



HHS Public Access

Author manuscript

Proc Hum Factors Ergon Soc Annu Meet. Author manuscript; available in PMC 2019 June 26.

Published in final edited form as:

Proc Hum Factors Ergon Soc Annu Meet. 2011 September ; 55(1): 291–295. doi:

10.1177/1071181311551060

NEEDS ASSESSMENT FOR CERTIFIED NURSING ASSISTANTS PROVIDING PERSONAL CARE

Jenay M. Beer, Jennifer M. Springman, Sara E. McBride, Tracy L. Mitzner, and Wendy A. Rogers

School of Psychology, Georgia Institute of Technology

Abstract

Home health care allows individuals to receive care in a home setting rather than a medical facility. This increasingly popular alternative to health care has many benefits; however, providing health care in a home setting involves unique challenges and difficulties for the health care providers, such as certified nursing assistants (CNAs). Human factors interventions and technological supports may ease difficulties home health care providers experience performing caregiving tasks. However, for such interventions to be effective there is a need to understand patient care within the context of a home environment. The purpose of this research was to conduct a needs assessment to identify 1) personal caretask characteristics, including the context in which they are carried out, and 2) challenges encountered during these tasks. Eight CNAs participated in structured interviews where in they were asked to describe difficulties and frustrations experienced when performing the tasks of toileting, bathing, and transfer. The results were categorized as patient- or provider-based difficulties, as well as along dimensions related to the environment, device design, and social influences. These data provide an understanding of the complexity of each task, and a means of highlighting areas of difficulty to provide guidance for designers of assistive technologies and other supportive interventions.

INTRODUCTION

As people are living longer (U.S. Census Bureau, 2009) and the cost of hospital care is increasing (NAHC, 2010), home health care has become an attractive alternative to hospital care. The goal of home health care is to allow individuals to receive care in the setting of their own home, rather than in an institutional setting.

The National Home and Hospice Care Survey (CDC, 2004) data suggest that over half of patients receiving home health care require assistance for at least one activity of daily living (ADL), most of which are personal care tasks. The most frequent ADL tasks requiring assistance include bathing (83%), dressing (39%), transferring to or from a bed or chair (30%), and toileting (22%). Certified nursing assistants (CNAs) most commonly assist individuals with personal care tasks. CNAs and home health aides comprise the largest category (34%), of the formal home health care workforce (NAHC, 2010).

Home health care offers a variety of benefits, including economic viability (Naylor et al., 1999) and reduction in exposure to hospital-associated infections (Leff et al., 2005). Home health care also supports aging-in-place: the desire for individuals to remain in their own

homes as they age (Gitlin, 2003). Ironically, the primary benefit of home health care is also a primary challenge: it takes place *in the home*.

The home is a complex environment in which to provide health care. Most home health care occurs in private residences where other family members may also be living. Supports that are available in institutional settings, such as durable medical equipment, devices, and other health care providers may not be available to the same extent in homes. When assessing needs related to home health care, it is important to consider how such factors play a role in the *environment* in which care is taking place, and how they may contribute to the challenges encountered by caregivers.

The Need for a Needs Assessment

Lawton and Nahemow's (1973) Ecological Model of Aging provides a framework for understanding the fit between individuals and their environment. We extend this model to provide a context for understanding patient- and provider-based difficulties found in the home environment. According to this model, people can be characterized by their level of competence, as measured by their physical, sensory, cognitive, and social capabilities; but, forces in the environment place physical, intellectual, and social demands on the individual. Ideally, an individual's competency should match the environmental press. However, if the environmental press exceeds the individual's competence, then maladaptive behavior and negative affect may result.

A short hand way to summarize Lawton and Nahemow's (1973) model is that either the environment or the person can be changed to reduce a mismatch between the environmental press and the individual's competence. Therefore, to improve the autonomy of the older adult, the basic principle is clear: the person must be considered in the context of the environment. Regarding home health care, the environment is the patient's home.

