with patient care decisions than operational or organizational decisions (Varjus et al., 2011). To cultivate not just clinical autonomy but also job autonomy and control over nursing practice, hospital leaders must employ various methods. For nurses to exercise job autonomy, they need to be engaged in operational decisions about how nursing work is organized and carried out on their units (Kramer et al., 2006). In practice, nurses can contribute to these operational decisions via meaningful committee involvement aimed at designing and implementing process improvements or when managers delegate authority to supervisory or charge nurses to, for example, adjust staffing, scheduling, and patient assignments. Similarly, for nurses to demonstrate control over nursing practice, they need to be active participants in venues, such as organizational committees and shared governance councils, where decisions that influence nursing practice are made. They can also demonstrate control over nursing practice via involvement in evidence-based practice initiatives and by providing peer review (Kramer et al., 2006).

Clinical autonomy is enhanced when nurses are engaged as equal partners in the interprofessional patient care team to contribute meaningfully to patients' plans of care (Kramer et al., 2006; Rafferty et al., 2001; Wade, 1999). An example of a strategy organizations can employ to support clinical autonomy is nurse-driven protocols, which provide a path to delegate clinical authority to nurses. This allows them to independently make decisions around specific circumstances and procedures, particularly around care issues for which they are primarily responsible. Importantly, these are not mindless algorithms; rather, they engage and allow for nurses to make critical decisions within their professional expertise. For instance, many hospitals now enable nurses, as a default, to exercise discretion with urinary catheter removal utilizing nurse-driven protocols. These protocols assign nurses responsibility for ongoing catheter assessment and management to determine when maintaining a catheter is appropriate for specific patients without unnecessarily delaying action by requiring physician direction. By enabling nurses' authority to make decisions and take action, this approach takes advantage of nurses' primary role of inserting, managing, and assessing urinary catheters and has the potential to significantly reduce catheter days and risk for catheter-related infection.

Administrators can also consider organizational strategies that improve the work environment such as the Magnet recognition program. Evidence suggests that work environment, including nurse autonomy, are not just better in Magnet hospitals, but improve as a result of engaging in the Magnet process (Witkoski Stimpfel, Rosen, & McHugh, 2014). Likewise, patient outcomes have been shown to improve as hospitals go through the Magnet process (Kutney-Lee et al., 2015).

Contemporary hospital nursing care is highly complex, and cultivating environments that enable nurses to apply autonomous judgment toward patient benefit is imperative. Clinicians and administrators are simultaneously attempting to individualize and standardize care, while also working to make decisions collaboratively and interprofessionally. In this context, the focus on strengthening teams and teamwork has grown (Leonard & Frankel, 2011). It is vital to recognize that autonomy does not erode teamwork. In fact, evidence has shown that nurses who perceive themselves as autonomous also report high levels of teamwork (Rafferty et al., 2001) suggesting that autonomy and teamwork are synergistic; they must both be optimized in tandem. As such, nurse autonomy is not achieved at the expense of teamwork because, in making decisions, nurses do not act alone. Rather, autonomy enhances teamwork when nurses act in a manner consistent with their training and scope of practice, engaging with other members of the patient care team as needed.

For interprofessional teams to function optimally, each profession must be able to execute the accountabilities assigned to his or her role. As a part of this team, nurses are especially accountable for surveillance, a process through which nurses gather, analyze, and synthesize patient data (Clarke & Aiken, 2003; Henneman, Gawlinski, & Giuliano, 2012). To guide decisions, the clinical and personal data nurses collect and interpret must be communicated to the interprofessional team. The team's shared decision making in response to this information leverages the diversity of expertise inherent among team members to strengthen patient care. Effectively, the quality of teamwork is enhanced when each team member is free to practice autonomously and participate in shared decision making (Hoegl & Parboteeah, 2006). Greater autonomy encourages greater accountability for practice (Wade, 1999), and more engaged and accountable team members are capable of driving improved outcomes.

When every provider is empowered to practice to their fullest scope and teams foster mutual respect for each provider's role in coordinated care delivery, patients benefit and efficiencies are achieved. Thus, as organizations evolve toward more team-based models of care, leaders must take care to encourage rather than constrain autonomous practice by leveling rather than reinforcing hierarchical structures. The importance of cultivating autonomy by actively engaging nurses in decision making is not limited to practice within the United States. Studies of nursing in various countries have demonstrated improved outcomes and quality of care in organizations with strong professional work environments (Cheung, Aiken, Clarke, & Sloane, 2008). As such, the benefits of nurse autonomy uncovered in this study have broad implications; they are likely internationally applicable to a variety of healthcare settings.

Limitations

One limitation of the study is that it employs observational, cross-sectional data, which does not allow conclusions to be made about the causal relationship between nurse autonomy and patient mortality and FTR. These conclusions could be drawn, however, in future studies by examining results over time to assess differences within institutions based on changes from low to high levels of organizational autonomy. Second, this study was a secondary data analysis, allowing only analysis of variables previously present within the dataset employed. Given that the nurse survey used in this study is the broadest and most unique of its kind, this is a minor limitation. Still, the notion that unmeasured aspects that may contribute to autonomy is conceivable. For example, one concept frequently cited in the literature, but not explored in this study, is employee engagement (Saks, 2006). Engagement can overlap with features of autonomy, such as participation in hospital affairs, increased productivity, or increased affiliation with hospital committees or other activities. Further research should include more aspects of autonomy that might contribute to its definition as an independent variable.

Conclusions

Autonomy is the vehicle through which nurses exercise their knowledge to drive quality by improving patient outcomes. Given that value is directly linked to quality, the results of this study highlight the value that can be created through the application of nursing knowledge. When nurses are able to exercise their clinical and organizational knowledge via autonomous practice, they can drive improvements in care quality. In a value-based system where organizations are under increasing pressure to deliver higher performance with limited resource utilization, capitalizing on all existing resources is critical. Nursing, as the core of the hospital workforce, represents a significant resource. Promoting nurses' autonomous practice leverages this vital human resource to the direct benefit of patients and nurses, while failing to do so can diminish this value and erode the advantages that knowledgeable nurses create in their hospitals by contributing to improved patient outcomes.

Clinical Resources

- American Association of Colleges of Nursing. The Essentials of Baccalaureate Education for Professional Nursing Practice (2008): http://www.aacn.nche.edu/education-resources/BaccEssentials08.pdf
- American Nurses Association. Guide to the Code of Ethics for Nurses (2010): http://www.nursesbooks.org/ebooks/download/CodeofEthics.pdf
- Canadian Health Services Research Foundation. Interprofessional Collaborative Teams (2012): http://www.cfhi-fcass.ca/Libraries/Commissioned_Research_Reports/Virani-Interprofessional-EN.sflb.ashx

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Supporting Information

Additional Supporting Information may be found in the online version of this article at the publisher's web site:

Table S1. Hospital Characteristics and Autonomy Scores ($n = 570$).

Table S2. Characteristics of Surgical Patients ($n =$ 1,222,870).

Table S3. Odds Ratio Indicating Effect of Autonomy on 30 Day Mortality and Failure to Rescue.

Figure S1. Distribution of autonomy by hospital.

JOURNAL OF NURSING SCHOLARSHIP

CLINICAL SCHOLARSHIP

Improving Utilization of the Family History in the Electronic Health Record

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Key words
Family History, Electronic Health Record, nursing practice

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Accepted September 10, 2016

doi: 10.1111/jnu.12259

Abstract

Purpose: The purpose of this article is to provide an overview of Family History in the Electronic Health Record and to identify opportunities to advance the contributions of nurses in obtaining, updating and assessing family history in order to improve the health of all individuals and populations.

Organizing Construct: The article presents an overview of the obstacles to charting Family History within the Electronic Health Record and recommendations for using specific Family History tools and core Family History data sets.

Methods: Opportunities to advance nursing contributions in obtaining, updating, and assessing family history in order to improve the health of all individuals were identified. These opportunities are focused within the area of promoting the importance of communication within families and between healthcare providers to obtain, document, and update family histories.

Findings: Nurses can increase awareness of existing resources that can guide collection of a comprehensive and accurate family history and facilitate family discussions. In this paper, opportunities to advance nursing contributions in obtaining, updating, and assessing family history in order to improve the health of all individuals were identified.

Conclusions: Aligned with the clinical preparation of nurses, family health should be used routinely by nurses for risk assessment and to help inform patient and family members on screening, health promotion, and disease prevention. The quality of family health information is critical in order to leverage the use of genomic healthcare information and derive new knowledge about disease biology, treatment efficacy, and drug safety. These actionable steps need to be performed in the context of promoting evidence-based applications of family history that will be essential for implementing personalized genomic healthcare approaches and disease prevention efforts.

Clinical Relevance: Family health history is one of the most important tools for identifying the risk of developing rare and chronic conditions, including cardiovascular disease, cancer, and diabetes, and represents an integration of disease risk from genetic, environmental, and behavioral/lifestyle factors. In fact, family history has long been recognized as a strong independent risk factor for disease and is the current best practice used in clinical practice to guide risk assessment.

Journal of Nursing Scholarship, 2017; 49:1, 80–86.

An accurate family history (FH) is fundamental to providing the highest quality of personalized health care. Amidst advancements in genomic science and translation to improved diagnostic precision, the FH still provides the most efficient and low-cost potential of providing an individualized blueprint for care. In 2002, the Office of Public Health Genomics started the Family History Public Health Initiative to increase awareness of family health history as an important risk factor for disease and to promote the use of FH in programs aimed at reducing the burden of disease in the U.S. population (Centers for Disease Control and Prevention, 2013). This was followed in 2009 by the National Institutes of Health (NIH) State of the Science Statement, which aimed to provide healthcare providers, patients, and the general public with an assessment of currently available data on FH and improving health (NIH, 2009). Although a comprehensive, three-generation pedigree used in medical genetics, counseling, and research remains a recognized important assessment for disease prevention and health promotion, significant knowledge gaps exist (Guttmacher, Collins, & Carmona, 2004; Pyeritz, 2012; Valdez, Yoon, Qureshi, Green, & Khoury, 2010). Though the American Association of Colleges of Nursing (AACN) has asserted that baccalaureate nursing programs "recognize the relationship of genetics and genomics to health ... using a constructed pedigree from collected family history information," studies have shown that many nurses lack literacy and skill in genomics and its application to health care (AACN, 2008; Camak, 2016).

Since the original publication of the NIH State of the Science Statement, the following gaps continue to exist:

- Lack of standardized practices for documenting and updating the FH given existing time and resource restraints in our healthcare system;
- Lack of ability to access family health data across the many different healthcare settings by all members of the interprofessional team where services are obtained and, ideally, coordinated (e.g., hospitals, home, outpatient settings, clinics, schools, communities);
- Inability to incorporate nonbiological family members who share common social-behavioral, cultural, and environmental factors;
- Inability to link family histories, which are dynamic and ever changing, with genomic data to guide automated risk assessment, prevention, and health promotion strategies within electronic health information systems;
- Lack of easy-to-use and culturally, linguistically, and educationally tailored resources, which can guide families on how to start the conversation on family health and support in acquiring, documenting, and updating an FH;
- Lack of a cohesive education strategy to support interprofessional communications of the health team's ability to translate genomic findings into practice.

The authors and members of The American Academy of Nursing's Genomic Nursing and Healthcare Expert Panel sought to further explore the current state of evidence on these issues in order to identify a process for advancing the utilization of FH in clinical practice. Nurses have an important role in promoting family health tracking among patients and families, the acquisition and documentation of a three-generation FH in the electronic health record (EHR), and performing updates of family health information and risk assessment on a routine basis for every individual.

To consistently support these practices across healthcare systems, action must be taken to (a) standardize collection methods and documentation content; (b) utilize the evidence-based recommendations for FH content acquisition to promote adoption of health promotion behaviors; and (c) advance interoperability of FH data among individuals, clinicians, and healthcare systems.

In order to support a standardized method of collecting FH in the EHR, a core data set and common data definitions must be developed. According to the New Standards and Enhanced Unity for Family Health History Information in the Electronic Health Record, in 2007 the critical importance of a core data set was recognized. An interdisciplinary team was formed to determine an FH core data set for primary care providers. For example, consanguinity, cause of death. and approximate dates/ages for data fields are suggested required core data sets relevant for FH collection in the EHR. The specific FH recommendations were adopted by the American Health Information Community from the Personal Health Record Workgroup. Additionally, it was recommended that studies be conducted to determine an evidence base and support pilot programs in order to evaluate the core minimum data set. Once the core data set is implemented, interoperable standards that allow collaboration between FH and health information technology can be achieved (Feero, Bigley, Brinner, & The Family Health History Multi-Stakeholder Workgroup of the American Health Information Community, 2008). In Oregon, 96% of the Federally Qualified Health Centers have already begun utilizing an FH section on their initial patient intake forms (Harris & McMullen, 2006). A senior epidemiologist from the Oregon Genetics Program in the Department of Human Services anticipates that collecting FH information may motivate patients who are at high risk for chronic conditions to engage in healthier behaviors (Zlot, Valdez, Han, Silvey, & Leman, 2010).

Standardized Family Health Collection Methods and Documentation Standards

Nurses have an important role in promoting family discussion and documentation of FH. Numerous agencies have provided recommendations on how to begin discussions about FH, including a tool developed by the U.S. Surgeon General, My Family Health Portrait (https://familyhistory.hhs.gov/FHH/html/index.html). Advantages of using these tools include wider dissemination of health information among family members and clinicians and less time required to collect the information in the healthcare setting. However, these strategies have not been routinely adopted into the delivery of health care, largely due to the potential inaccuracies of the information (Facio et al., 2010). To address this issue, metrics for the quality of FH data were developed and tested using MeTree, a patient-facing web-based family and personal health history collection and clinical decision support program (Wu et al., 2014). While using MeTree improved the quantity and quality of data collected, the study also found that the process of engaging patients to discuss FH with relatives prior to collection improved the quantity and quality of data provided by patients.

Recommendations for using specific FH tools and core FH data sets have been published (Feero et al., 2008). However, the lack of a standardized process for charting FH remains a significant obstacle to implementation. A strategy to promote quality FH data within the EHR interface would be implementation of metrics that must be routinely updated in order to qualify as complete documentation, such as those defined by Wu and colleagues (2014), including (a) three generations of relatives; (b) relatives' lineage; (c) relatives' gender; (d) an up-to-date FH; (e) pertinent negatives noted; (f) age of disease onset in affected relatives; and, for deceased relatives, the (g) age and (h) cause of death. This process would necessitate a reconceptualization of how FH is charted; instead of having one free-text box to fill in, the FH would be documented by filling in all known metrics.

Thus, the process of including comprehensive FH in EHRs can facilitate family discussions about family health, improve communication among individuals and healthcare providers, and aid verification of FH data. One method of promoting wider adoption of FH tools in the EHR is application program interface, which allows data transfer between EHR platforms. A verification protocol, similar to the process used by Wikipedia that tags verified or unverified information, could be used in the EHR to improve confidence in, and utilization of, FH. In addition, automated reminders in the EHR should be included to remind the healthcare team to ask for updates in the FH, flag data for further investigation or screening, and link health information from other family members in the system. Automated updates of FH information may enhance the process of data collection if family member profiles are linked (e.g., a confirmed diagnosis in a father or mother would be automatically updated in their child's profile). In children, automatic FH updates could also cross-pollinate into siblings' histories, thereby drawing attention to familial risk or exposure.

