JAMDA 17 (2016) 148–154

JAMDA

journal homepage: www.jamda.com

Original Study

Examining Time Use of Dutch Nursing Staff in Long-Term Institutional Care: A Time-Motion Study

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Keywords:
Long-term care
nursing home
nursing interventions
nursing staff
time-motion study
time use

A B S T R A C T

Objectives: Increasing residents' acuity levels and available resources in long-term institutional care requires insight into the care provided by nursing staff so as to guide task allocation and optimal use of resources, and enhance quality of care. The purpose of this study was to examine the relationship between time use and type of nursing staff, residents' acuity levels, and unit type by using a standardized nursing intervention classification.
Design: A multicenter cross-sectional observational study was performed using time-motion technique.
Setting: Five Dutch long-term institutional care facilities participated. In total, 4 residential care units, 3 somatic units, and 6 psycho-geriatric units were included.
Participants: Data were collected from 136 nursing staff members: 19 registered nurses, 89 nursing assistants, 9 primary caregivers, and 19 health care assistants.
Measurements: A structured observation list was used based on the Nursing Interventions Classification (NIC). Residents' acuity levels, representing residents' needs, were based on the Dutch Care Severity Index. Medians and interquartile ranges were calculated for time spent on interventions per type of nursing staff and units. Linear mixed models were used to examine the relationship between time spent on nursing interventions and the type of nursing staff, residents' acuity levels, and unit type.
Results: Observations resulted in 52,628 registered minutes for 102 nursing interventions categorized into 6 NIC domains for 335 residents. Nursing staff spent the most time on direct care interventions, particularly in the domain of basic physiological care. Variances in time spent on interventions between types of nursing staff were minimal. Unit type was more significantly ($P < .05$) associated with time spent on interventions in domains than the type of nursing staff. Residents' acuity levels did not affect time spent by nursing staff ($P > .05$).
Conclusion: The current study found limited evidence for task allocation between the types of nursing staff, which may suggest a blurring of role differentiation. Also, findings suggest that residents received similar care regardless of their needs, implying that care is predominantly task-oriented instead of person-centered. Managers may reconsider whether the needs of residents are adequately met by qualified nursing staff, considering the differences in education and taking into account increasing acuity levels of residents and available resources.

The authors declare no conflicts of interest.
This study was funded by the Stichting Innovatie Alliantie, Regional Attention and Action for Knowledge circulation (SIA RAAK-PRO), project pro-1–035. The SIA-RAAK-PRO monitored the progress of the project and had no involvement in conducting the results.
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http://dx.doi.org/10.1016/j.jamda.2015.09.002
1525-8610/

The number of elderly residents with higher acuity levels is increasing in long-term institutional care (LTIC), primarily due to population aging and governmental policies that promote home-based care.[1,2] Subsequently, nursing staff attend to people with an increasing number of severe limitations.[1]

Dutch LTIC is nonprofit and mainly funded from public sources.[3] The emphasis of residential care is on housing and support with activities of daily living, whereas nursing homes also provide skilled nursing services, recreational therapy, and rehabilitation. Due to policy reforms, facilities are often combined and nursing home units have emerged in residential care homes.[4] Residents' increasing acuity levels intensify the work of nursing staff and affect the staff qualifications needed, which is of concern.[5]

Deficiencies in LTIC are associated with the number of nursing staff as well as the staff mix,[6] that is, the composition of nursing staff (eg, registered nurses [RNs] and nurse assistants) that is often related to the educational level of nurses.[7,8] Reviews about nurse staffing related to quality of care in LTIC show tentative evidence that a higher number of nursing staff is associated with better quality of care.[9–11] Mixed results are reported concerning quality of care outcomes related to the type of nursing staff.[9,11] Studies lack information about what nursing staff is actually doing in the process of care that may have contributed to quality of care outcomes.[9–11] A methodological concern is that studies mainly rely on secondary survey data that report care outcomes at the facility level, thereby disregarding individual resident-acuity factors that influence these outcomes.[9,10] In addition, unit type may affect activities of nursing staff because residents at risk of specific quality outcomes are often clustered within specific units[12,13] where residents' needs may vary and may influence the type of nursing activities and amount of time spent on these.[13,14] It has been argued that the time spent with an individual resident has the greatest effect on quality of care.[15] Primary data from observational studies into the actual time use of type of nursing staff are needed[10] and would provide more insight into the allocation between types of nursing staff that could enable matching types of nursing staff to residents' needs.