The Lawton and Nahemow (1973) model did not directly address issues of home health care. However, using the same logic, an individual with low levels of competence (i.e., needing assistance with ADLs) will therefore require reduced environmental demand. For example, if an older adult's capabilities are reduced, then the demands of the home environment could potentially exceed the person's capabilities. A CNA may reduce environmental press by alleviating task demands of personal care. Additionally, the CNA may increase the patient's level of competency through encouragement and training to achieve independence.

Optimizing the person-environment fit may be easier said than done. The variety of challenges that CNAs face when working in a complex environment may reduce the CNA's capability of meeting the patient's ideal person-environment match. Designers of technological supports and other interventions (e.g., training programs) can potentially diminish the challenges faced by CNAs. A needs assessment is typically the first step toward defining the needs of the individual for whom a design or task is intended. The purpose is to identify the user and task characteristics, the context in which tasks are carried out, and the challenges faced during these tasks. The goal is to create solutions that address the specific

needs of the individual, rather than fixing problems related to the current method or tool used to perform a task (Beith, 2001).

In short, a needs assessment is a useful tool to investigate the person-environment fit, and identify where provider- *and* patient-based shortcomings limit the person's competence or increase environmental press. The goals of this study were to (1) understand the nature of the personal care tasks (i.e., toileting, bathing, and transfer); and (2) identify and categorize the challenges the CNAs report for each task.

METHOD

Participants

We interviewed 8 CNAs recruited from local home health care agencies, and provided with monetary compensation for their participation. The CNAs had at least two years experience in the home health care industry ($M=6.56$, $SE=1.55$), and experience working with older adult patients. They were between the ages of 23 to 69 ($M=42.38$, $SE=3.09$), worked full-time, and had some college education or at least an Associate's (2 year) degree.

Procedure

The structured interviews took place either in person or over the telephone and lasted a maximum of three hours. Prior to the structured interview, the CNAs completed a set of questionnaires that documented general demographic and background information, including their education, training, and employment history.

The CNAs were asked to discuss a variety of tasks, including toileting, bathing, and transfer. For each task, they described the ideal step-by-step process required to complete each task. Next, they were asked to discuss the frustrations and difficulties commonly associated with performing these tasks and to provide detailed examples of such difficulties, as well as how the issues were resolved, if at all.

RESULTS

For each task, the trends were organized into categories representing the goals of the task, and the reported difficulties associated with performing each task.

Toileting

Goals of task.—We asked the CNAs to describe the process of toileting and provide examples. When describing the task of toileting, CNAs called it "...a big problem," and "the process I hate the most." CNAs discussed the use of devices such as a portable toilet, urinal, ostomy waste removal tubes, or bedpan, and supplies such as adult diapers and incontinence pads. The CNAs noted that the type and amount of toileting assistance needed varied greatly based on the patient capabilities and limitations. We identified the following task goals (i.e., what the CNAs were trying to accomplish) related to toileting:

- Communicating with patient
- Encouraging independence

- Ensuring modesty and privacy
- Instructing patient
- Maintaining a clean environment
- Maintaining patient comfort
- Preventing falls
- Transferring the patient to the bathroom

Difficulties associated with toileting.—The goals provide a detailed breakdown of what is required for completing the task of toileting. The various goals reflected the complexity of the task and provided the context in which difficulties were discussed. Table 1 shows commonly mentioned toileting difficulties. We categorized these difficulties into three dimensions: patient-based difficulties, provider-based difficulties, and “other difficulty” factors, which included social, environment, or device specific factors.

Patient-based difficulties.—One cognitive, patient-based difficulty stemmed from the patient’s inability to indicate a toileting need quickly enough for the CNA to intervene. An intervention is necessary when a patient is unable to reach the toilet independently. Those patients who face the physical factors of both incontinence and immobility require a CNA to transfer them to the bathroom if they are unwilling to wear an adult diaper. Transferring was called, “the most difficult thing.” One CNA said that it takes “some of them 15 minutes to get to the toilet.” This CNA later stated, “That’s a challenge if they’re drinking the liquids like they’re suppose to because it’s like two or three times within an hour that they have to go to the bathroom.”