Despite the utility of routinely updating FH data, there are important ethical considerations in doing so that must be taken into account. Ethical factors including who has access to the patient EHR, the accuracy of automated data that is captured, and family dynamics that affect the disclosure of significant FH may have drastic implications for the patient and additional family members. Obtaining genetic information from an FH has the ability to prevent disease, aid in reproductive planning, and even result in life-saving treatments for family members who may be unaware of any preexisting conditions. The American College of Medical Genetics and Genomics' (AMCG) recent policy statement supports the clinical utility of genetic and genomic services that may benefit the individual and family in informing them on a particular diagnosis (AMCG, 2015). Additionally, the American Nurses Association encourages further efforts to be made to the EHR that will improve patient care in the future (ANA, 2009). Moving forward, ways in which to protect patient confidentiality and improve the collection and accuracy of FH must be better defined to enhance patient outcomes.

Ensure Return of Evidence-Based Recommendations to Promote Adoption of Health Promotion Behaviors

Obtaining an accurate three-generation FH is one critical area in which nurses and other healthcare professionals can actively engage. However, FH continues to be underdocumented and underutilized in clinical practice. Retrospective reviews of EHRs have continued to show that FH information is gathered for only a small percentage of patients and lacks sufficient detail for an accurate risk assessment (Langlands, Prentice, & Ravine, 2010; Quereshi et al., 2009). Beyond the barrier of lack of time to accurately collect, update, and document FH data, there is also a lack of access to guidelines or resources for estimating the impact of FH (Daelemans, Vandevoorde, Vansintejan, Borgermans, & Devroey, 2013). Documentation of FH in at least 20% of patients is an optional "menu-set objective" that healthcare providers may use to meet Stage 2 meaningful use requirements for the Centers for Medicare and Medicaid Service's EHR incentive program. However, this requirement falls short of its mandate by the lack of criteria for quality assessment (e.g., documenting all chronic conditions and age at onset utilizing a three-generation pedigree) and evaluation of risk, that is, the utilization of the data to provide recommendations for health promotion and disease prevention. Ideally, automated messages could be designed in the EHR to flag patients at risk for health conditions based on FH data; however, the implementation of this approach requires provider engagement. Recently, a study that evaluated primary physician responses to automated tailored prompts that alerted them to a patient's risk to one or more of six diseases based on FH found no significant change in adding the FH risk to the problem summary lists or screening interventions (Zazove, Plegue, Uhlmann, & Ruffin, 2015). In addition, the manner in which healthcare providers are reimbursed for services, such as the time and effort for collecting and documenting an FH, has yet to be addressed. Thus, better strategies that recognize and reimburse practitioners for the value of integrating the collection and utilization of FH information to risks that are amenable to preventative interventions are needed.

Genetic and genomic educational standards of bachelor's level nurses include the basic competency of obtaining and constructing a three-generation pedigree family health history. Nurses focus on the identification of red flags as identification of basic risk assessment of individuals with an emphasis on referral to the physician regarding the assessment findings. Master's- and doctoral-level nurses are prepared to manage both real and potential risks identified based on FH information acquisition in efforts to intervene and improve health outcomes. Through collaboration between the ANA and the International Society of Nurses in Genetics (ISONG), genetic and genomic competencies and outcomes have been established for nursing across all levels of education (Consensus Panel on Genetic/Genomic Nursing Competencies, 2009). While a national strategy to support the integration and translation of genetics and genomics has been defined for nursing (Calzone et al., 2013), these competencies could ideally extend across all interprofessional team members in order to facilitate clear, nonrepetitive client communication that will support collaborative team outcomes.

Limited evidence exists on the effect of FH collected by nurses on the delivery of healthcare services and the impact on direct or indirect health outcomes. Future integrated electronic healthcare delivery systems, particularly those utilizing EHRs, may provide greater opportunities to evaluate the enormous value of nursing in collecting, documenting, updating, referring, and managing real and potential issues of clients derived from FH at all levels of practice across all populations

Nurses work in many settings and are the most trusted healthcare professionals; thus, they are ideally suited to answer many important questions related to the FH. This includes questions related to the variance in accuracy and completeness of FH information according to the setting, the mode of collection, and the person who is collecting it. In addition, nurses are able to recognize and assess how genomic health literacy, family dynamics, and various health disorders affect an individual's awareness and ability to communicate and report his or her family health history.

Nurses with genetic and genomic knowledge are also uniquely positioned to identify and answer other important questions that will impact personalized health care. These questions may pertain to which environmental and lifestyle elements of an FH are most useful in helping patients make positive changes in health-related behavior. Nurses may also inform how FH may be best collected and integrated into practice in diverse racial, ethnic, religious, social, cultural, and economic populations. Finally, simple-to-use "real world" culturally, linguistically, and educationally tailored resources that will allow nurses and other healthcare professionals to accurately update, assess, and make evidence-based recommendations across healthcare settings are needed to make this a reality. Nurses are ideally suited to develop FH resources for implementation across a variety of healthcare settings.

The Family History Impact Trial Group has provided critically important data for informing the ways in which we help patients engage in efforts to promote or maintain health. A self-administered web-based tool, Family Healthware, provided personalized risk-tailored messages intended to influence health behaviors. Patients completed the FH history and physicians reviewed the data. The study examined the influence of risk-based alerts on physical activity, fruit and vegetable consumption, and cholesterol screening (Ruffin et al., 2011). Six months after implementation of tailored messages, they found a modest increase in self-reported physical activity and fruit and vegetable intake, but reduced likelihood of receiving cholesterol screening. Although this study did not demonstrate an appreciable improvement in health outcomes or behavior change, recent studies focused on technology show promise regarding how technology can motivate adoption of health promotion behaviors (Joseph, Keller, Adams, & Ainsworth, 2015; Nahm et al., 2015).

Nurses are often the most readily available healthcare team member and routinely spend more time with patients and families regarding their health. The delivery of evidence-based recommendations must occur within the context of the patient and family relationship with consideration of environment and resources. Advances in understanding the importance of epigenetics in health has brought an increasing interest in incorporating FH elements to include fictive kin and other-mothers, which are nonbiological family members who play a major role in the transmission of culture, health promotion, and decision making (Spruill, Coleman, Powell-Young, Williams, & Magwood, 2014). With this knowledge, there is greater potential to identify at-risk individuals and provide opportunities for education, prevention, and early diagnosis. As common diseases cluster within families as a result of shared environment and genetics, there has also been an interest in including neighbors and communities in the family health risk assessment (Hartmann, Marshall, & Goldenberg, 2015). Housing and neighborhood factors may also be included as social and behavioral determinants of health (SBDH), indices that are also recommended for inclusion in the EHR by the American Academy of Nursing, the Agency for Healthcare Research and Quality, and the World Health Organization (http://www.nursingoutlook.org/article/S0029-6554(1500257-2/fulltext); http://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-health; http://www.who.int/social_determinants/en/). As similar challenges are inherent in collecting, analyzing, and providing recommendation for FH and SBDH factors, it may be reasonable to address these issues together. Nurses are in a prime position to take a leading role in the implementation process for ensuring that these data are collected and addressed within the realms of health care for individuals and families.

Integrating Family Health History With Other Genomic Tools

The potential for having an EHR that is available to patients across their lifespan and accessible to healthcare providers during every interaction with the healthcare system is becoming more of a reality. As genetic and genomic testing is becoming more readily available and more frequently used by healthcare providers, there is great potential for these data to be housed within individual EHR profiles. This advancement could provide another avenue for linking FH data with genomic risk factors and improving the early diagnosis and treatment of common chronic health conditions.

Nurses across the nation are performing cutting edge research to identify genomic risk factors and Gene × Environment interactions that influence health outcomes. With increasing proficiency in the utilization and interpretation of big data, nurses will continue to provide personalized health interventions and contribute to President Obama's Precision Medicine Initiative® announced in January 2015 (https://www.whitehouse.gov/the-press-office/2015/01/30/fact-sheet-president-obamas-precision-medicine-initiative). The integration of family health history with genetic test results will be a major issue that needs to be addressed as EHRs provide the capability of automating the analysis of genomic discoveries into personalized risk stratification. As technology continues to increase the ability to advance precision approaches for health, nurses must be prepared to interpret and discuss this information with individuals and families.

While some of these systems are becoming more automated, patients will still require assistance with knowing how to apply the information in the context of screening recommendations and options for addressing psychological, behavioral, or environmental risk factors. In a recent study using MeTree, the number of patients at increased risk for breast/ovarian cancer, colon cancer, hereditary syndrome risk, and thrombosis were examined (Orlando et al., 2014). The authors reported that the implementation of risk stratification tools in primary care will likely increase costs related to an increased prevalence of nonroutine risk assessment and management resources required. As tools such as MeTree become more available, nurses are ready to be part of the solution in assisting patients and families to make the right personal choices. Nurses play an important role as frontline educators and advocates of patients and families, and documentation of FH and risk assessment should be part of routine practice.

FH remains the best means of assessing lifespan health risks and for providing patients and families with the best guidance on lifestyle choices to prevent chronic disease. Incorporating genomic risk assessments with other genomic advancements using a lifespan approach will only increase the ability of nurses to provide more precise information to patients and families and provide more momentum to improve the health of the nation.

Conclusions

In order to further its mission of utilizing FH within the EHR as an essential fundamental health assessment tool critical to healthcare delivery and policy, we have identified opportunities to advance the contributions of nurses in obtaining, updating, and assessing FH in order to improve the health of all individuals and populations. Identified opportunities are focused within the areas of:

- Urging Medicare and healthcare insurance companies to adopt quality metrics of FH data as an essential component of documentation; routine risk assessment should be addressed in health promotion and screening recommendations for each patient encounter.

- Promoting the importance of communication within families and between healthcare providers to obtain, document, and update family histories at all levels of practice.
- Improving the awareness and utility of existing resources and developing new resources that can guide and increase the frequency of obtaining and updating a comprehensive and accurate FH.
- Developing and evaluating new tools that can be used in primary care and nontraditional settings that will integrate FH with other genomic healthcare information to derive new knowledge about disease biology, risk assessment, treatment efficacy, and drug safety.
- Promoting evidence-based applications of FH for implementing personalized genomic healthcare approaches and disease prevention efforts.
- Determining the impact of FH on direct and indirect health outcomes, patient choices, and economic healthcare costs across the lifespan through systematic evaluation.
- Developing strategies that assist families to understand the value of passing generational information on within families and with healthcare providers as a mechanism to inform and maintain health through personal engagement.

Clinical Resources

- Centers for Disease Control and Prevention. Family health history: https://www.cdc.gov/genomics/famhistory/
- Genetic Alliance. Family health history: http://geneticalliance.org/programs/genesinlife/fhh
- HealthIT.gov. Family health history: https://www.healthit.gov/providers-professionals/achieve-meaningful-use/menu-measures-2/family-health-history
- International Society of Nurses in Genetics: http://www.isong.org/
- Partners in Information Access for the Public Health Workplace. Public health genomics: https://phpartners.org/public_health_genomics.html
- U.S. Department of Health & Human Services. The Surgeon General's family health history initiative: http://www.hhs.gov/programs/prevention-and-wellness/family-health-history/index.html

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JOURNAL OF NURSING SCHOLARSHIP

WORLD HEALTH

Use and Evaluation of Postpartum Care Services in Rural Malawi

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Key words
Adequacy of care, decision to return for care, Malawi, postpartum care, postpartum clinical assessments, postpartum evaluation

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Accepted September 10, 2016

doi: 10.1111/jnu.12257

Abstract

Purpose: The purpose of this study was to examine women's evaluation of postpartum care services (postpartum clinical assessments, health education, and midwife kindness) received from midwives prior to discharge in rural health facilities, and to examine husband-and-wife-farmer dyads' reasons for their decisions to return or not return for 1-week postpartum care visits in rural central Malawi.

Design: Cross-sectional matched-pairs survey design.

Methods: Participants included a convenience sample of 70 husband-and-wife-farmer dyads living in rural communities who had a live birth in the past year at one of four health facilities in Ntcheu district, central Malawi. Data were collected using an interviewer-administered postpartum care questionnaire from the World Health Organization (WHO) Safe Motherhood Needs Assessment Questionnaires. Data analysis included univariate and multivariate statistics.

Findings: Women's evaluation of postpartum care assessments received from midwives in rural health facilities prior to discharge included partial assessments of blood pressure (44%), temperature (41%), abdominal examination (50%), vaginal examination/bleeding (46%), breast examination/soreness (34%), and baby examination (77%). Only 16% of the women received all six of these postpartum clinical assessments prior to discharge, while 11% received none. Women also reported that midwives did not: introduce themselves (50%); ask if patients had questions (44%); explain what they were doing (43%); or explain what to expect after delivery (50%). Despite this, 77% of women felt midwives paid close attention to them and 83% gave an overall positive evaluation (3.5–5 on a scale of 1–5). Numbers of postpartum clinical assessments ($p = .09$) and overall evaluation ($p = .71$) did not differ between the four health facilities. The top three reasons for husbands' and wives' decisions to return for 1-week postpartum care visits were: being advised to return for care, wanted the mother to be examined, and wanted the baby to be examined. Participants stated prior negative experiences, or not perceiving a need for care (feels fine), may potentially prevent them from returning for postpartum care visits in a health facility.

Conclusions: Most women reported they received only partial postpartum clinical assessments; thus, it is important for health facilities to address the adequacy of postpartum clinical assessments provided to women by midwives before discharge. Women returned for 1-week postpartum care visits because they were advised to return for care, and also to make sure their babies were examined. However, the principal reason why husbands permitted their wives to return for postpartum care was because they wanted their wives to be examined.

Clinical Relevance: Midwives need to advise all patients to return for postpartum care visits consistent with WHO or country guidelines, and continue to educate husbands and wives regarding the importance of postpartum care even when the wife feels fine. Refresher in-service trainings on postpartum care are recommended for midwives to encourage them to perform the recommended postpartum clinical assessments.

Sub-Saharan African countries have the world's highest rates of maternal deaths. Sub-Saharan Africa alone accounted for 62% of all maternal deaths globally in 2013 (World Health Organization [WHO] & UNICEF, 2014). Malawi, a small country in southeastern Africa, is among the top 16 countries in sub-Saharan Africa with the highest maternal mortality ratios, where an estimated 675 mothers die per 100,000 live births (WHO & UNICEF, 2014). This is more than 50 times the maternal mortality ratio in developed countries, which is 12 maternal deaths per 100,000 live births (WHO, 2015).

The postpartum period, defined as the time from 1 hr after delivery of the placenta to 6 weeks (42 days) after delivery of the baby, poses substantial risks and can result in significant maternal morbidity and mortality. Yet, it receives much less attention from healthcare providers in developing countries than pregnancy and childbirth (WHO, 2010). Analysis of causes and characteristics of maternal deaths in health facilities in the central region of Malawi indicated that about 70% of maternal deaths occurred in the postpartum period, and 90% of the postpartum deaths occurred in the first 7 days after delivery (Kongnyuy, Mlava, & van den Broek, 2009). Postpartum hemorrhage (25.6%) and postpartum sepsis (16.3%) were the two major causes of direct maternal deaths (Kongnyuy et al., 2009).

Postpartum care is important for maternal health and survival because life-threatening complications that occur after delivery are often unpredictable and require rapid response (WHO & UNICEF, 2010). For example, postpartum hemorrhage, if not managed promptly, can result in death of the mother in just a few hours (WHO & UNICEF, 2010). Postpartum care enables healthcare providers to prevent potential postpartum problems, and identify and treat postpartum complications promptly (Titaley, Hunter, Heywood, & Dibley, 2010). In addition, providers can offer help and support for a wide range of related health and social needs during postpartum visits, and can also encourage mothers to adopt evidence-based postpartum practices at home, since maternal self-care usually takes place at home (WHO, 2010).