A number of explorative observational studies into nurses' activities in LTIC provided insight into time use of RNs,[16,17] health care aids,[16,18,19] and recreation activity officers.[16] Depending on the type of nursing staff, results show that up to 50% of the time was spent on individual resident care (direct care) and the remaining time on care activities, such as communication and documentation, but also walking, restocking, and bed making. Higher-educated staff (RNs) were more engaged in communication and documentation activities and less in direct care activities.[16,17] Study results are difficult to compare because of the various terminologies used to describe activities. Furthermore, most of these studies described time use of one type of nursing staff in 1 or 2 units during day shifts, and none related residents' acuity levels to the amount of time spent on activities. Using self-reports, Paquay et al[20] did link residents' dependency levels to activities of type of nursing staff. There was tentative evidence that nursing staff spent more time on residents with higher dependency levels; however, the proportion of time was not significantly associated with the dependency levels. The small size of this study and underrecording may have been limitations.

Thus, research about the actual care provided by nursing staff is needed, taking into account acuity levels of residents. This could provide insight into task allocation between type of nursing staff, facilitating matching types of nursing staff to residents' needs, as well as enhancing optimal use of resources and providing insight into the contribution of nursing staff to quality of care. The purpose of our study was to examine the relationship between time use and the type of nursing staff, residents' acuity levels, and type of unit by using a standardized nursing intervention classification.

Methods

Study Design

This multicenter observational study used a cross-sectional quantitative explorative design. LTIC settings were purposively sampled to represent different types of LTIC.

Study Setting and Sample

Six chains of long-term care in the north of the Netherlands, including residential care facilities and nursing homes, were invited to participate. Three chains consented, 2 did not respond, and 1 declined. Of the participating chains, 5 facilities representing different types of LTIC were selected. One was a nursing home (133 beds) with somatic and psycho-geriatric units, 2 were residential care homes (60 and 52 beds), and 2 were care centers (62 and 96 beds) combining residential care and nursing home care. In total, 4 residential, 3 somatic, and 6 psycho-geriatric care units were included. Residential care units varied from 36 to 60 residents who had their own rooms. Three psycho-geriatric units were large-scale, housing 10 to 36 residents. One somatic and 3 psycho-geriatric units were small-scale living units housing 8 residents. Unlike small-scale living, residents in large-scale psycho-geriatric units did not have their own room at the time of the study. All units had a shared living room where residents could have their meals together. Psycho-geriatric units were secure units.

The purposive sample of personnel represented all types of nursing staff. To qualify for a specific nursing profession, a certain level of education is required. Because educational arrangements vary widely between, and even within, countries, we used the International Standard Classification of Occupations (ISCO-08)[21] to enhance comparability. Nursing assistants (Nursing Associate Professionals, ISCO code 3221) form most staff and are not legally registered as nurses. They receive 3 years of training in which cognitive and practical skills, such as basic bedside care, administering injections, and taking vital signs, are learned.[22] After additional training (35 weeks), they may become primary caregivers who monitor the care process of a group of residents and serve as a contact for family and health professionals.[23] Nurses (Nursing Professionals, ISCO code 2221) may have obtained a bachelor's degree (bachelor of science in nursing) or not (RN) after 4 years of education. They plan and manage care and supervise other health care workers.[21] Quality indicators in LTIC require that a RN is available 24 hours a day.[24] Health care assistants (ISCO code 5321) follow 2 years of education and provide care that supports basic activities of daily living, such as bathing and food preparation.[22]

Data Collection and Ethics

Data collection was conducted in April and May 2011. Structured observations were made using time-motion technique. Nursing staff were observed during day, evening, and night shifts. Together with the facility's care coordinators, observers were linked to type of nursing staff per unit.

The Ethical Review Board of the University Medical Center Groningen approved the study. Residents or their legal representatives were asked to give their written informed consent to permit observers to enter residents' rooms.

Measurement Instruments

An observation list was developed on the basis of the Nursing Interventions Classification (NIC), which provides titles and definitions of nursing interventions (542) and a categorization in classes (30) and