CNAs also reported difficulties interacting with patients. For example, they discussed instances of uncooperative behavior, including hesitation from fear of falling and unwillingness to leave the bed due to illness or feeling unwell. CNAs also reported frustration with patients who were capable but unwilling to complete tasks such as wiping after using the toilet, citing that “a lot of them just feel like this is your job.”

Provider-based difficulties.—Provider-based difficulties were mainly physical in nature. For example, CNAs discussed problems with their own physical strength during transfer of large patients. One CNA also noted difficulty in ensuring that a patient was properly situated on the toilet due to the patient’s obesity, which led to the patient missing the toilet.

Other factors.—Difficulties also stemmed from the quality of materials used in toileting. Adult diapers were described as problematic because of the patient’s reaction to them as well as their performance. One CNA noted that the adult diaper embarrassed the older adults and stated “they don’t want to wear a diaper cause they’re not a baby.” The choice to avoid supplies which may be seen as embarrassing created an environment with frequent transfers and cleaning. Adult diapers and incontinence pads were also described as unable to maintain cleanliness in cases where bedridden patients soil a bed. Adult diapers allowed excrement to seep out, whereas flimsy incontinence pads were prone to failing when soiled.

With respect to other factors, CNAs described examples in which family members made toileting difficult because their interference derailed the work of the CNA. Family members were reported to make distracting comments such as “you need to get on in there and stop acting like this,” frustrating and distracting patients when the CNA was trying to calm them.

Bathing

Goals of task.—We asked the CNAs to describe the process of bathing and provide examples. From these data, it is clear that the task of bathing is highly dynamic and complex. One CNA noted, “I would say I don’t [think] there is an ideal step-by-step policy. These questions are kind of tricky. I’m not going to say it’s an ideal policy because bathing someone it’s like everyone is different... you get trained to do certain things but once you get in the field and start working, everybody has different ways of doing everything.”

The CNAs noted that there are different types of bathing which are highly dependent on patient capabilities and limitations. For example, depending on the patient, the CNAs may need to administer bed baths, chair baths, showers, or regular baths (in a bathtub). The CNAs indicated that the procedure is slightly different for each method, although many of the goals remain consistent. We identified the following task goals (i.e., what the CNAs were trying to accomplish):

- Cleansing patient body
- Communicating with patient
- Drying patient
- Ensuring modesty and privacy
- Instructing patient
- Keeping the provider dry
- Maintaining a clean environment
- Maintaining patient safety
- Maintaining provider safety
- Prepping the bath water (i.e., water temperature)
- Transferring to/from tub or shower chair

Difficulties associated with bathing.—Table 2 shows commonly mentioned bathing difficulties, which we categorized into patient-based difficulties, provider-based difficulties, and other difficulty factors (e.g., social, environment, or device specific).

Patient-based difficulties.—With regard to bathing, the CNAs discussed cognitive limitations of the patients that caused difficulty in completing the task. For example, CNAs mentioned that patients sometimes forgot the proper procedure for bathing, or were confused as to why the task was being done in the first place. The CNAs expressed this difficulty was particularly frustrating because the patients’ cooperation with the task determined how easily it could be done. One CNA stated, “Well let me just say this first. A lot of them

[patients] won't bathe themselves even if they can. They just don't want to do it. They know that we're there and that's what we're suppose to do, but I just find it -- most of them are in pain [referring to arthritis]."

Arthritis and other physical limitations were also discussed. In particular, mobility and limb movement limitations were reported to make the task of bathing particularly cumbersome.

Finally similar to toileting, the CNAs expressed the need to maintain a sanitary environment. Whether the patient soiled the bathwater or soiled the bed during a bed bath, the goal of ensuring proper hygiene was reported as challenging.

Provider-based difficulties.—The provider-based difficulties were primarily physical in nature. In particular, lifting and turning patients was mentioned. For example, during a bed bath, the CNAs indicated that they must turn or rotate the patient to clean their backside. If the patient was particularly obese or unable to move, then this task was especially demanding.