The WHO recommends that postpartum care be provided to mothers for at least 24 hr after birth in a health facility. The mother should then be examined at 48 to 72 hr, 7 to 14 days, and 6 weeks after birth (WHO, 2013). The WHO recommends that postpartum clinical assessments of the mother include measurement of vital signs and assessment of vaginal bleeding, uterine contraction, fundal height, urine void, and breast tenderness or pain (WHO, 2013). However, not all women who deliver in health facilities in developing countries receive postpartum clinical assessments at the recommended time points (Wang, Alva, Wang, & Fort, 2011). In addition, not all women who have been seen by a healthcare provider during the immediate postpartum period in developing countries receive the recommended range of postpartum clinical assessments (WHO & UNICEF, 2010). In Malawi, nurses and midwives are the main primary healthcare providers, especially in rural areas, providing the bulk of maternity care services to women (Bradley et al., 2015). A review of postpartum care in health facilities conducted in a district in central Malawi indicated that 63% of midwives in government facilities discharged postpartum women without checking their vital signs (Chimtembo, Maluwa, Chimwaza, Chirwa, & Pindani, 2013).

The Ministry of Health in Malawi recommends that all women who deliver in a health facility receive postpartum care within the first 24 hr after delivery (Malawi Ministry of Health, 2007). If delivery occurred outside of a health facility, a woman should be referred to a health facility for postpartum care within 12 hr (Malawi Ministry of Health, 2007). However, findings from a nationally representative survey in Malawi indicated that 48% of all women did not receive any postpartum care after delivery, and only 32% received postpartum care within 23 hr or less (Malawi National Statistical Office & ICF Macro, 2011). Urban women were more likely than rural women to receive postpartum care within the first 2 days after delivery. Nationally, 50% of rural women in

Malawi did not receive any postpartum care after delivery (Malawi National Statistical Office & ICF Macro, 2011).

Many women who give birth in health facilities in developing countries are discharged within hours after delivery (WHO, 2010). Thus, it is essential that women return to health facilities for their recommended postpartum care visits after discharge. Studies have shown that rural women with farming as a main occupation or wives of farmers have significantly lower rates of postpartum care use (Dhakal et al., 2007; Khanal, Adhikari, Karkee, & Gavidia, 2014; Rahman, Haque, & Zahan, 2011). Identifying reasons why rural women decide or do not decide to return for postpartum care visits is an important step in designing interventions that can decrease postpartum mortality rates. It is also important to understand the reasons why husbands may permit their wives to return for postpartum care visits because in many settings in sub-Saharan Africa, husbands, as household heads, are the decision makers (Mullany, Becker, & Hindin, 2007). Thus, the ability of women to seek health care is often determined by their husbands (Mullany et al., 2007).

The first objective of this study was to examine women's evaluation of postpartum care services (postpartum clinical assessments, health education, and midwife kindness) received from midwives prior to discharge in rural health facilities in central Malawi. To address the first objective, we posed the following specific research questions: (a) What routine postpartum clinical assessments and health education did women receive in health facilities prior to discharge? (b) Does the average number of postpartum clinical assessments and health education received by women differ between health facilities? (c) What are women's perceptions of midwife kindness and overall evaluation of care received prior to discharge? The second objective was to examine husband-and-wife-farmer dyads' reasons for their decisions to return or not return to a health facility for 1-week postpartum care visits in rural central Malawi. This study is one of few postpartum care studies to evaluate WHO-recommended postpartum clinical assessments provided to women in health facilities prior to discharge in Malawi. It is also one of few studies that explore the reasons behind husbands' decisions regarding their wives' postpartum care. Findings could be used to aid in the design of targeted postpartum care interventions for husband-and-wife dyads in rural Malawi.

Conceptual Framework

This study is guided by the three delays model (Thaddeus & Maine, 1994). The model is based on the premise that delays in accessing obstetric care have three phases that prevent women from receiving care and become factors that contribute to maternal deaths (Win, Vapattanawong, & Vong-ek, 2015). The three phases of delays are (a) delay in deciding to seek care on the part of the individual, the family, or both; (b) delay in reaching a healthcare facility; and (c) delay in receiving adequate care at the health facility (Thaddeus & Maine, 1994). This study focuses on the first and third delays as they relate to postpartum care among rural husband-and-wife-farmer dyads in Malawi.

Methods

Design, Setting, and Sample

A descriptive, cross-sectional matched-pairs survey design was used. Participants were a convenience sample of 70 husband-and-wife-dyads who were 18 years of age or older, able to communicate in Chichewa, and had a live birth in the past year. All participants were subsistence farmers living in rural communities in two extension planning areas (EPAs) in the Ntcheu district of central Malawi. There were a total of four health facilities where the women delivered and received postpartum care prior to discharge. These health facilities included two government health centers, one faith-based health center, and one district hospital. All of the health centers had only one midwife on duty at a scheduled time period who was responsible for all maternity care services.

The first author worked with Extension Officers in each of the EPAs to identify households that had a baby less than 1-year-old. Extension officers in Malawi are trained personnel under the Ministry of Agriculture whose responsibilities are to educate and provide advisory services to farmers on a wide range of issues, among which are farming practices, harvesting, disease and pest control, and new technologies. Extension officers work within operational jurisdictional locales called EPAs that typically encompass a cluster of villages. The research team, composed of the first author, extension officer, and two interviewers, visited each household and conducted interviews in their homes. All participants were offered consent in their native language, Chichewa, and were asked to provide consent by providing their thumb print on consent forms. All study procedures, including recruitment and consent, were compliant with the College of Medicine Research and Ethics Committee at the University of Malawi, and the Institutional Review Board at Michigan State University.

Measures and Data Collection

The postpartum questionnaire consists of 46 structured items adapted from the Safe Motherhood Needs

Assessment Questionnaires developed by the WHO (2001). Data for this study were obtained using the questions that pertained to decisions to return for postpartum care visits, postpartum clinical assessments and health education received after delivery prior to discharge, and acts of midwife kindness prior to discharge. Postpartum clinical assessments, health education, and midwife kindness were assessed by questions that required a “yes,” “no,” or “don’t know” response. Reasons for decisions to return for postpartum care visits were assessed by the following two open-ended questions: (a) Why did you (would you) decide to seek care after giving birth (postnatal care of the mother)? and (b) Why did you (would you) decide NOT to seek care after giving birth (postnatal care of the mother)? A male version of the questionnaire was created by changing the reference of questions to ″your wife.″ The questionnaires were translated into Chichewa and back-translated into English by the research office at the Kamuzu College of Nursing, University of Malawi. The back-translated questionnaires were compared to the original, and any discrepancies were corrected before data collection.

Two trained Malawian interviewers, who were fluent in English, conducted face-to-face interviews with participants in Chichewa in the presence of the first author. The one-time interview took place at the participants’ homes, who were a few days to less than 1 year postpartum. The interviewers interviewed the husband-and-wife dyad members separately (and simultaneously) in locations where the husband could not hear what the wife was saying and vice versa, using the male and female versions of the postpartum questionnaire. The first author tossed a coin to determine which interviewer would interview the husband or wife in each dyad to prevent interviewer bias. The interviews lasted, on average, 20 to 30 min. The response data were recorded on the questionnaires in English and then entered into a secure data management system that is described in the next section. No identifying information was collected or recorded on the questionnaires; rather, each dyad was identified by a study identification number.

Data Analysis

All data were entered into a secure data management system, REDCap (research electronic data capture). REDCap is a web-based application for building and managing surveys and databases (Harris et al., 2009). REDCap data were exported to STATA 14 statistical software at the end of data collection for analysis (StataCorp, 2015). The data were analyzed using univariate and multivariate statistics. Principal components factor analysis was performed to confirm categories of services (postpartum clinical assessments, health education, and midwife kindness). Pearson’s correlation was used to test the association of overall evaluation of postpartum care service with postpartum clinical assessments, health education, and midwife kindness. Analysis of variance was used to test whether services received differed by health facility. A p value of $<.05$ was considered statistically significant.

Table 1. Participant Characteristics

Sample Size, $N = 70$		
Age (years)	Range	Mean (*SD*)
Women	18–40	27.2 (6.5)
Men	20–59	32.4 (8.3)
	n	%
Marital status		
Legally Married	32	45.7
Traditionally Married	38	54.3
Education (years of school)		
Women		
0–6 years of school	41	58.6
7–12 years of school	29	41.4
Men	27	38.6
0–6 years of school	43	61.4
7–12 years of school		
Gravida (no. of pregnancies)		
Primigravida (first pregnancy)	15	21.4
Multigravida (2–4 pregnancies)	34	48.6
Grand multigravida (5–8 pregnancies)	21	30.0
Mode of delivery		
Vaginal	67	95.7
Cesarean section	3	4.3

Results

Seventy women 18 to 40 years of age ($M = 27.2$, $SD = 6.5$) and men 20 to 59 years of age ($M = 32.4$, $SD = 8.3$) were interviewed. A higher percentage of men (61%) had 7 to 12 years of education compared to women (41%). Approximately 46% of participants were legally married and 54% were traditionally married. The majority of participants (65.7%) reported a monthly household income of <10,000 Malawian kwacha (approximately $14). This monthly household income translates into an annual household income of about $170, compared to a 2015 per-capita income of about $381 in Malawi (World Bank, 2016). It was the first pregnancy (primigravida) for 21% of the women. Thirty percent of the women had between five and eight pregnancies. The demographic characteristics of participants are presented in **Table 1**.

For postpartum clinical assessments received in health facilities prior to discharge by midwives, approximately 44% of women reported that they had their blood pressures checked, 41% had their temperatures checked,

Table 2. Women's Evaluation of Postpartum Care Services Received After Delivery From Midwives Prior to Discharge in Rural Health Facilities

Number of women who received services ($N = 70$)	*n*	%
Postpartum clinical assessments		
Blood pressure	31	44.3
Temperature	29	41.4
Abdominal exam	35	50.0
Vaginal exam/checked bleeding	32	45.7
Breast exam/soreness	24	34.3
Baby exam	54	77.1
Postpartum health education		
Advice and information on how to care for baby	63	90.0
Discussed family planning/contraception	57	81.4
Discussed breastfeeding	66	94.3

Table 3. Women's Evaluation: Acts of Kindness by Midwives in Rural Health Facilities Prior to Discharge From Postpartum Ward

Number of women who received services ($N = 70$)	*n*	%
Did midwives . . .		
introduce themselves?	35	50
ask if you had any questions or concerns?	31	44.3
provide privacy when they examined you?	57	81.4
explain what they were doing before examination?	30	42.9
explain what you should expect for normal after delivery recovery?	35	50

50% had an abdominal examination, 46% had a vaginal examination or bleeding checked, 34% had a breast examination or asked about soreness, and 77% had their babies examined (**Table 2**). About 11% of women did not receive any of these six postpartum clinical assessments, while only 16% received all six postpartum clinical assessments. In terms of postpartum health education, 90% received advice on caring for the baby, 81% on family planning, and 94% on breastfeeding (see **Table 2**). About 4% of women did not receive any health education before discharge. The average number of postpartum clinical assessments provided by midwives to women prior to discharge in each of the four health facilities ranged from 2.1 to 3.6 assessments out of the 6 possible assessments, while the average for health education ranged from 2.6 to 2.8 out of 3 education topics. The average number of services received (postpartum clinical assessments and health education) did not significantly differ between health facilities ($p = .099$ for postpartum clinical assessments and .89 for health education).

With respect to midwife kindness, 50% of women said that midwives did not introduce themselves, 44% were not asked if they had any questions or concerns, 43% said midwives did not explain what they were doing before examining them, and 50% did not receive explanation of what to expect as normal after delivery recovery (**Table 3**). Fifty percent of women received at most two of the above acts of kindness from midwives. Despite this, 77% of women believed that the midwives paid close attention to them throughout their stay, and 83% gave an overall evaluation (overall kindness of midwives and satisfaction with care) of 3.5 or higher on a scale of 1 to 5, with 5 being the highest score possible. This overall evaluation was correlated with level of midwife kindness ($r = 0.4$, $p = .00$) and number of postpartum clinical assessments ($r = 0.3$, $p = .02$), but not with number of health education topics on which the women were advised ($r = 0.01$, $p = .96$).

Surprisingly, about 97% of women reported that they returned to a health facility for 1-week postpartum care visits after discharge. Reasons why women decided to return to a facility for the 1-week postpartum care visit were ranked on the basis of the percentage of women mentioning these reasons as follows: (a) advised to return for care (35%), (b) wanted examination of baby (29%), (c) wanted examination of self (18%), (d) wanted examination of both baby and self (13%), (e) believed midwives had good reason to ask them to return (3%), and (f) had confidence in health facility (1%). When asked what could have made them decide not to return for postpartum care visits, many women said nothing could have stopped them from returning for care (29%), and that they would never decide not to return for care (19%). Some women also stated they would have decided not to return for their 1-week postpartum care visits if (a) they did not feel the need (17%), (b) they were not advised to return for care (13%), (c) they were sick (9%)n (d) long distance and no transport (6%), (e) mistreated or negative delivery experiences (6%), and (f) funeral of close relative (3%).

On the other hand, reasons given by the husbands why they permitted their wives to return for 1-week postpartum care visits included (a) wanted examination of wife (39%), (b) wanted examination of both baby and wife (19%), (c) followed advice to return for care (14%), (d) had confidence in health facility (11%), (e) wanted examination of baby (9%), (f) could not give medical support to wife (6%), and (g) knew the importance of postpartum care (3%). When asked what could have made them decide not to permit their wives return for care, many husbands stated (a) nothing would have stopped them from allowing their wives to return for care (29%), (b) they had no reason to stop their wives (20%), (c) they would never decide not to let their wives return for care (13%), and (d) they would always encourage their wives to return for care (11%). Some husbands stated they would have decided not to permit their

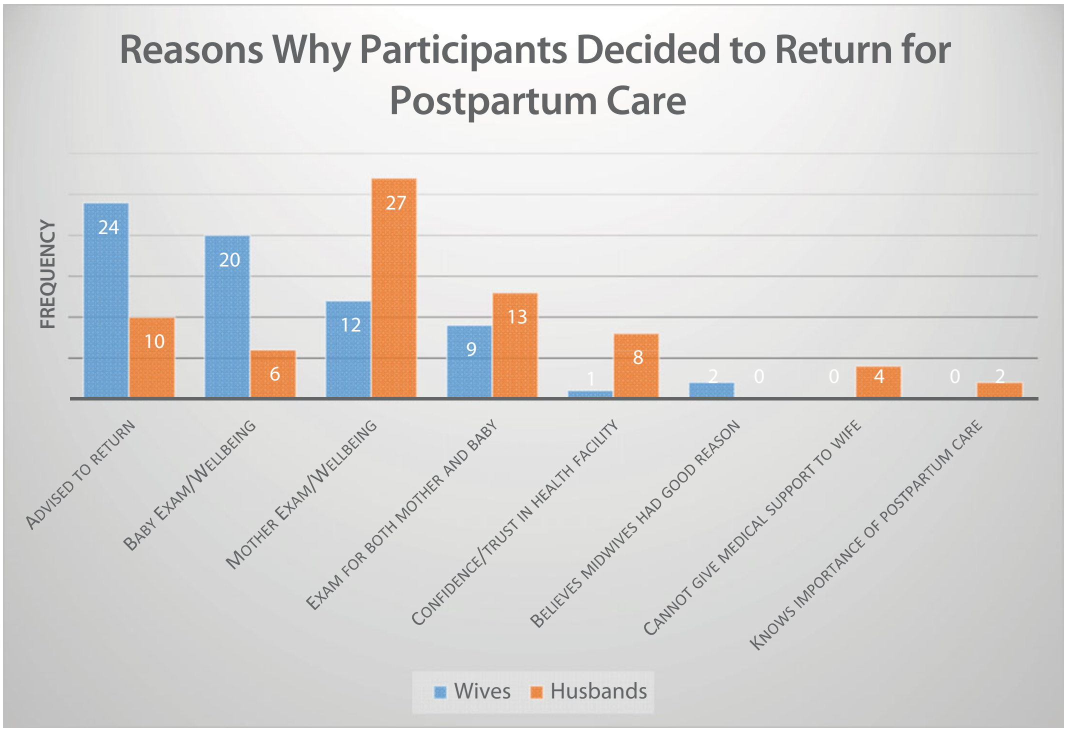

Figure 1. Reasons of husbands and wives for returning to a rural health facility for 1-week postpartum care visits.

wives to return for their 1-week postpartum care visits if (a) she was mistreated or had negative experiences at the health facility (11%), (b) she was sick (4%), (c) there was a funeral of a close relative (3%), (d) she was not advised to return for care (3%), (e) no transportation or high cost (3%), and (f) he was ignorant of the importance of postpartum care (3%). **Figure 1** presents a comparison of reasons husbands and wives gave for deciding to return for their 1-week postpartum care visits in a health facility.