The length of time bathing requires was also discussed. The CNAs indicated that whether they were completing the task individually, or if the patients were doing it themselves (with CNA supervision), bathing can be very time consuming. One CNA provided an example of working with a patient during a three hour shift. If that patient needed a bath, then bathing had to be the first task completed because it took nearly two hours.

Other factors.—One bathing-related factor mentioned was the use of shower chairs. Although these devices are designed for standard showers, the one CNA expressed that patients are generally nervous about the reliability of the chair. "Basically being confident of the devices. Would the devices hold them up. Is it steady enough to lean against or hold on to make sure it's not going to make them fall. So basically it's the devices as far as the bathing chair, you know, would this fit? Would I slide out of the tub, would I fall?"

Finally, the CNAs often discussed the difficulty of meeting individual needs and preferences, particularly with regards to bath water temperature. "I poured the water out, made the water scalding hot ... She [patient] said yeah put a cup of cold water in it. And I have to understand that I'm there to do a job, so if they want me to go back two or three times and get two or three cups of water and it was the same temperature before, you just have to do it." The CNAs mentioned that they spend a considerable amount of time learning each patient's needs and preferences.

Transfer

Goals of task.—The CNAs discussed the task of transfer (i.e., moving a patient from one location to another), which was also dynamic. This task included transfer from a bed to a walker, or a bed to a wheel chair, and visa versa. Additionally, transfer occurred in and out of bathtubs, as well as on and off the toilet. We focus here primarily on transfer in and out of bed, which was commonly discussed.

The CNAs discussed a variety of transfer devices, such as a gait belt and Hoyer lift. Sometimes CNAs transferred without a device, in which case the patient uses the CNA's body as a means of support. Additionally, the process varied by patient limitation and capabilities. Ideally, patients can participate in the transfer task, aiding the CNA by swinging legs over the side of the bed or shifting their weight. The task goals remained relatively constant between these types of transfer procedures, but it is important to consider the procedural variability in the task. We identified the following task goals related to transfer:

- Communicating with patient
- Instructing patient
- Lifting patient
- Maintaining patient safety
- Maintaining provider safety
- Moving out of bed
- Sitting up
- Standing up
- Turning, rotating, or maneuvering patient
- Using Hoyer lift

Difficulties associated with transfer.—Table 3 shows commonly mentioned transfer difficulties, categorized into patient-based difficulties, provider-based difficulties, and other difficulty factors (e.g., social, environment, or device specific).

Patient-based difficulties.—Patient-based difficulties included memory impairment, particularly patients with Alzheimer's disease. Transfer was generally described as a series of steps that needed to be completed in a particular order. Sometimes, patients would skip steps or forget what to do. Physical limitations of the patients also affected transfer; transferring patients with missing limbs was of particular difficulty.

Similar to toileting and bathing, uncooperative patients were challenging. The CNAs described transfer as a somewhat scary process for patients, and a large amount of encouragement was required for the patients to comply. One CNA described, "just getting them to do it -- the initial just saying you know let's get going. This is what we need to do. We need to get up and we need to be in a certain place by a certain amount of time and they're just not moving you know. That's the biggest challenge just to get them to do it."

Provider-based difficulties.—The provider-based difficulties were primarily physical in nature. Transfer requires physical exertion and CNAs must keep the patients', as well as their own, safety in mind. "So my thing that is frustrating is I just don't want to drop anybody. So I'm like totally afraid. So I'm not very confident in doing that cause I'm kind of scared but I can't let them know that I'm afraid either." Maintaining safety and avoiding physical injury was reported to be particularly difficult when working with an obese patient.

Despite the CNAs' best efforts, sometimes falls did occur. The CNAs discussed these instances as very serious and scary events. "I feel like if that therapist wouldn't of been there, she [the patient] would have hit that floor. So that was like totally, totally scary for me, but the therapist was there thank God. She was there and she was able to grab her leg that fell out of it [Hoyer lift], and I was able to grab the top part of it. We got her to safety."

Other Factors.—Many of the CNAs reported using Hoyer lifts to reduce the physical challenge of transfer. However, the use of these devices was mentioned as being a challenge in itself. One CNA stated, "and they taught me when I got my first CNA job you're not suppose to use that Hoyer lift by yourself because it could very easily -- the patient could drop from the Hoyer... You know it's very scary when you're doing it by yourself because it could not work. It could fail." Additionally, Hoyer lifts are expensive and usually the patient could not afford to own or maintain one. One CNA stated, ".being that these devices [Hoyer lifts] are in the client's home, they're not going to get the new products. You know they're going to get the oldest thing that's out because most of the time most of the clients are on Medicare and Medicaid."

In general, Hoyer lifts were thought of as beneficial when available. However, if the patient owned an older or unmaintained Hoyer lift, then the device may be considered unsafe to use. An alternative would be to lift a patient without the device, which created its own challenges.

DISCUSSION

Home health care provides a wonderful option for the older adult patients. But for the home health care provider, it is a challenging work environment. Our needs assessment results contribute to the understanding of home health care in a variety of ways. First, the data illustrate the complexity of the home tasks CNAs perform, particularly the tasks of toileting, bathing, and transfer. All of these tasks were described as having variation in procedure. For example, bathing may be completed in a tub, bed, or shower. The difficulty of such varying procedures was highly dependent on the capabilities and limitations of *both* the CNA and patient. Additionally, our analysis revealed a range of difficulties associated with performing these tasks. The difficulties were categorized broadly as patient-based, provider-based, and other factors (e.g., environment, social, or device based). Furthermore, the provider- and patient-based difficulties were described as cognitive (e.g., memory impairment), physical (e.g., lifting), or interactive (e.g., cooperation) in nature.

By categorizing the data in this manner, we identified the categories of difficulties that limit the person's competence as well as increase environmental press. Referring back to the Lawton and Nahemow (1973) Model of Ecological Aging, ideally a match between the environmental press and the individual's competence should exist. Our findings suggest areas in which there is a mismatch between individual CAN competence and environmental press for all three tasks discussed. For instance, for the task of transfer, a provider- based challenge was moving obese patients. The limited strength of stature of the provider (limitation in individual competence) could be alleviated by the use of transfer devices, such as a Hoyer lift. However, the providers reported that sometimes device design or safety

limitations (limitation in environmental press) further complicate the task. In this example, an obvious mismatch between individual competence and environmental press is evident.

To achieve the proper environment-person fit, either the person or the environment needs to be changed, and the next step is to develop solutions to alleviate the environment-person mismatch. Technological supports or other interventions, such as training, can be guided by the knowledge of these difficulties. Our needs assessment provides an understanding of the person within the context of the environment and can provide insights to potential human factors solutions.

ACKNOWLEDGEMENTS

This research was supported in part by a grant from the National Institutes of Health (National Institute on Aging) Grant P01 AG17211 under the auspices of the Center for Research and Education on Aging and Technology Enhancement (CREATE; www.createcenter.org).