Discussion

Nearly all women (97%) reported that they returned to a health facility for the 1-week postpartum care visit. This percentage is higher than reported in other primary studies on postpartum care use in developing countries, where rates of use have been as low as 34% in Nepal (Dhakal et al., 2007) and 35.3% in northern Nigeria (Idris, Sambo, & Ibrahim, 2013). The high numbers of women returning for postpartum visits in this sample may be the result of a recent campaign in the two study areas for women to use health facility services. A midwife in one EPA explained that women were told during antenatal care they would have to pay 5,000 Malawian kwacha if they did not return to the health facility for delivery. In the other EPA, the extension officer explained there was a program that gave women incentives of 5,000 Malawian kwacha if they delivered in a health facility. This push for women to use health facilities for deliveries may have also influenced the high postpartum care use in health facilities. Our results are similar to a study conducted in southeastern Nigeria, where 91.7% of women returned to a health facility for their recommended postpartum visit (Ugboaja, Berthrand, Igwegbe, & Obi-Nwosu, 2013). Similar to our study area, the high percentage of return for postpartum care visits was attributed to a high level of sensitization in that study area about using maternal healthcare services (Ugboaja et al., 2013).

The principal reason given by women for returning to a health facility for postpartum care is that they were advised by the midwife to return for care. This result highlights the importance of advising families to return for their postpartum care visits after discharge. All midwives should ensure that they inform women of the need to return for postpartum care in the health facility per WHO or country guidelines. Previous studies on postpartum care use have indicated that a lack of awareness or knowledge is a major reason why women do not return for postpartum care services (Dhakal et al., 2007; Ugboaja et al., 2013). About 17% of women in this study stated they would not have returned for care if they did not feel the need. The study by Ugboaja and colleagues (2013) found that 21.1% of women did not go for postpartum care because they believed the visit was not necessary. It is, therefore, important to educate families regarding the importance of returning for their postpartum visits, even when the woman feels fine at the time.

The fact that many husbands stated they would always encourage their wives to return for postpartum care visits is indicative of the supportive roles husbands can play in ensuring that their wives receive the needed postpartum care. A qualitative study conducted in Jordan on the roles of family members in women's decision to return for postpartum care revealed that husbands and other relatives can either play the supporter role or opponent role (Abushaikha & Khalaf, 2014). In the supporter role, husbands encourage, support, or show positive attitudes towards their wives' decision to seek postpartum care, which propels them to actually return for care (Abushaikha & Khalaf, 2014). In this study, husbands wanted their wives to be examined, especially if she had a cesarean section or had stitches. Some men wanted to make sure that the wife was "healed," while others wanted to be certain there was nothing remaining in her uterus. This implies that husbands will support their wives to return to a health facility for postpartum care if they have a concern about their wives' health. Husbands should be encouraged to support their wives to return to health facilities for postpartum care visits even if she had an uncomplicated, normal delivery.

The study results reveal the inadequacy of postpartum care assessments provided to women by midwives in the study areas, as 11% of women did not receive any postpartum clinical assessments after delivery in a health facility prior to discharge, and most women only received partial assessments. The evaluations of inadequate postpartum clinical assessments (blood pressure, temperature, vaginal bleeding, abdominal examination, and breast examination) by women in this sample support the observations made by Chimtembo et al. (2013) in health facilities in the central region of Malawi. Their study observed midwives in health facilities in a district in central Malawi, and results indicated that postpartum women were not monitored and were not physically examined at discharge.

The inadequacy of postpartum clinical assessments provided to women by midwives prior to discharge may be due to the critical shortage of midwives in rural health facilities. Using 2008 health worker census data, there were 3,896 nurses or midwives in Malawi, which translates into about 0.30 nurses or midwives per 1,000 population (Nove, 2011). The vast majority of health professionals in Malawi are located in urban areas, while the vast majority of the population lives in rural areas (Nove, 2011); thus, access to skilled health professionals in rural areas is inadequate. Some health workers in Malawi have acknowledged that quality of care is poor, and attributed this poor quality to both patient-related factors and facility or staff-related factors. Staff-related factors included constraints such as inadequate resources, inadequate staffing, poor teamwork, and inadequate knowledge or supervision (Chodzaza & Bultemeier, 2010).

The majority of women in this study believed midwives paid close attention to them throughout their stay, and were satisfied with postpartum care services received, despite the fact that most women received partial postpartum clinical assessments. We speculate that this is because these women did not know what assessments they were supposed to receive, and did not base their evaluations of satisfaction on adequacy of care provided to them. For many women, they are satisfied as long as they successfully deliver their babies, and both mother and baby seem to be fine.

This study did not find any significant differences between the average numbers of postpartum clinical assessments and health education received between the four health facilities. This lack of significance may have been due to sample size resulting in small numbers of women from each of the four health facilities. Therefore, we recommend that future studies use larger sample sizes. Since the majority of our sample did return to a health facility for the 1-week postpartum visit, a finding we did not expect, reasons given "why they would not have returned" is hypothetical information. Data were obtained through self-report, which can lead to social bias in responses and may not reflect the true opinions of participants. This limitation was minimized by using interviewers who were not only skilled data collectors and fluent in the local language, but were people the participants were likely to discuss issues with freely, because they had worked with the participants on several other studies and built a trusting relationship. Participants were obtained using convenience sampling, which limits the generalizability of the results; thus, the use of probability sampling is recommended in future studies.

Conclusions

The study results show that the principal reasons why women return for the 1-week postpartum care visit is because they are advised to return for care, and also to make sure their babies are examined. On the flip side, many husbands permit their wives to return to a health facility for postpartum care visits because they want their wives to be examined, especially if they have a concern about their wives' health. Prior negative experiences or not perceiving a need for care may potentially prevent participants from returning for postpartum care visits in a health facility.

The results indicate the necessity of midwife counseling on the importance of returning for postpartum care visits as part of discharge teaching in rural health facilities. Educational campaigns on postpartum care use should focus on the importance of adhering to midwife recommendations, husbands supporting their wives to seek care for the well-being of the wife, and the importance of returning for care even when the wife feels fine. The results also reveal the inadequacy of assessments offered to women by midwives in rural health facilities prior to discharge. Midwives in rural health facilities must improve the adequacy of clinical assessments provided to women after delivery in order to reduce postpartum mortality rates in rural women. Refresher in-service trainings on postpartum care assessments are recommended for midwives.

Acknowledgements

This study is part of the first author's doctoral dissertation research. The study was funded by a research grant from the American Nurses Foundation, and a dissertation research fellowship from the Gender, Justice, and Environmental Change program at Michigan State University. We express our gratitude to Dr. Sieglinde Snapp, and the Michigan State University Africa Rising Project, for assistance in the recruitment of farmers in the study areas. We would like to thank the Malawian interviewers and extension officers who helped in the data collection process. We are also grateful to all the husbands and wives who enthusiastically agreed and participated in the study. We thank Dr. Alfred Maluwa and the research office at the Kamuzu College of Nursing for their assistance, as well as the Michigan State University College of Nursing Research Center for assistance during all stages of the study.

Clinical Resources

- World Health Organization. Recommendations for postpartum care: http://www.who.int/maternal_child_adolescent/documents/postnatal-care-recommendations/en/
- World Health Organization (Regional Office for Europe). Hospital care for mothers and newborn babies' quality assessment and improvement tool, 2nd ed. 2014: http://www.euro.who.int/en/health-topics/Life-stages/maternal-and-newborn-health/publications/2014/hospital-care-for-mothers-and-newborn-babies-quality-assessment-and-improvement-tool

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JOURNAL OF NURSING SCHOLARSHIP

WORLD HEALTH

Acceptance and Impact of Point-of-Use Water Filtration Systems in Rural Guatemala

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Key words
Developing country, diarrheal disease, point-of-use water filtration systems

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Accepted September 19, 2016

doi: 10.1111/jnu.12260

Abstract

Purpose: Infants and children in developing countries bear the burden of diarrheal disease. Diarrheal disease is linked to unsafe drinking water and can result in serious long-term consequences, such as impaired immune function and brain growth. There is evidence that point-of-use water filtration systems reduce the prevalence of diarrhea in developing countries. In the summer of 2014, following community forums and interactive workshops, water filters were distributed to 71 households in a rural Maya community in Guatemala. The purpose of this study was to evaluate the uptake of tabletop water filtration systems to reduce diarrheal diseases.

Design: A descriptive correlational study was used that employed community partnership and empowerment strategies. One year postintervention, in the summer of 2015, a bilingual, interdisciplinary research team conducted a house-to-house survey with families who received water filters.

Methods: Survey data were gathered from the head of household on family demographics, current family health, water filter usage, and type of flooring in the home. Interviews were conducted in Spanish and in partnership with a village leader. Each family received a food package of household staples for their participation. Descriptive statistics were calculated for all responses. Fisher's exact test and odds ratios were used to determine relationships between variables.

Findings: Seventy-nine percent ($n = 56$) of the 71 households that received a water filter in 2014 participated in the study. The majority of families (71.4%; $n = 40$) were using the water filters and 16 families (28.6%) had broken water filters. Of the families with working water filters, 15% reported diarrhea, while 31% of families with a broken water filter reported diarrhea. Only 55.4% of the homes had concrete flooring. More households with dirt flooring and broken water filters reported a current case of diarrhea. A record review of attendees at an outreach clinic in this village noted a decrease in intestinal infections from 2014 (53%) to 2015 (32%).

Conclusions: A trend suggests that water filter usage was both practically and clinically significant in reducing the incidence of diarrheal disease in this sample. Some homes did not have flat surfaces for water filter storage. Housing conditions should be taken into consideration for future diarrheal disease prevention initiatives.

Clinical Relevance: Point-of-use water filters using a community–university partnership can reduce diarrheal disease in rural regions of Guatemala.

In 2010 the United Nations General Assembly declared that everyone has the right to sufficient, safe, and affordable drinking water (World Health Organization [WHO], 2015). While 91% of the world's countries meet this requirement, over 600 million people still rely on unsafe sources for drinking water (WHO, 2015). Unsafe drinking water contributes to diarrheal disease, the second leading cause of death worldwide for children under 5 years of age (United Nations Children's Fund [UNICEF]/WHO, 2009; WHO, 2013). Rural regions of Latin America and Africa remain least likely to have access to improved drinking water sources (UNICEF, 2014). Guatemala, a developing country in Latin America, is a place where unsafe drinking water is a major health problem. It is estimated that 2 million deaths occur each year in Guatemala due to diarrheal disease from contaminated water (Chiller et al., 2006). The lack of potable water in Guatemala contributes to a child mortality rate of 31/1,000; the highest child mortality rate of all countries in Central America (UNICEF, 2014).

Diseases associated with nonpotable water are especially common among the Maya, the indigenous population that makes up half of the Guatemalan population. The majority of Maya live in the rural highlands, where health and social services are scarce. A recent geographic analysis determined that almost a quarter of the population in the rural highlands of Guatemala did not have access to basic healthcare centers (Owen, Obregon, & Jacobsen, 2010). While Guatemala is working toward increasing access to health care, many disparities still exist for the Maya. For example, a study of intestinal parasitic infections in two Maya villages revealed an overall infection rate of 85% (Jensen, Marlin, Dyck, & Laubach, 2009). In addition, malnutrition is a widespread health problem in Guatemala, primarily affecting Maya children (UNICEF, 2014). Diarrheal disease coupled with malnutrition results in greater damage to immune function and brain growth than either condition separately (Bulled, Singer, & Dillingham, 2014). Culturally relevant interventions are needed at the point of care to improve the health of the Maya.

Literature Review

Point-of-Use Water Filtration Systems

One effective method that can increase access to safe drinking water in developing countries is point-of-use water filtration systems. Numerous studies using ceramic silver-impregnated, carbon-activated, or slow sand water filters have reported reductions in the prevalence of diarrhea in resource-poor countries (Clasen, Brown, & Collin, 2006; De Ver Dye et al., 2011; Fewtrell et al., 2005; Ren, Colasi, & Smith, 2013; Wolf et al., 2014). A study in Guatemala compared ceramic water filters with chlorine-treated water and found both methods effectively reduced the number of bacteria present in drinking water. However, the chlorine group had to purchase new chlorine packets every 6 months, which led to decreased compliance (Mellor, Kallman, Oyanedel-Craver, & Smith, 2014).

There is strong evidence that point-of-use water filtration systems are more practical and sustainable than piped water systems in rural developing countries (Ren et al., 2013; Wolf et al., 2014). Andrade and Zeorhoff (2012), working in a rural community in Honduras, found that a piped water system was complex, expensive, and not able to serve every home in the community. Challenges to providing safe drinking water in rural Guatemala include geography and financial stability. Rural communities do not have the finances for community water systems (Vasquez, 2013), and these communities are often in mountainous terrain where roads are impassable during the rainy season, making well construction and maintenance a challenge (Owen et al., 2010). Thus, families rely on unimproved water sources.

The WHO created a Water, Sanitation, and Hygiene (WASH) program that promoted hand washing to reduce diarrheal disease. Lindquist et al. (2014) conducted a cluster randomized controlled trial (RCT) of the WASH program in Bolivia, placing participants in groups based on use of water filtration systems and WASH education. Investigators determined that hand hygiene alone was not enough to reduce the incidence of diarrhea. Only the water filter intervention groups showed a statistically significant reduction in diarrheal disease.

While point-of-use water filters work, there can be a problem with storage. In a 1-year follow-up RCT in Zambia, Peletz et al. (2013) found that 53% of families were not storing their water properly. When water is stored improperly, contamination can occur despite the purity of the water directly after filtering. In addition, chlorine-treated water requires ongoing quality control testing, further impacting use of purified water systems (Lantagne, 2009).

Factors Influencing Behavior Change

Although point-of-use water filtration systems have been shown to reduce diarrheal disease, consistent and correct use of these systems is dependent on human behavior. De Ver Dye et al. (2011)noted that point-of-use water filters proved acceptable to Kenyans when aligned with community practices and beliefs. The uptake of solar water disinfection in Zimbabwe was influenced by knowledge, skills, attitudes, beliefs, ability, and social norms (Kraemer & Mosler, 2010).

Several studies focused on implementing change within a Guatemalan population. A research team found cultural beliefs, such as mistrust of the government, deterred use of a municipal chlorination project for safe drinking water in a Maya community (Nagata et al., 2011). These researchers suggest that future studies consider cultural beliefs related to water filtration systems (Nagata et al., 2011). A community-based *promotora* program in Guatemala demonstrated the important role of indigenous leaders to improve family health (Amerson, 2013). *Promotoras* are respected leaders in the community who take on the role of health promotion. Wher, Chary, Webb, and Rohloff (2014) examined the impact of gender and household roles in the Maya culture on behavior change. While the woman's primary role was to take care of the household and family, men and the paternal grandmother controlled household finances. Bruce et al. (2014) noted that knowledge of a community emergency plan and the WHO danger signs of diarrhea were the two factors most strongly associated with care-seeking behaviors. Thus, inclusion of cultural beliefs, core knowledge, skills, and attitudes; community and family norms; and indigenous leaders in behavior change are essential for effective and sustainable health initiatives.

Conceptual Framework

The Risks, Attitudes, Norms, Abilities, and Self-regulation (RANAS) model of behavior change, based on several highly acclaimed behavior change theories, was designed to evaluate uptake of water technology in developing countries through a cultural lens (Mosler, 2012). The RANAS model posits five factors that must be favorable for new behavior to take root. These factors are risks, attitudes, norms, abilities, and self-regulation. The perception of risk, or vulnerability to a disease, can be influenced by learning accurate information. Attitudinal factors change with persuasive cues such as publicity and credibility. Normative factors require community buy-in toward the desired behavior. Abilities are acquired through demonstration, practice, and feedback. Self-regulation requires individuals to foresee and prevent situations of behavior lapse. We employed the RANAS framework to guide our intervention. Specifically, we used these factors coupled with community partnership and empowerment strategies to develop and implement the intervention. This article reports the details of the theory-driven intervention.

Community–University Partnership

Tabletop carbon-activated water filtration systems were introduced through a partnership between a Guatemalan community-based organization (CBO) and a U.S.-based college of nursing. The partners have been conducting community service projects with villagers in one rural Maya community since 2008 (Larson, Ott, & Miles, 2010). The only health service in the community is a health post with one community health worker. Nursing faculty and students have assisted the health worker in conducting a primary care outreach clinic each year. A local Guatemalan physician provides medical consultation during these clinics. Numerous cases of intestinal infections, likely due to contaminated water, have been identified. The community recently attempted to dig a well for potable water but was unsuccessful because of the mountainous terrain. The main source of drinking water is untreated rainwater and water from a spring. Untreated rainwater may result in intestinal infections especially among the very young and very old (Rodrigo, Sinclair, Forbes, Cunliffe, & Leder, 2011).

The partners followed the guiding principles for ethical global public health, including collaboration, sustainability, education, and evaluation (Suchdev et al., 2007). Cultural sensitivity is foundational to these principles. The purpose of this study was to examine the uptake of tabletop water filtration systems in reducing the incidence of diarrheal disease in a rural Maya community in Guatemala. The study was approved by the university institutional review board.

Methods

Design and Sample

A descriptive correlational design was used for the study. The research team was composed of one bilingual nursing faculty, three university students (one bilingual), and two Guatemalan community leaders. To participate in the study, families had to have received a water filter from the community–university Clean Water Project in 2014 and be present in the village at the time of the current survey. Seventy-nine percent ($n = 56$) of the 71 households that received a water filter in 2014 participated in the study.

Intervention

Using the RANAS model, accurate information about the health risks of unsafe drinking water and associated health costs was provided through interactive workshops using a socio-drama and hands-on activities. Attitudinal factors were addressed through the credibility of community leaders who endorsed the water filters during three community forums and the Guatemalan CBO that coordinated development activities in the village.

Social norms and abilities were considered through local demonstrations by community partners on the care and use of the water filters. Self-regulation was attended to by providing contact names and telephone numbers for the water filter agency. Following the community forums and workshops, tabletop water filtration systems were distributed to a total of 71 households. Families with school-age children receiving scholarships from the CBO were recruited first, and these families subsequently encouraged other villagers to participate. Families met at the local school on a designated day to receive the water filters. The Guatemalan community leaders were essential in the successful planning and implementation of the intervention.

Data Collection

A follow-up survey was conducted between May and June 2015 to measure household demographics, current health status of family members, water filter usage, and type of flooring. The 13-item survey (available upon request) was based on a review of the literature and project objectives. Bilingual team members made home visits to each eligible household to explain the project and invite them to participate. Following consent, survey questions were read in Spanish to the head of household (HOH), which took 20 to 30 min. Each HOH was given a food package containing beans, rice, oatmeal, and cooking oil. An honorarium was provided for the village leader. Following best practices for conducting research in a developing country, we involved local leaders, offered incentives relevant to the cultural context, used a waiver of signed informed consent, and incorporated a bilingual research team (Amerson & Strang, 2015).

Statistical Analysis

IBM SPSS 22.0 software (IBM Corp., Armonk, NY, USA) was used for data management and analysis. Descriptive variables were expressed as frequencies. Fisher's exact test and odds ratios (ORs) were used to examine relationships between water filter usage, other factors, and diarrheal disease.

Results

Most of the families had two adults in the household (64.3%), and the average family size was 6.3 (**Table 1**). The majority of families (96.4%) had one or more working adults in the home. All except three families had a functional latrine. Among the 56 households, 71.4% (*n* = 40) were using the water filters at the time of the survey, primarily for cooking and drinking. However, 16 households (28.6%) had broken water filters. In fact, the only reason for non-use of water filters was that they were broken. All HOHs reported the water filters were beneficial and that they would recommend the water filters to others. Overall, 34 homes had concrete or wood flooring (60.7%), while the remaining 22 homes had dirt flooring (39.2%). At the time of the study, 11 households (19.6%) reported a current case of diarrhea.

Table 1. Characteristics of Maya Households ($N = 56$)

Household characteristics	*n*	%
Adults/household		
1	3	5.4
2	36	64.3
$\geq$3	17	30.3
Children/household		
1	5	8.9
2	13	23.2
$\geq$3	38	67.8
Working adults		
0	2	3.6
1	29	51.8
2	18	32.1
$\geq$3	7	12.5
Functional latrine		
Yes	52	92.9
No	3	5.4
Missing	1	1.8
Water filter status		
Working	40	71.4
Not working	16	28.6
Flooring type		
Concrete/wood	34	60.7
Dirt	22	39.2
Reported diarrhea		
Yes	11	19.6
No	44	78.6

Note. Fisher's exact test, $p = .263$; odds ratio = 2.58 and 95% confidence interval = 0.1–10.1.

Of the 40 households with working water filters, six cases of diarrhea (15%) were reported, while in the 16 households with a broken water filter, five cases of diarrhea (31%) were reported (**Table 2**). Of the 34 households with concrete or wood flooring, five cases of diarrhea (14.7%) were reported, while in the 22 households with dirt flooring, six cases of diarrhea (27.2%) were reported (**Table 3**). Although not statistically significant due to the small sample size, the odds of a reported case of diarrhea was 2.15 times higher in houses with dirt floors (OR = 2.15, 95% confidence interval [CI] 0.6, 8.3) compared to houses with cement or wood floors and 2.58 times higher in houses with nonworking water filters (OR = 2.58, 95% CI 0.1, 10.1) compared to houses with working water filters. Finally, we reviewed the records

Table 2. Water Filter Status and Current Report of Diarrhea Among Household Member (*N* = 56)

	Water filter status			
	Working		Not working	
Family health	*n*	%	*n*	%
Reported diarrhea				
Yes	6	15.0	5	31.3
No	34	85.0	11	68.8
Total	40	100	16	100

Note. Fisher's exact test, $p = .31$; odds ratio = 2.15 and 95% confidence interval = 0.6–8.3.

Table 3. Type of Floor Covering and Current Report of Diarrhea Among Household Member (*N* = 56)

	Flooring type			
	Cement/wood		Dirt	
Family health	*n*	%	*n*	%
Reported diarrhea				
Yes	5	14.7	6	27.2
No	29	85.2	16	70.8
Total	34	100	22	100

from the outreach clinics conducted in 2014 and 2015 in this community. Our review revealed a decrease in intestinal infections from 2014 (53%) to 2015 (32%) among persons who attended the clinic.

Discussion

While only 71.4% ($n = 40$) of the households in the study were using the water filters, the filters were both practically and clinically effective in reducing diarrheal disease in the study population. Applying the RANAS model of behavior change, we found the intervention to be acceptable and beneficial (Mosler, 2012). The filtering process takes 6 hr, which required a change in attitudes and norms, suggesting a valuing of clean water and buy-in from the study population. Families using the water filters for cooking and drinking demonstrated perceived risk and practiced skills consistent with the health teaching and the socio-drama. Concerns about the households with broken water filters indicate we should have paid more attention to the self-regulation factors of the RANAS model. While this empiric approach was useful in guiding the intervention, a more holistic model could have helped us understand how the Maya explain why they are sick and what keeps them well.

Among the 16 households with broken water filters, to the best of our knowledge, these families did not know what to do with the broken filter. These families reported that the filter slipped off a surface, fell, and broke. Investigators who assessed water filter use in Kenya found that 17% of the households had stopped using water filters due to operational difficulties (De Ver Dye et al., 2011). Although families in our study were initially instructed to contact agency staff if they had problems or questions, they did not do so. Thus, our intervention did not provide sufficient attention to empowering families for follow-up on system failure. Bruce et al. (2014) suggested that there should be follow-up programs that reinforce skills that ensure families can identify and correct a problem with the filter.

In some households, we observed that water container storage was a problem due to an unstable platform or unlevel surface in the home. With regard to the broken filters, we communicated our concern with staff at the water filter agency and discussed a plan for replacing broken filters. Study findings have been discussed with community partners to determine next steps, which may include addressing housing needs. Furnishing houses with concrete flooring may ensure stability for the water filter containers and further reduce disease transmission. Dirt flooring, absence of potable water, and inadequate sanitation may interact to influence associations with diarrheal prevalence (Bulled et al., 2014). Future projects with this community will strive to better understand community empowerment and indigenous explanations of health and illness.

Limitations

The limitations identified in our study include a small sample size from a single village, which restricts generalizability to other world cultures. However, the community–university partnership model and intervention framework may be applicable to other developing countries. Also we were not able to visit all households who had received water filters due to forces of nature and limited time in the country, common issues in conducting research outside of one's native country. Despite these limitations, our community partners were extremely satisfied with the high proportion of households still using the water filters and in the positive clinical outcomes noted in the record review.

Conclusions

International partnerships are critical to improving community health in rural Guatemala, where resources remain scarce. However, partners must pay close attention to ethical practices in research with historically marginalized populations (Amerson & Strang, 2015; Grandin, Levenson, & Oglesby, 2011; Rodriguez & Garcia, 2013). Through a long-standing partnership with this Maya community, we have been able to incorporate the sociopolitical context of a community to shape a public health initiative that fit population health needs. Furthermore, we were able to identify which households had more difficulty with water filters, providing needed information to make future changes.

We note that few nurse scientists are conducting studies in the area of water, sanitation, and hygiene. We are aware of only one study by a Brazilian nurse that addressed the self-efficacy of mothers in preventing childhood diarrhea (Andrade et al., 2015). Two of the United Nation Millennium Development Goals, to reduce child mortality and to ensure environmental sustainability, relate specifically to improved drinking water (United Nations, 2015). Nurses are involved in global health initiatives to improve maternal and child health and should consider disseminating research to include environmental factors, especially when working in rural communities in Latin America, Asia, or Africa.

This study supports point-of-use water filter usage in a rural developing country as a cost-effective intervention to reduce intestinal infections related to contaminated water. Moreover, the water filters were perceived as beneficial by the community. Still, strengthening empowerment and capacity building with village leaders and family members is critical for problem solving. Empowerment training that addresses cultural roles related to power and authority could lead to community development efforts that include housing. The study suggests that combination interventions of household flooring and water filters would lead to greater improvements in population health.

Acknowledgments

We are grateful for funding from East Carolina University, Division of Research and Graduate Studies. We would like to recognize our community partners, La Unión Centro Lingüístico and Soluciones Comunitarias, for their significant contribution to the project. A special thanks to the families who participated in this study.

Clinical Resources

- Global Water, Sanitation, & Hygiene. Contains health promotion materials and community health worker training materials: http://cdc.gov/healthywater/global/
- Safe Water System. The CDC and the Pan American Health Organization have collaborated to increase access to safe water by helping individuals treat and safely store water in homes, health facilities, and schools: http://cdc.gov/safewater/index.html
- World Health Organization International Scheme to Evaluate Household Water Treatment Technologies: http://www.who.int/household_water/scheme/household-water-treatment-report-round-1/en/

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JOURNAL OF NURSING SCHOLARSHIP

HEALTH POLICY AND SYSTEMS

Jordanian Nursing Work Environments, Intent to Stay, and Job Satisfaction

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Key words
Intent to stay, Jordan, nurse job satisfaction, nursing work environment

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Accepted October 3, 2016

doi: 10.1111/jnu.12265

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Abstract

Purpose: The purpose of this study was to examine associations among the nursing work environment, nurse job satisfaction, and intent to stay for nurses who practice in hospitals in Jordan.
Design: A quantitative descriptive cross-sectional survey design was used.
Methods: Data were collected through survey questionnaires distributed to 650 registered nurses (RNs) who worked in three hospitals in Jordan. The self-report questionnaire consisted of three instruments and demographic questions. The instruments were the Practice Environment Scale of the Nursing Work Index (PES-NWI), the McCain Intent to Stay scale, and Quinn and Shepard's (1974) Global Job Satisfaction survey. Descriptive statistics were calculated for discrete measures of demographic characteristics of the study participants. Multivariate linear regression models were used to explore relationships among the nursing work environment, job satisfaction, and intent to stay, adjusting for unit type.
Findings: There was a positive association between nurses' job satisfaction and the nursing work environment ($t = 6.42$, $p < .001$). For each one-unit increase in the total score of the PES-NWI, nurses' average job satisfaction increased by 1.3 points, controlling for other factors. Overall, nurses employed in public hospitals were more satisfied than those working in teaching hospitals. The nursing work environment was positively associated with nurses' intent to stay ($t = 4.83$, $p < .001$). The Intent to Stay score increased by 3.6 points for every one-unit increase in the total PES-NWI score on average. The highest Intent to Stay scores were reported by nurses from public hospitals.
Conclusions: The work environment was positively associated with nurses' intent to stay and job satisfaction. More attention should be paid to create positive work environments to increase job satisfaction for nurses and increase their intent to stay.
Clinical Relevance: Hospital and nurse managers and healthcare policymakers urgently need to create satisfactory work environments supporting nursing practice in order to increase nurses' job satisfaction and intent to stay.

An increasing body of research has linked poor nursing work environments to poor nurse outcomes in general (Institute of Medicine, 2004). Nursing job satisfaction and intent to stay are two specific nurse outcomes associated with the nursing work environment (Manojlovich & Laschinger, 2002; Nedd, 2006). An ongoing focus on these two nursing outcomes is needed because of the current nursing shortage, which has now spread internationally. Jordan, like other countries, has an inadequate supply of nurses in part because of a high nurse migration rate to countries with more favorable conditions such as the Gulf Corporation Council countries (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and United Arab Emirates) as well as other developed countries. In Jordan the nurse turnover rate may be as high as 36.6%, and this percentage is expected to increase (Hayajneh, AbuAlRub, Athamneh, & Almakhzoomy, 2009). The majority of Jordanian nurses work for 2 years in Jordan to gain experience before moving on to work in Gulf countries (especially Saudi Arabia, United Arab Emirates, Kuwait, and Qatar), where the pay is much higher; those countries require at least 2 years of experience (Hayajneh et al., 2009). Moreover, Jordan now faces new challenges far different from any other nearby country. Jordan is experiencing a big jump in its population census because of the "Arab Spring" movement followed by an influx of refugees, putting heavy pressure on the healthcare system and posing a question regarding the nature of healthcare services provided.

Jordan is a small, limited- and middle-income country. It is a kingdom situated in the Middle East with an estimated total population of 6.5 million people. The health system in Jordan consists of a complicated amalgam of private and public sectors. There are 31 public hospitals, 12 military hospitals, 2 teaching hospitals (university affiliated), and 61 private hospitals. The public sector is composed of Ministry of Health (MOH) hospitals, Royal Medical Services, and university-affiliated hospitals; this sector has scarce resources to optimize health care, but it serves the biggest portion of the population (MOH, 2013). The private sector, which is held by for-profit companies and stakeholders, is well resourced and covers the population who pay in cash or by medical insurance. Total health expenditures for 2012 represented 9.12% of the gross domestic product. The private sector is the largest source of health funding (47%), followed by the public sector (45%) and donors (8%; MOH, 2013).

The nursing profession in Jordan has made impressive improvements towards developing role adequacy over the past 50 years. Presently, there is quite a good national system of educational preparation of nurses, with the bachelor of science in nursing (BSN) degree providing the only point of entry to the profession (Shuriquie, While, & Fitzpatrick, 2008). The language of education for professional nursing programs is English, the educators are generally Western-educated Arab nurses, and the textbooks are in English. The total population of Jordanian registered nurses (RNs) is about 30,000, with around 14,500 nurses working in Jordan and others either unemployed or emigrants to other countries. About half (51%) of Jordanian nurses are male, and annually the total number of nurses increases by around 1,500 nurses. There are 27.6 nurses for every 10,000 people (MOH, 2015). The nurse:patient ratio varies from public to private hospitals and also from critical care to general wards. In critical care wards, the ratio is 1:1 in private hospitals and 1:2 in public hospitals, but in medical surgical wards the nurse:patient ratio varies from 1:6 in private to 1:12 in public hospitals.

Thus, the context of the Jordanian healthcare system may pose unique challenges for nurses depending on the type of hospital in which they work. While relationships between hospital work environments and nurse outcomes have been well described in North American, Asian, and European contexts, we know little about these relationships in Jordan. The ongoing nursing shortage and increasing demands for health care in Jordan makes it important to understand the effect of the work environment on nurses' job satisfaction and intent to stay.

Review of the Literature

Few studies have examined relationships between the nursing work environment and nurse outcomes in Jordan, but even studies conducted in other countries with different cultures have all concluded that there is an effect of the nursing work environment on nurse outcomes. Aiken and colleagues conducted a large study in the United States (10,184 nurses and 232,342 surgical patients recruited from 168 hospitals) and concluded that there was a positive relationship between healthy work environments and nurse outcomes that included job satisfaction, intention to leave, and burnout (Aiken, Clarke, Sloane, Lake, & Cheney, 2008).

Rochefort and Clarke (2010) examined the nursing work environment and its association with nurse outcomes such as emotional exhaustion, job satisfaction, and nurse perceptions of the quality of care provided. This study reported that the nursing work environment had a strong effect on nurse outcomes and recommended that to improve these outcomes, more frequent assessment and systematic evaluation of the nursing work environment should be conducted. These findings suggest that conditions in the work environment may change over time and are amenable to intervention for improvement (Rochefort & Clarke, 2010). Another American study assessed relationships among the nursing work environment, nurse turnover, and intention to leave (Friese, 2005). Nurses who perceived their work environment as negative had higher intention to leave their jobs. In addition, significant correlations were found between the nursing work environment, intention to leave, and nurse turnover (Friese, 2005).

In European countries, many studies have investigated the relationship between the nursing work environment and nurse-reported outcomes of job satisfaction and retention. For example, favorable evaluations of resource adequacy and management support, components of a healthy work environment, have had a positive association with nurse outcomes in several studies (Tervo-Heikkinen, Partanen, Aalto, & Vehviläinen-Julkunen, 2008; Van Bogaert, Kowalski, Weeks, & Clarke, 2013). In China, Liu et al. (2012) examined the relationship of the nursing work environment and nurse outcomes in a cross-sectional survey of 1,104 registered nurses in 21 hospitals. The results highlighted the inverse association between the nursing work environment and nurses' satisfaction and job-related burnout (Liu et al., 2012).

In the Eastern Mediterranean Region (EMR), two papers have focused on the nursing work environment. First in Lebanon, a study conducted by El-Jardali et al. (2011) indicated an undeniably negative and significant correlation between the nursing work environment and intention to leave among nurses in 69 Lebanese hospitals. This study provides additional evidence for the important role of the nursing work environment on nurses' intention to leave their positions. According to these Lebanese nurses, their nursing professional development and career control were the most important challenges that threatened the nursing work environment, suggesting possible intervention targets (El-Jardali et al., 2011). In the second study, conducted in Jordan, AbuAlRub, El-Jardali, Jamal, and Al-Rub (2016) examined relationships between the nursing work environment and job satisfaction and intent to stay, specifically in underserved areas in Jordan. The results showed positive significant relationships between healthy work environments and nurse outcomes of job satisfaction and intent to stay (AbuAlRub et al., 2016).

Although the nursing work environment has been conceptualized and studied in many ways, we decided to use Lake's definition: organizational characteristics of a work setting that facilitate or constrain professional nursing practice (Lake, 2002, p. 178). The nursing work environment is a multifactorial construct consisting of five characteristics: nurse participation in hospital affairs; nursing foundations for quality of care; nurse manager ability, leadership, and support; staffing and resource adequacy; and collegial relationships between physicians and nurses. We were drawn to this conceptualization because each of the five characteristics can be amenable to intervention for improvement, and the scale used to measure the work environment, the Practice Environment Scale of the Nursing Work Index (PES-NWI), has been used globally (Warshawsky & Havens, 2011).

Aims

In summary, while in North American, Asian, and European countries there is a robust body of literature demonstrating associations among nurses' work environments, job satisfaction, and intent to stay, we know less about these relationships in countries in the Middle East, specifically Jordan. The work environment has been shown to be amenable to intervention for improvement in other countries, which may be transferrable to the Jordanian context. We asked the following research question: What are the associations among the nursing work environment, nurse job satisfaction, and intent to stay for nurses who practice in hospitals in Jordan?

Methods

Design

This study used a descriptive, cross-sectional survey design.

Participants

The population included all RNs working on inpatient units in three hospitals: one public and one private hospital in Amman, and one teaching hospital in Irbid, Jordan. To be included in the study, nurses had to be RNs who had at least 1 year of experience and who worked in a clinical unit. We conducted a power analysis according to Cohen's Statistical Power Primer (Cohen, 1992). There are three sectors (public, private, and teaching hospitals), and to detect significant differences between responses of nurses who worked in the three sectors we needed a minimum of 52 participants from each sector (for a total of 156 participants) to achieve 80% power to detect a medium population effect size and two-sided alpha of 0.05. We chose to recruit more than the minimum number of participants needed to account for nonrespondents and possibly missing data. The target study population was 1,000 RNs; of those, 350 either did not meet the inclusion criteria or were on annual leave. Convenience sampling was used to recruit all 650 eligible nurses who were employed during the data collection period.

Measures

A self-report questionnaire was used and consisted of three instruments and demographic questions. The instruments were the PES-NWI, the McCain Intent to Stay scale, and Quinn and Shepard's (1974) Global Job Satisfaction survey.

PES-NWI. The PES-NWI measures various aspects of nurses' work environments and consists of five dimensions: nurse participation in hospital affairs (9 items), nurse foundations for quality care (10 items), nurse managers' ability and leadership and support of nurses (5 items), staffing and resource adequacy (4 items), and collegial nurse-physician relationships (3 items). This instrument uses a 4-point Likert-type scale (*strongly agree* = 1 to *strongly disagree* = 4). A mean score of 2.5 or greater on four or five subscales indicates that nurses have appropriate perception of their practice environment. A mean score of 2.5 or more for two or three subscales indicates that nurses have neither a favorable nor an unfavorable perception of their practice environment. If none or only one of the subscales achieves a mean score of 2.5 or greater, then the nurses perceive that their work environment is unfavorable to nursing practice. The tool is considered highly reliable and valid, with international studies reporting its internal consistency reliability in the range of 0.85 to 0.95 (Liu et al., 2012; Nantsupawat et al., 2011). In the present study, the reliability coefficient (Cronbach's alpha) was 0.92.

Intent to stay. McCain's Intent to Stay scale measures an employee's intention to stay in his or her current position and contains of five items arranged on a 5-point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Content validity of the Arabic version of McCain's Intent to Stay scale was established by experts in nursing. The Intent to Stay scale was used by AbuAlRub and colleagues (AbuAlRub, 2010; AbuAlRub, Omari, & Al-Zaru, 2009), who also studied Jordanian nurses, and reported the internal consistency of the scale to be 0.74. The Arabic version was used in the current study.

Job satisfaction. The six-item Global Job Satisfaction survey (Quinn, 1972) was used to measure job satisfaction. This instrument was originally developed by Quinn and Shepard and subsequently modified (Pond & Geyer, 1991; Rice, Phillips, & McFarlin, 1990). All six items measure an employee's general feelings about his or her job, instead of referring to any specific aspect of the job. Responses are rated on a 5-point Likert-type scale (5 = *more satisfied*), and each item uses a different anchor. The reliability coefficient (Cronbach's alpha) for the Global Job Satisfaction survey in this study was 0.86.

Reliability measures and summary statistics of the above-mentioned three instruments from the current study are described in **Table 1**. Content validity of the Arabic version of the three instruments was established by experts in nursing. The instruments were translated and back-translated by bilingual experts.

Table 1. Summary Statistics and Reliability Measures of the Instruments Used in This Study ($N = 582$)

Scale name	No. of items	Mean ± *SD*	Range	Cronbach's alpha
PES-NWI	31	2.72 ± 0.46	1–4	0.92
Global Job Satisfaction Survey	6	2.77 ± 0.93	1–5	0.86
McCain's Intent to Stay Scale	5	14.10 ± 4.28	5–25	0.74

Note. PES-NWI = Practice Environment Scale of the Nursing Work Index.

Data Collection Procedures

The first author initially met with the administrative representatives of all three hospitals to enlist their support and cooperation. Approval was obtained from the university research board.

Hospital nurses were invited to participate in this study through a packet distributed to all nurses. The questionnaire packet included a cover letter explaining the aim of the study, the three instruments, and demographic questions. To protect participant anonymity, potential respondents were asked not to write their names on or sign the questionnaire. Participants were instructed in the cover letter to return the questionnaire in a concealed envelope and submit it to the first author directly. A total of 582 of the 650 distributed questionnaires were returned, resulting in a response rate of 89.5%.

Data analysis. Descriptive statistics were calculated for discrete measures of demographic characteristics of the study participants. Of the 582 cases that were analyzed, there were no missing values for the Nursing Work Index, two cases had missing values for the Global Job Satisfaction survey, and six cases had missing values for the Intent to Stay scale. A complete case analysis approach was taken since the percentage of missing information was only 1%. Multivariate linear regression models were used to explore relationships among the nursing work environment, job satisfaction, and intent to stay, adjusting for unit (medical, surgical, maternity, critical, pediatric, or other) and hospital (private, public, or teaching) type. Initial models included two-way interaction terms: first Nursing Work Index by hospital type and then by unit type, since there is evidence that job satisfaction and intent to stay outcomes vary by hospital and unit types. Final models were determined by the Akaike information criterion, in which a smaller value indicates the better model. SAS version 9.4 (SAS Institute Inc., Cary, NC, USA) and SPSS version 22 (IBM Corp., Armonk, NY, USA) were used for all analyses. Significance was determined at $p \leq .05$.

Table 2. Demographic Characteristics of Nurses ($N = 582$)

	%
Age	
< 25 years	19.3
25–34 years	58.7
35 years or older	22.0
Gender	
Male	40.5
Female	59.5
Years of experience as a nurse	
5 years or less	31.7
6–10 years	41.4
11 years or more	26.9
Years of experiences in this current post	
5 years or less	47.2
6–10 years	36.4
11 years or more	16.4
Marital status	
Single	33.0
Married	66.7
Other	0.3
Education	
General nursing diploma	11.0
BS in nursing	81.4
Master's degree in nursing	6.0
Other	1.6
Job type	
Staff nurse	71.4
Other	28.6

Results

Demographic characteristics of the study sample are presented in **Table 2**. The study population was evenly divided by gender. The majority of nurses had BSN degrees (81.4%), with 6 years or more of job experience as nurses (68.3%), and were currently working as staff nurses (71.4%). Most of the study participants were young (25–34 years of age [58.7%]) and married (66.7%). **Table 3** depicts the multivariate linear regression results to examine the relationships of job satisfaction and intent to stay with the nursing work environment. Results were examined for interactions between the Nursing Work Index by hospital and unit type as well. The nonsignificant interaction term PES-NWI by unit type was removed from the final model, which contained the dependent variable intent to stay.

Job Satisfaction

There was a positive association between nurses' job satisfaction and the nursing work environment ($t = 6.42$, $p < .001$). For each one-unit increase in the total score of the PES-NWI, nurses' average job satisfaction increased by 1.3 points, controlling for other factors. Overall, nurses employed in public hospitals were more satisfied than those working in teaching hospitals. Among six different hospital unit types, nurses employed in surgical units were highly satisfied, followed by nurses who worked in other departments (e.g., infection control, quality management, and continuous education departments), and pediatric units relative to critical care units. There were differences found in the nurses' job satisfaction ratings employed in the public hospitals relative to teaching hospitals at the same level of PES-NWI score. Nurses working in surgical and other units relative to critical care units reported different job satisfaction scores even if they were in a similar nursing work environment.

Intent to Stay

The nursing work environment was positively associated with nurses' intent to stay ($t = 4.83$, $p < .001$). The Intent to Stay score increased by 3.6 points for every one-unit increase in the total PES-NWI score on average. The maximum Intent to Stay score was reported by nurses from public hospitals. Unit type was not a predictor of the intent to stay outcome for this study sample. There were significant differences found in the Intent to Stay score of nurses who worked in public hospitals relative to teaching hospitals at the same level of nursing work environment score ($t = -4.29$, $p < .001$).

Discussion

The purpose of this study was to describe associations among the nursing work environment, nurse job satisfaction, and intent to stay for a sample of nurses who worked in three different types of hospitals in Jordan. We found that, in answer to our research question, the nursing work environment was a significant predictor of both job satisfaction and intent to stay. Our findings provide further support for results of similar studies conducted in other countries, suggesting that nurse perceptions of their work environment affect nurse outcomes, no matter where in the world nurses may practice (Aiken et al., 2008; El-Jardali et al., 2011; Friese, 2005; Gardner, Thomas-Hawkins, Fogg, & Latham, 2007).

Because of our large sample drawn from multiple hospital types, we were able to better understand the interaction of hospital and unit type with the nursing work environment. We used a reliable and valid measure of the nursing work environment, the PES-NWI, yet found that organizational characteristics such as hospital and unit type also had an independent influence on nurse outcomes. Other research (AbuAlRub et al., 2016) has also shown that job satisfaction and intent to stay vary

Table 3. Multivariate Linear Regression Analysis Results of Job Satisfaction and Intent to Stay

	Job satisfaction			Intent to stay		
Effects	Estimate	*t* value	*p* value	Estimate	*t* value	*p* value
Intercept	−0.59 (0.56)	−1.06	.29	4.79 (2.08)	2.3	.02
PES-NWI	1.30 (0.20)	6.42	**<.0001**	3.58 (0.74)	4.83	**<.0001**
Hospital type						
Public	2.22 (0.57)	3.87	**<.001**	10.08 (2.64)	3.81	**<.001**
Private	0.49 (0.59)	0.82	.41	1.43 (2.74)	0.52	.60
Teaching	Reference			Reference		
Unit type						
Medical	0.76 (0.60)	1.27	.21	0.69 (0.50)	1.39	.17
Surgical	2.08 (0.66)	3.16	**.002**	0.04 (0.54)	0.08	.94
Pediatrics	1.55 (0.68)	2.27	**.02**	0.78 (0.58)	1.36	.18
Maternity	0.27 (1.16)	0.23	.82	−0.73 (0.68)	−1.08	.28
Other	1.84 (0.90)	2.04	**.04**	0.57 (0.69)	0.82	.41
Critical	Reference			Reference		
PES-NWI by hospital type						
PES-NWI, public	−0.94 (0.21)	−4.53	**<.0001**	−4.09 (0.95)	−4.29	**<.0001**
PES-NWI, private	−0.29 (0.22)	−1.33	.19	−0.84 (1.00)	−0.84	.40
PES-NWI by unit type						
PES-NWI, medical	−0.24 (0.22)	−1.07	.29			
PES-NWI, surgical	−0.76 (0.24)	−3.17	**.002**			
PES-NWI, pediatrics	−0.48 (0.25)	−1.92	.06			
PES-NWI, maternity	−0.14 (0.42)	−0.34	.74			
PES-NWI, other	−0.67 (0.33)	−2.06	**.04**			

Note. Significant *p* values are boldfaced. PES-NWI = Practice Environment Scale of the Nursing Work Index.

by hospital and unit type, suggesting that organizational characteristics, not captured by a reliable and valid nursing work environment instrument, are important considerations in research where the nursing work environment is explored.

Our finding that nurses who worked in public hospitals were more satisfied and had higher Intent to Stay scores is interesting. In Jordan, the staff who work in public hospitals are government employees and have job security because of permanent contracts. This is in contrast to the private sector, where hospitals operate on a for-profit basis, with staff working under yearly contracts in these hospitals. It may be that the job security afforded by public hospitals contributes to job satisfaction and intent to stay. In the United States, healthcare workers in the Department of Veterans Affairs are also government employees, and in one study a comparison of Veterans Administration staff and community mental health center staff in the same city showed significantly greater job satisfaction among Veterans Administration staff (Salyers, Rollins, Kelly, Lysaker, & Williams, 2013).

Although there is substantial research that has studied job satisfaction and intent to stay jointly as nurse outcomes, our results suggest that there is justification to examine each outcome separately. Unit type was significantly associated with job satisfaction but not intent to stay, suggesting that there is something in the way nurses' work is configured at the unit level that influences job satisfaction only, at least in Jordan. AbuAlRub and colleagues (2016) also demonstrated a relationship between work environment characteristics and job satisfaction among nurses in Jordan, although unit-level analyses were not conducted. In our sample, nurses who worked in surgical, pediatric, and "other" units had the highest job satisfaction (AbuAlRub et al., 2016). Patient care needs influence workflow and practices on various types of units, which may have an effect on nurses' job satisfaction and other variables. For example, Manojlovich and Antonakos (2008) found that unit type affected nurses' satisfaction in communicating with physicians.

In addition, it may be that intent to stay has an emotional component, whereas job satisfaction may be more influenced by organizational characteristics. Also in Jordan, AbuAlRub and colleagues (2009) noted a relationship between intent to stay and social support found in relationships at work, suggesting that an emotional component to intent to stay exists. Our results provide support for an empirically tested theoretical model which posits that intent to stay is the product of nurses' affective as well as cognitive responses to their work environments. Cowden and Cummings (2012) suggest that greater acknowledgement of the emotional component of nurses' work lives is needed because it influences decision making.

Our study has some important limitations. This was a cross-sectional exploration of relationships, so we are unable to establish causality and must be careful not to infer that changes in the nursing work environment caused changes in job satisfaction or intent to stay. The use of a survey design means that all of our measures were self-reported and may not reflect actual work environment characteristics. However, self-report is the only way to determine job satisfaction and intent to stay. Our sample, albeit a large one, was drawn from only two cities in Jordan, so our results are not widely generalizable.

Conclusion and Implications

The present study found significant associations between the nursing work environment and nurse outcomes of intent to stay and job satisfaction, with important nuances. Whereas hospital and unit type were both significantly associated with nurses' job satisfaction, only hospital type was associated with nurses' intent to stay. Our findings suggest that, as in other countries, a positive work environment will increase the job satisfaction and intent to stay of Jordanian nurses. Given the high nurse turnover rate in Jordan, and costs of hiring new nurses to replace those who have left, Jordanian healthcare managers and policymakers should be encouraged to take action to improve working conditions for nurses while paying attention to nurses' emotional responses to increase nurse satisfaction and keep them in the profession.

Clinical Resources

- International Council of Nurses fact sheets on Human Resources, Planning & Development: http://www.icn.ch/publications/fact-sheets/
- U.S. Department of Health and Human Services, Hospital Compare: http://www.hospitalcompare.hhs.gov

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JOURNAL OF NURSING SCHOLARSHIP

PROFESSION AND SOCIETY

Measurement Reactivity in a Randomized Clinical Trial Using Self-Reported Data

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Key words
Measurement reactivity, secondary data analysis, self-management self-monitoring, self-reported data

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Accepted October 3, 2016

doi: 10.1111/jnu.12266

Abstract

Purpose: The objective of this article is to describe how self-monitoring contributed to measurement reactivity in a randomized clinical trial (RCT). The implications of measurement reactivity on self-monitoring and suggestions for minimizing its effect will be discussed.
Design: The study involved a secondary data analysis of responses from 145 participants who completed a 12-month long RCT. The original sample consisted of 202 community-living adults with long-term indwelling urinary catheters.
Methods: The data analyzed were from the participants' brief responses to the final study question concerning their perceived study participation value. The data were discussed and coded iteratively until three researchers reached consensus. At the end, each item was recoded into eight categories and minor codes.
Findings: Our belief that the calendar was the probable cause of reactivity was not fully supported as the control group also learned about paying attention to urinary catheter problems by the questions asked through the seven bimonthly interviews.
Conclusions: The calendar and interview questions were reactive by increasing participants' self-monitoring of catheter problems. Specifically, the frequent interviews exposed participants to catheter-related concerns and provided them with ideas as to how to better manage them.
Clinical Relevance: This article provides insight related to the internal validity threat of measurement reactivity in RCTs and gives suggestions to reduce its effects.

Self-reported measures, such as diaries, checklists, interviews, or surveys, are common in behavioral interventions. In randomized clinical trials (RCTs), the use of these measures can lead to internal validity concerns due to the testing effects (i.e., Hawthorne effect or measurement reactivity) that these measures may elicit. McCambridge, Witton, and Elbourne (2014) operationalized the Hawthorne effect by describing it as the testing effect that occurs when participants are assessed by being directly observed, made aware of being studied, or asked to report on their behavior by answering questions. Measurement reactivity is a special case of the Hawthorne effect that specially focuses on the processes by which repeated measurement leads to changes in the participants being measured (French & Sutton, 2010; Shadish, Cook, & Campbell, 2002). Specifically, the measures themselves may inform the study participants of the intended behaviors being evaluated and in turn influence the achieved results. This can create questions regarding whether or not the intervention was effective (Gravetter & Forzano, 2009).

In a 1-year randomized trial teaching self-management skills to 202 people with long-term indwelling urinary catheters, both groups appeared to have improved. The research team attributed this to an increase in self-monitoring (awareness and observations or recordings) caused by use of the catheter calendar, but this conclusion was not supported by data from the study. The improvements of decreasing symptomatic catheter-related urinary tract infection and catheter blockage over the 12 month study were clinically meaningful in both the control and intervention groups (Wilde et al., 2015). Importantly, similar improvements were not observed in a prospective observational study of 34 catheter users of the same population who were assessed bimonthly over a 6 month period (Wilde et al., 2010), causing the researchers to wonder what contributed to both groups' improvements in the 12 month RCT.

The unintended improvement in the control group compelled the researchers to try to determine its potential cause, specifically whether the calendar or other factors caused behavior changes in the participants. We believed that the catheter calendar, used to record catheter problems, could have contributed to self-monitoring and in turn measurement reactivity in the control group. The answers to the final open-ended interview question for both the experimental and control groups were analyzed. The question asked was,

> Now that the study is over, what can you tell us about how it went? Please tell us whether it was worth it to you to be in the study and why? (Note to interviewers: Describe in participant's words as much as able.)

This is a discussion of the data analyzed from the responses to this question, the measurement issues in self-reported data, implications related to self-monitoring, and suggestions for minimizing this testing effect in repeated measures studies, particularly self-management RCTs.

Background

Self-management clinical trials often use self-reported data for health status, health indicators, and healthcare utilization outcomes. Several recent Cochrane reports on self-management show low to moderate benefit in outcomes for conditions like osteoarthritis (Kroon et al., 2014), asthma (Peytremann-Bridevaux, Arditi, Gex, Bridevaux, & Burnand, 2015), and type 2 diabetes (Pal et al., 2013). In a meta-analysis of outcomes related to behavior, physical and psychological health, and healthcare utilization, based on the Stanford Chronic Disease Self-Management Program (CDSMP) literature from 1999 to 2009, researchers suggested small to moderate effects in studies measured at baseline and at 6 and 12 months (Brady et al., 2013). In this review of the 23 studies, 9 were RCTs and the rest were longitudinal pre- and post-research. The CDSMP has been tested in multiple studies, including clinical trials for specific conditions like arthritis using peer leaders (Lorig, Ritter, Laurent, & Fries, 2004), for varying chronic conditions in online programs (Lorig et al., 2008) or for evaluating healthcare utilization (Ahn et al., 2013). Recently, significant improvements were found in health indicators and healthcare utilization in a study of people with different chronic conditions using mailed materials in a pre-post design (Lorig, Ritter, Moreland, & Laurent, 2015).

Self-reported data, such as those used in self-management research, may be particularly vulnerable to measurement reactivity. This is particularly true when the methods or repeated assessments used to measure a certain phenomenon promotes unexpected self-monitoring, which in turn culminates in changes in the behaviors of the individuals being measured (Darwin, McGowan, & Edozien, 2013; French & Sutton, 2010). For example, asking participants about catheter-related issues might cause them to pay more attention to their catheters, which they otherwise might not have done.

Self-monitoring is defined as an iterative process of increased "(1) awareness of bodily symptoms, sensations, daily activities, and cognitive processes and (2) measurements, recordings and observations that inform cognition or provide information for independent action or consultation with care providers" (Wilde & Garvin, 2007, p. 339). Self-monitoring is believed to contribute to better self-management of chronic conditions (Riegel, Jaarsma, & Stromberg, 2012). Therefore, intervention research in self-management often uses strategies to measure participant behavior that may increase self-monitoring and in this way become reactive. For example, the use of a recording device in measuring self-regulation may alter the study participant's behaviors or thought process by causing him or her to consider issues he or she may have previously neglected to examine (French & Sutton, 2010). Reactivity occurs through the mechanisms of self-appraisal, validation, and seeking support (Darwin et al., 2013). Self-appraisal involves self-assessment behavior (increased ongoing awareness) and can thereby impact study outcomes. Validation of participants' feelings, struggles, and experiences also can cause measurement reactivity by helping participants to realize that they are not alone in what they are going through. Lastly, measurement tools may influence participants to seek support from healthcare providers or family members.

In assessing measurement reactivity, it is important to determine if the noted reactivity solely adds "noise" to the gathered results or if it adds bias to them (French & Sutton, 2010). If a measure causes the scores in both control and experimental groups to consistently increase, this may only represent a source of variance, which may not be problematic to the interpretation of the results. However, result bias may occur if "(a) measurement is confounded (mingled together) with intervention/treatment; (b) the measurement otherwise interacts with intervention/treatment; (c) there is neither confounding nor interaction with intervention, but there is shifting of the absolute level of measurement gathered" (French & Sutton, 2010, p. 462). Information on the prevalence and magnitude of measurement reactivity has been found to be inconsistent, given that some trials have not found any effects on outcome data, while others report small effects (McCambridge, Butor-Bhavsar, Witton, & Elbourne, 2011).

Measurement confounding occurs when measurement reactivity functions in the same manner as the intervention (French & Sutton, 2010). For example, the use of self-recording devices like pedometers or calendars to record behaviors may lead to increased self-monitoring (French & Sutton, 2010; Nelson, Boykin, & Hayes, 1982). This in turn can inhibit the ability of the intervention to cause observable changes in behaviors in comparison to the controls. When measurement effects are as large as the intervention effects, it is important to assess and learn which underlying mechanisms are causing these effects.

The interaction of measurement with intervention can occur when there is a limit to the amount of behavior a person is willing to carry out. Thus, if both the intervention and control groups increase in a specific behavior, then the intervention may be unable to cause any more increase in that behavior. In other words, the measurement effect may inhibit an additional intervention effect (French & Sutton, 2010). Lastly, if measurement reactivity causes a specified behavior increase, it can cause a ceiling effect, which will reduce the possibility of an intervention effect being elicited.

Keeping in mind the different ways that measurement reactivity can affect study results, the aim of this article is to determine the contributing factors of measurement reactivity in an RCT teaching self-management skills to persons with long-term indwelling urinary catheters. In discussing measurement reactivity, we will also address ways to determine what is causing both the control and experimental groups to improve or change. Furthermore, we will consider what steps could be taken to reduce reactivity.

Parent Study Description

The purpose of the parent RCT was to test whether a self-management intervention could decrease catheter problems and whether these changes were mediated by self-efficacy or self-management behaviors. The study was conducted from 2008 to 2012, with data collection from June 2009 until August 2012. The sample, all with long-term indwelling urinary catheters, included 51% men who were diverse in age (19–96 years old) and race (57% White, 30% Black, 2% American Indian or Alaskan Native, 2% biracial, and 9% not known). Eleven percent were of Hispanic ethnicity. The sample was composed of 56% with urethral and 44% with suprapubic catheters. The participants were highly disabled, with 60% of them needing help in completing activities of daily living such as dressing, bathing, toileting, and getting out of bed; 19% also needed help with eating. Attrition was similar in both the intervention and control groups, and 74% completed the full 12 months of the study. Several publications provide additional information about the study related to the main findings (Wilde et al., 2015), the study sample at baseline (Wilde, McDonald, et al., 2013), and a description of the intervention (Wilde, Zhang, et al., 2013).

There were two study sites: one was a large home care agency (with an active research branch) in a large metropolitan area in a northeastern state of the United States and the other was a university site in the same state composed of urban, suburban, and rural regions. Human subjects' approval was obtained at both sites' institutional review boards in a synchronous approach. Participants gave informed written consent prior to participating.

The primary RCT study outcomes were reports of (a) treatment of catheter-associated urinary tract infection (CAUTI), (b) blockage of the catheter defined as a lack of urine flow within the catheter lumen, and (c) accidental catheter dislodgement or its falling out. Several follow-up questions were asked about these outcomes, including the presence or absence of 16 possible CAUTI symptoms and whether the participant was hospitalized or went to rehabilitation after being hospitalized for CAUTI. Secondary outcomes included having sediment in the urine, leakage of urine around the catheter (bypassing of urine), bladder spasms, catheter pain, and catheter-related care practices, such as irrigation of the catheter (Wilde, McDonald, et al., 2013).

The blinded data collectors (different people from the study nurses) were trained together, monitored for quality, and met with one another and the research team through regular monthly conference calls. A written script was used for each question. For both intervention and control groups, data were collected through a home visit at the beginning of the study (prior to the randomization) and through six bimonthly phone interviews, lasting about 30 to 45 min. Explanation of the data collection process was provided to participants, including the use of “show cards” (with a list of several possible answers). A 1-year catheter calendar and a simple code for problems and treatments were used in both groups to aid in recall and facilitate phone interviews. Problem codes were: U for urinary tract infection, D for accidental dislodgement of the catheter, and B for blockage (meaning urine not flowing within the catheter lumen). Treatment codes were: A for antibiotic, O for extra office visit, HV for extra home visit, ER for emergency room visit, H for hospitalization, and R for rehabilitation stay (related to residual effects from the CAUTI). Data collected at baseline involved the use of questionnaires related to demographics, catheter self-efficacy and self-management, quality of life, and catheter problems. At months 2, 4, 6, 8, 10, and 12, our catheter problems questionnaire (Wilde, McDonald, et al., 2013) was administered, and at 6 and 12 months, the catheter self-efficacy and self-management questionnaires (Wilde et al., 2015) were used.

Besides data collection, the control group only received their routine catheter-related care through their regular providers, for example, nurses from a home care agency, physician or nurse practitioner office visits, or both. The experimental group received, in addition to data collection, three home visits by a trained study nurse. These visits included two visits in the first month a week apart, followed by a phone call 2 weeks later and a “booster” home visit at 4 months. Each visit lasted about an hour. The aim of the first visit was to teach participants on the use of (a) the 3 day urinary diary, which included measuring fluid intake and urine output and noting urine color and character; and (b) the journal for the recording of self-monitoring observations and catheter-related problems. The second home visit, which took place 1 week later, included a discussion about the information recorded and suggestions for improvement or action. A 20 page educational booklet was reviewed in depth, with emphasis on maintaining optimal fluid intake and preventing catheter dislodgement. The educational booklet included an overview of basic catheter self-management, tips from catheter users (quotes collected from catheter users from other studies), 11 chapters of strategies to prevent or resolve common catheter problems, a urine color chart, and a “sources of caffeine” sheet. All areas of the booklet were reviewed, but the emphasis was on a discussion of the participant’s problems and suggested strategies and goals. Progress toward goals was acknowledged and reinforced to develop self-efficacy (i.e., confidence in participant’s catheter management).

Group differences through general estimating equation analysis were found only in the first 6 months of the study for blockage favoring the experimental group (Wilde et al., 2015). Rates of primary outcomes per 1,000 catheter days, however, showed that both groups improved from baseline over the 12 months of the study for CAUTI, blockage, and dislodgement. For instance, CAUTI decreased in the experimental group from 6.93/1,000 catheter days to 4.89 (or a decrease of 29%) and the control group went from 5.5/1,000 catheter days to 4.12 (which was a 25% decrease). For blockage, both groups improved from baseline: the experimental group from 9.26 to 4.76/1,000 catheter days and the control group 11.05 to 6.04/1,000 catheter days. Dislodgement decreased in the experimental group from 2.8 to 2.06/1,000 catheter days and the control group went from 4.3 to 2.6/1,000 catheter days (Wilde et al., 2015).

Methods for the Current Analysis

In this secondary analysis, the principal investigator (PI) and students brainstormed about possible threats to internal validity that may have caused the control group to have significant improvements in the measured catheter outcomes. As reported in the main findings publication, we concluded that power was adequate to determine group differences, group differences were found for blockage in the first 6 months, attrition was similar by group over time, and both groups had clinically significant improvements as reported in rates from baseline through the 12-month study (Wilde et al., 2015). To determine what else might have contributed to reactivity, if it occurred, we analyzed: (a) whether the calendar was used differently by the experimental and control groups; and (b) whether other factors might have influenced outcomes, such as the occurrence of history or contamination effects of the intervention into the control group. Because participants were asked whether they had a catheter problem (i.e., blockage, CAUTI), we used the dates of their occurrence to determine whether the calendar was used. The PI of the RCT and two doctoral students analyzed the qualitative data acquired from the responses to the final study question about the value of their participation in the research: “Now that the study is over, what can you tell us about how it went? Please tell us whether it was worth it to you to be in the study and why.” There were 145 entries, 71 from the experimental group and 74 from the control group. Data were entered into SPSS version 19 software (IBM Corp., Armonk, NY, USA), verified by the study coordinators and data analyst, and downloaded into a table format for coding. The PI identified 14 initial codes and then trained the students on how to complete the coding on all responses. Based on several iterations of discussions and further coding between PI and students, the larger categories of codes were reduced to eight, with several minor codes identifying content further. The coding team then met four times during meetings lasting an hour or two to thoughtfully recode each of the items into these eight categories, and separating the codes into each of the two treatment groups (i.e., intervention and control groups). Delineation of final code assignment for each comment was determined by reaching consensus during these discussions. Many comments included content that fit into several codes. In a few instances, individuals made contradictory statements, showing that there were parts of the study that were perceived as positive and other parts that were negative. The group evaluated such comments to discern their meaning as best as possible. Interpretation of the differences and similarities in treatment group responses were drafted and agreed upon by all authors. Key quotes were identified to illustrate the findings. The final manuscript included input from all authors.

Findings

Analysis of Group Differences

Missing dates for blockage or CAUTI occurrence was an indication that the calendar was not used in these instances, despite the participants' report of the occurrence and frequency of these catheter-related problems. Details on blockage, including dates of the events, were asked only on the first four blockages per participant (131 events), and a few individuals had blockage as often as 20 times in 2 months. Recorded dates were missing for 1.8% of the reports of the first four blockages in nine individuals, six in the experimental group and three in the control group. These included 19 blockage events recorded as "don't know" (15 events in experimental, 4 in the control group) and 5 events recorded as "refused to answer" (all in control group). Only three dates for CAUTI were missing as "don't know" in three individuals, one in the experimental group and two in the control group. Therefore, we believe that the groups were similar in their use of their calendars for reporting blockage and CAUTI events.

Analysis of Final Study Question From Both Groups

The final seven codes are represented in **Table 1**. While not very different, the control group's comments included a few more responses about paying attention, a key concept of the intervention (13 responses in intervention vs. 16 in control). For example, a participant from the control group stated: "the things in the study that I was not paying attention to, now I'm good paying attention to it. I'm paying attention to what's going on more, like kinks." From an intervention participant, the following comment was received: "It helped me to stay 'on point' and to pay close attention to my catheter. I now know more about my catheter. Things that I did not imagine I have control of [e.g., urinary tract infection, blockage]." The next statement, from an individual in the control group, showed the value of the calendar in self-monitoring and for interacting with the physician: "It helped me to see the benefit of writing things down. It was helpful when I met with my doctor to know the dates of problems and possible reasons why." A participant in the intervention group shared a similar sentiment: "The calendar was helpful in showing the MD the patterns of infections. It enabled the urologist to see a unique pattern of organisms and infections."

One striking difference was in how many more people in the control group commented specifically about the interviews (i.e., 6% intervention and 23% control). There were only three comments from the experimental group about the questions from the interviews needing refinements or being a burden, whereas eight participants in the control group provided this type of feedback. Six comments from the control group were about the questions "making you think." Some of the participants in the control group identified that they had learned about or to pay attention to the catheter in general "from the questions" asked by the interviewers. One person in the control group talked about this in relation to increased awareness, which is a key component of self-monitoring, by saying: "Just the questions in the interviews helped [me] to be alert to many things in how to look at my day-to-day activities ... [and] helped me to be aware."

As seen above, it was not unusual for people from the control group to reflect our theoretical language about "paying attention" (i.e., increasing awareness). Some also seemed to know about the content of the intervention, possibly based on the questions we asked. The following comment illustrates key components of what was taught in the intervention about monitoring fluid intake and assuring the correct catheter position. We heard this comment from a person in the control group: "I learned to pay close attention to my catheter. I learned how to monitor the intake of fluids and the position that my catheter is supposed to be."

Whereas the control group talked about how the interview questions helped them learn, the experimental group talked about their confidence or reassurance, using study information for daily catheter care and communicating with healthcare providers. Both groups made comments about valuing the research in general, feeling valued through talking about the catheter, and perceiving that the researchers appreciated them and that they were not alone in dealing with catheter problems.

Table 1. Responses to Question at the End of the Study

		Intervention group		Control group	
		(*n* = 71)	% of *n*	(*n* = 74)	% of *n*
1. Overall value	Worth it—beneficial/helpful	58	61/71 = 86%	61	62/74 = 84%
	Interesting	5[a]		5[a]	
	Helped aides/family	1		1[a]	
	Neutral—not bad, ok	2	9/71 = 13%	8	16/74 = 22%
	Did not learn anything new/no catheter problem	4		2	
	Did it for the money/incentive	3		3[a]	
	Aides/family do catheter care	0		3	
	Not knowing results	0		2[a]	
	Not worth it	1	6/71 = 8%	5	6/74 = 8%
	Differing expectation/disappointment	6[a]		1	
2. Paying attention	Paying attention to catheter, awareness, monitoring intake of fluid and position or self (independence)	11	13/71 = 18%	12	16/74 = 22%
	Through question	0		2	
	Keep track of catheter and problems/use of calendar	2		2	
3. Learning	Learned about catheters or body	3	27/71 = 38%	17	23/74 = 31%
	Learned through question	0		4	
	More information or educational	18		0	
	Confidence/reassured/validated	5[a]		3[a]	
	Use information towards the daily care of my catheter	3[a]		1[a]	
	Improvement	1		1[a]	
4. Communication	Helped me to communicate with doctors and nurses	3	7/71 = 10%	3	4/74 = 5%
	Have a good relationship with doctors and nurses	1		0	
	Learned to be more proactive and prepared	3		1	
5. Feeling valued	Voice/talking about catheter	4	9/71 = 13%	4	11/74 = 15%
	Appreciate researchers caring about them/helping to find solutions	5		7	
6. Sharing information	Sharing information about self and catheter	1	26/71 = 37%	3	29/74 = 39%
	Others with catheters dealing with similar problems	1		1	
	Helping others—recognize research benefits others with catheters	24		25	
7. Interviews	Needs refinement/repetitive	2	4/71 = 6%	5	17/74 = 23%
	Burden/not comfortable	1		3[a]	
	Questions relevant, make you think	1		6	
	Interviewers professional	0		4	

[a] The responses provided by a particular participant fit into one or more subcategories within a category. Thus, the final cumulative number in the percentage column may not equal the sum of each subcategory.

Discussion

As an alternative to our belief that self-monitoring reactivity might have occurred in the control group, we considered whether history (changes in practice) or contamination of the control group occurred. This study is believed to be the only one like it on self-management, and providers would not have had access to the intervention information except as nurses at the Visiting Nurse Service of New York. These nurses might have seen the educational booklet and diary used in the experimental group. However, given the nurses' familiarity with blinded study protocols, it is unlikely that they breached the RCT guidelines.

Recognizing our goal in this study of analyzing responses to the final question in the RCT, we discovered that it was not just the calendar that contributed to the changed behavior in the control group, but also it is likely that the repeated (seven) interviews in 12 months had an impact on thinking and behavior on many participants. Thus, our belief that it was the calendar that caused increased self-monitoring (awareness and observations or recordings) and interfered with group outcome differences was not fully supported. Based on the comments, we now believe that the seven interviews over 12 months also contributed to the increased self-monitoring and resulting reactivity. The persons in the study might have changed their behavior because they heard information repeatedly about catheter self-care during these interviews.

Although the groups did not differ much in their responses to the last question about the study, many comments seemed to reflect their group assignment and how they interacted with study personnel, either with interviewers for data collection or with both interviewers and study nurses. For example, it seems logical that participants in the control group made more comments about the interviews because the interviews were the only contact they had with the study personnel. But we were surprised that some people in the control group used the theoretical language of the study (e.g., self-monitoring). The instruments on self-efficacy and self-monitoring were administered only three times, at baseline and at 6 and 12 months. However, there were many items on these questionnaires and perhaps some participants recalled the language.

Comments related to the bimonthly interviews that were "making you think" most likely reflected the self-monitoring that occurred in relation to the participant's awareness of what to notice based on the question content as this type of comment was received six times in the control group and only once in the experimental group. We noted that there were slightly more comments in the experimental group (see **Table 1**) related to study concepts of confidence, using the information for daily catheter care, and communication with healthcare providers. Thus, the experimental group responded to our final question with more details about increased awareness of what to notice (self-monitoring) and self-management activities.

In this RCT, the calendar and bimonthly interviews were considered confounding variables, as they seemed to lead to an increase in self-monitoring behavior in the control group, thus threatening the researcher's ability to find observable differences in the treatment group (French & Sutton, 2010). As in other research (Barta, Tennen, & Litt, 2012), the participants' access to calendar recordings may have raised awareness of their individualized catheter-related concerns and motivated them to not only seek additional advice or help from their healthcare providers, but also start taking better care of their catheters.

Suggestions to Decrease Reactivity in Intervention Research

Because only a 3-day urinary diary of fluid intake and urinary output and journal notations was used in our single group pilot study ($N = 11$; Wilde & Brasch, 2008), we were not aware of the calendar's potential to impact outcomes through measurement reactivity; hence, we did not consider asking the participants about what they learned from the calendar or interviews. In hindsight, we acknowledge that our design was possibly affected by use of a calendar, which was meant only to improve recall for the interviews. When researchers plan studies using potentially reactive measures, such as those in self-reported data collection, they should acknowledge this potential issue and take steps to minimize it (French & Sutton, 2010). One way to reduce measurement reactivity is to do pilot testing and eliminate instruments that may have ceiling or floor effects (Becker, Roberts, & Voelmeck, 2003). Another commonly used method to minimize measurement reactivity is concealing the purpose of the study. However, this method could be difficult to implement in studies with self-reported measures. Such measures require participants to understand the questions and then engage the self to respond to them (Knowles & Byers, 1996). To prevent some level of reactivity, the interviewer should avoid providing any feedback related to the nature of the study that could be revealed in the questions.

Measurement reactivity can be examined by conducting a Solomon four-group design, which allows the researcher to estimate a wide range of effects on the intervention (Barta et al., 2012; French & Sutton, 2010) and test the study's internal validity (McCambridge et al., 2011). In this type of design, study participants are randomly assigned to four groups: experimental and control groups that are assessed and experimental and control groups that are not assessed (McCambridge et al., 2011). A caveat to this type of design is that it can be a costly one, given its need for a larger sample size to achieve statistical power (French & Sutton, 2010; McCambridge et al., 2011). If this type of design is not feasible, then in order to prevent indeterminate results, it is essential to certify that the expected effect size for the intervention is more than the mean effect size correlated with measurement alone (Godin, Sheeran, Conner, & Germain, 2008).

Limitations

The limitations of this study in evaluating measurement reactivity include that we did not systematically assess the frequency of calendar use by the participants and we did not consider pilot testing it. Also, because we expected a short response in this final question, we did not capture a full description of how people viewed their participation. We believe that (a priori) we should have included a number of randomly selected persons from each treatment group to be interviewed at the end of the study as a component of our evaluation of the RCT. In-depth qualitative analysis might have helped us better understand the mechanism by which our measures (bimonthly interviews and calendar) might have contributed to self-monitoring reactivity.

Summary and Conclusions

We believe that measurement reactivity occurred and that both groups were affected not only by use of our calendar (to improve interview accuracy), but also from the content in the seven bimonthly interviews. While RCTs often are considered the gold standard for intervention research, there are limits in self-reported data often used in self-management research because self-reports inherently involve self-monitoring, which can affect measurement results. We offer several suggestions to minimize this threat to validity, particularly in RCTs in which both groups must by design receive identical measures, often through questionnaires and interviews.

Acknowledgments

We acknowledge that the parent study, the RCT, could not have been done without the researchers at the Visiting Nurse Service of New York (City) and at the University of Rochester. Also, we are most grateful to the people with indwelling urinary catheters who gave of their time and energy to participate in this research.

Dr. Wilde has been a consultant with NovaBay Pharmaceutics Inc. since June 2013. The study was Funded by National Institute of Nursing Research, National Institutes of Health (U.S.) #R01 NR01553 (Mary H. Wilde, Principal Investigator).

Clinical Resources

- International Continence Society Nurses' Committee: http://www.ics.org/committees/nursing
- Wiki: https://en.wikipedia.org/wiki/Reactivity_(psychology)

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In the above article, the funding source was not included in the Acknowledgments. It is corrected below.

Acknowledgments

This work was supported through the following grants from the NIH Institute for Nursing Research: P20NR015339; P30NR015326; P20NR014126; P20NR015320; P30NR014129; P30NR011396; and 1P30NR014139.

Conley, S., & Redeker, N. (2016) A systematic review of self-management interventions for inflammatory bowel disease. *Journal of Nursing Scholarship*, *48*(2), 118–127. https://doi.org/10.1111/jnu.12189.

In the above article, the funding source was not included in the Acknowledgment. It is corrected below.

Acknowledgment

Funding for this project was from the National Institute of Nursing Research, Grant number T32NR008346, a training grant in self and family management awarded to the Yale School.

https://doi.org/10.1111/jnu.12310

doi: 10.1111/jnu.12310