REFERENCES

- Beith B (2001). Needs and requirements in health care for the older adult: Challenges and opportunities for the new millennium Human factors interventions for the health care of older adults (pp. 13–30). Mahwah, NJ US: Lawrence Erlbaum Associates Publishers.
- Centers for Disease Control and Prevention (CDC). (2004). National Center for Health Statistics: Health Data Interactive. Retrieved January 7, 2008, from www.cdc.gov/nchs/hdi.htm
- Gitlin L (2003, 10). Conducting research on home environments: Lessons learned and new directions. *The Gerontologist*, 43(5), 628–637. [PubMed: 14570959]
- Lawton MP, & Nahemow L (1973). Ecology and the aging process In Eisdorfer C & Lawton MP (Eds.), *The psychology of adult development and aging* (pp. 619–674). Washington, DC: APA.
- Leff B, Burton L, Mader SL, Naughton B, Burl J, Inouye SK, Greenough WB, Guido S, Langston C, Frick KD, Steinwachs D, & Burton JR (2005). Hospital at home: Feasibility and outcomes of a program to provide hospital-level care at home for acutely ill older patients. *Annals of Internal Medicine*, 143(11), 798–808. [PubMed: 16330791]
- National Association for Home Care and Hospice (NAHC) (2010). Basic statistics about home care. Retrieved November 15, 2010, from <http://www.nahc.org/facts/10HCStats.pdf>
- Naylor MD, Brooten D, Campbell R, Jacobsen BS, Mezey MD, Pauly MV, & Schwartz JS (1999). Comprehensive discharge planning and home follow-up of hospitalized elders: a randomized clinical trial. *JAMA: The Journal of the American Medical Association*, 281(7), 613–620. [PubMed: 10029122]
- U.S. Census Bureau (2009, December). International database of population estimates and projects. [Data file]. Available from <http://www.census.gov/ipc/www/idb/informationGateway.Php>

Table 1.

Difficulties Associated with Toileting

Patient Difficulties	Provider Difficulties	Other Factors
<p><i>Cognitive</i></p> <ul style="list-style-type: none"> • Failure to indicate need 	<p><i>Cognitive</i></p> <ul style="list-style-type: none"> • None reported 	<p><i>Other</i></p> <ul style="list-style-type: none"> • Using toileting supplies (e.g. urinals, incontinence pads, adult diapers)
<p><i>Physical</i></p> <ul style="list-style-type: none"> • Incontinence • Lacking mobility 	<p><i>Physical</i></p> <ul style="list-style-type: none"> • Caretaker small in stature • Difficulty doing part of task (e.g., cannot see toilet) 	<ul style="list-style-type: none"> • Family dynamics
<p><i>Interaction</i></p> <ul style="list-style-type: none"> • Patient uncooperative • Patient perceives task to be caretaker's responsibility 	<p><i>Interaction</i></p> <ul style="list-style-type: none"> • Task takes a long time to complete 	

Table 2

Difficulties Associated with Bathing

Patient Difficulties	Provider Difficulties	Other Factors
<p><i>Cognitive</i></p> <ul style="list-style-type: none"> • Failure to understand task • Memory impairment <p><i>Physical</i></p> <ul style="list-style-type: none"> • Incontinence (e.g., soiling bath water) • Physical limitation, particularly arthritis <p><i>Interaction</i></p> <ul style="list-style-type: none"> • Patient uncooperative or combative 	<p><i>Cognitive</i></p> <ul style="list-style-type: none"> • None reported <p><i>Physical</i></p> <ul style="list-style-type: none"> • Difficulty lifting patient (e.g., obese patient) • Lacking physical support from another caregiver <p><i>Interaction</i></p> <ul style="list-style-type: none"> • Task takes a long time to complete 	<p><i>Other</i></p> <ul style="list-style-type: none"> • Environment not suited for care (e.g., too small of bathroom) • Family dynamics • Using bathing devices (e.g., shower chair) • Water temperature adjustment

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Table 3.

Difficulties associated with transfer

Patient Difficulties	Provider Difficulties	Other Factors
<p><i>Cognitive</i></p> <ul style="list-style-type: none"> • Memory impairment (e.g., forgetting steps) 	<p><i>Cognitive</i></p> <ul style="list-style-type: none"> • None reported 	<p><i>Other</i></p> <ul style="list-style-type: none"> • Device design inadequate or unsafe • Device too expensive
<p><i>Physical</i></p> <ul style="list-style-type: none"> • Physical limitation restricting limb movement • Risk of falls 	<p><i>Physical</i></p> <ul style="list-style-type: none"> • Difficulty lifting patient (e.g., obese patient) • Lacking physical support from another caregiver 	
<p><i>Interaction</i></p> <ul style="list-style-type: none"> • Patient uncooperative or combative 	<p><i>Interaction</i></p> <ul style="list-style-type: none"> • Fear of dropping patient 	

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript