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EDITORIAL

RETHINKING THE STAFF-QUALITY RELATIONSHIP IN NURSING HOMES

R. BACKHAUS[1], H.C. BEERENS[1], E. VAN ROSSUM[1,2], H. VERBEEK[1], J.P.H. HAMERS[1]

1. Department of Health Services Research, CAPHRI Care and Public Health Research Institute, Maastricht University, Maastricht, The Netherlands; 2. Research Centre for Community Care, Zuyd University of Applied Sciences, Heerlen, The Netherlands. Corresponding author: Ramona Backhaus, Maastricht University, Faculty of Health, Medicine and Life Sciences, CAPHRI Care and Public Health Research Institute, Department of Health Services Research, P.O. Box 616, 6200 MD Maastricht, The Netherlands, Telephone: 0031-43 3882286, Email: r.backhaus@maastrichtuniversity.nl

Staffing practices in long-term care lack a clear evidence base and often seem to be guided by opinions instead of evidence. While stakeholders believe intuitively that there is a positive relationship between staffing levels and quality in nursing homes, the research literature is contradictory (1). In this editorial we consider the evidence found in a literature study that we conducted for the Dutch Ministry of Health, Welfare and Sports (VWS). The aim of this study was to summarize all available evidence on the relationship between staffing and quality in nursing homes. Specifically, we focused on the quantity and the educational background of staff and quality in nursing homes. The literature study has contributed to the recent Dutch quality framework for nursing homes (Kwaliteitskader verpleeghuiszorg in Dutch) of the National Health Care Institute. This quality framework was published in January 2017 and provides norms – among other quality aspects – for nursing home staffing. As well as a description of the main findings of the literature study, we present implications for different stakeholders charged with staffing issues in nursing homes.

Methods literature study

In January and February 2016, we searched the scientific databases PubMed and CINAHL as well as Google Scholar for articles published in peer-reviewed scientific journals. First, we searched for existing systematic reviews on the relationship between staffing and quality in nursing homes published in the last 20 years and found 13 systematic reviews (2-14). Two members of the research team (RB, HCB) assessed the quality of these reviews. Based on this quality assessment, five reviews were included in this study (2, 5, 6, 11, 14). Eight systematic reviews were excluded, predominantly because it was not clear on which studies the authors had based their conclusions. Individual studies in these eight reviews that were not considered in the five included reviews were analyzed independently. Second, we searched the two databases and Google Scholar for additional studies that had not been considered in the systematic reviews or had been published after the publication of the reviews. In total, we found 60 additional studies, of which one was excluded as it was not clear on which results the authors had based their conclusions.

Two members of the research team (RB, HCB) independently analyzed the results of the included systematic reviews and the additional studies. A total number of 183 studies were considered (see Appendix 1).

Results literature study

Most included studies were conducted in the US, and many of these made use of secondary data from large US databases (e.g., OSCAR (Online Survey, Certification and Reporting)) that are not primarily intended for research purposes. Within and outside the US, most studies had a cross-sectional design. We distinguished between studies that assessed the quantity of staff (i.e., the total number of staff hours per resident, often described in full-time equivalents) and the educational background of staff. In addition, we distinguished between studies assessing quality of care (e.g., clinical outcomes like pressure ulcers or falls, deficiency citations), quality of life and other quality outcomes. Deficiency citations have been used as quality indicators in US studies (15). In the US, deficiency citations are given to those nursing homes that failed to meet federal or state quality requirements (16).

When interpreting the results, it is important to bear in mind that, both within and between countries, there is much variety regarding the care provided in nursing homes. In addition, the professions that work in nursing homes may vary by country (17). To enable comparison across countries, the following international definition of 'nursing homes' was presented in 2015:

'A nursing home is a facility with a domestic-styled environment that provides 24-hour functional support and care for persons who require assistance with activities of daily living (ADLs) and who often have complex health needs and increased vulnerability. Residency within a nursing home may be relatively brief for respite purposes, short term (rehabilitative), or long term, and may also provide palliative/hospice and end-of-life care. In general, most nursing homes also provide some degree of support from health professionals, but […] a small subset provide socialization activities and basic assistance with ADLs but have no trained health

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Table 1
Relationship between staffing and clinical quality of care outcomes in nursing homes

		Year of publication	Number of studies on which results are based	More total staff	More registered nurses	More certified nurse assistants	More nurse aides
Systematic reviews	Backhaus et al. (11)	2014	20	0	0	0	0
	Spilsbury et al. (14)	2011	50	+	0	0	0
	Castle (5)	2008	59		+	0	0
	Collier & Harrington (6)	2008	71	0	0		
	Dellefield (2)	2000	26	+	0	0	0
Studies not included in the above-mentioned systematic reviews		1998-2015	32	0	0	0	0

This table presents the general tendency of the relationship between staffing and quality of care. Two members of the research team independently interpreted the included systematic reviews as well as all the 32 studies not included in the systematic reviews; +: more total staff, more registered nurses, more certified nurse assistants or more nurse aides are predominantly associated with better quality of care outcomes; 0: no consistent relationship between more total staff, more registered nurses, more certified nurse assistants or more nurse aides and quality of care outcomes; -: more total staff, more registered nurses, more certified nurse assistants or more nurse aides are predominantly associated with poorer quality of care outcomes; If an assessment (+, 0, -) is missing in the table, the relationship was not assessed.

professionals on staff. Although post-acute rehabilitation may be provided in the nursing home (i.e., in the United States and The Netherlands), in many countries this is provided in separate facilities (i.e., geriatric or cottage hospitals) or in a geriatric unit of the acute hospital.' (17)

Globally, direct nursing care staff form the largest group of employees in nursing homes. Across countries, the educational background of direct nursing care staff differs substantially. For example, in the US, a minimum of 75 hours of initial training is required to become a certified nurse assistant (18). In the Netherlands, on the other hand, the educational program to become a nurse assistant is two years. Despite the heterogeneity across countries, nursing homes across the world have to ensure the delivery of high-quality care, while adequately staffing the homes remains a major concern in most countries.

Quantity of staff

Quantity of staff and quality of care

Based on four systematic reviews (2, 6, 11, 14) and 17 individual studies, there is no consistent evidence of a positive relationship between the quantity of staff and quality of care (see Table 1). Studies that found a positive relationship were mostly conducted in the US and made use of the aforementioned national databases. Studies that were conducted outside the US and made use of primary data collected for research purposes often found no relationship between the quantity of staff and quality of care.

Quantity of staff and quality of life

Only five individual studies have assessed the relationship between the quantity of staff and quality of life of residents. Based on these studies, no consistent conclusion can be drawn. Three studies assessed the perceived quality of life of residents, of which two found no relationship (19, 20). The third study found that more staff led to a better quality of life (21). Two other studies measured quality of life in terms of deficiency citations and did not find a relationship with the quantity of staff (22, 23).

Quantity of staff and other outcomes

The only other outcome related to quality that was assessed was satisfaction with quality of care. Satisfaction was assessed in three studies (24-26). In one of these studies (25), resident satisfaction was considered, while the other two studies used family members of residents as proxies to assess how satisfied residents were with the quality of care provided (24, 26). In all three studies, no (consistent) evidence was found of a relationship between the quantity of staff and satisfaction of residents.

Educational background of staff

Most studies assessing the educational background of staff focus on the total amount of care provided by, for example, registered nurses or certified nurse assistants. Most of these studies do not consider the skills mix of staff (e.g., the percentage of the total number of hours of care provided by registered nurses). Moreover, studies do not distinguish between vocationally trained and baccalaureate-educated registered nurses, while their educational backgrounds differ substantially. In addition, few studies pay attention to the employment of nonnursing staff (e.g., social workers).

Educational background of staff and quality of care

We found no evidence of a relationship between the educational background of staff and quality of care (see Table 1). The employment of more registered nurses will not per se lead to better quality of care. This can be concluded from five systematic reviews (2, 5, 6, 11, 14) and 24 individual studies. While some studies found that more registered nurses, certified nurse assistants or nurse aides led to better or poorer quality of care, other studies found no relationship. Studies that found a

positive relationship were, again, mostly conducted in the US and made use of the aforementioned national databases.

Educational background of staff and quality of life

Based on ten individual studies assessing the relationship between registered nurses, certified nurse assistants or nurse aides and quality of life, we found no evidence of such a relationship (19-23, 27-31). Four studies considering the employment of activity staff found a (slight) positive relationship with residents' quality of life (19, 27-29).

Educational background of staff and other outcomes

Research on the relationship between the employment of registered nurses, certified nurse assistants and nurse aides and a) person-centered care or b) residents' satisfaction with quality of care is scarce. Therefore, no conclusions can be drawn. Only four studies assessed the satisfaction with quality of care (24, 26, 32, 33), of which two were descriptive studies (24, 26). In one study, the relationship between registered nurses, certified nurse assistants or nurse aides and person-centered care was assessed (34).

Lessons learned from the literature study and implications for practice

Contrary to existing opinions and beliefs, there is no convincing scientific evidence of a positive relationship between staffing levels or the educational background of staff and quality in nursing homes. This means that employing more or better-educated staff will not automatically lead to better quality and that the evidence base for implementing a generic minimum staffing standard in nursing homes is lacking. Several factors might explain this lack of evidence.

First, the relationship between staffing and quality might be nonlinear. If this is the case, extra manpower will not automatically lead to better quality. Nevertheless, there is probably a minimum staffing threshold below which the probability of poor quality is higher. Up until, there has been no consensus on this threshold (35). In addition, evidence suggests the existence of other factors in the work environment (e.g., team climate, collaboration) that might mediate the relationship between staffing and quality in nursing homes (36, 37). Also, contextual characteristics in nursing homes may bias the relationship between staffing and quality. Lower staffing levels in nursing homes might, for example, be compensated for by higher physician or allied professionals staffing levels (1), labor-saving technologies (e.g., digitalization of administrative processes, nurse call system, camera supervision) (1, 38) or the physical environment of the nursing home (e.g., length of hallways, location of medications and other equipment) (1). In the public debate on staffing and quality in nursing homes, people tend to forget these contextual characteristics.

Second, little attention is paid to the skills or staff mix within direct care teams. Differentiating between the skills and competencies of different team members is important to ensure that registered nurses are employed to their full scope of practice, and lower-educated staff members do not go beyond their practice scope (39). The included studies did not give attention to the tasks of different staff members. This may mean that registered nurses fulfilled the same tasks as certified nurse assistants and that their specific expertise was not used optimally. A recent study (40) indicates that role differentiation in nursing homes is scarce and that the roles of staff members have become blurred. Without considering the (unique) tasks of team members, it is hard to study the influence of specific staff members (e.g., registered nurses) on the quality of nursing homes.

Third, predominantly clinical quality of care outcomes (e.g., pressure ulcers, falls) were considered in the included studies. While these outcomes are important, they cover, in terms of Donabedian (41), only the 'technical care' dimension (related to the management of health problems) and give no attention to the interpersonal processes of care (i.e., the psychosocial interaction between resident and staff member). Interpersonal processes can be assessed by integrating resident, family and staff perspectives when assessing quality in nursing homes, which is seldom done (42). While these interpersonal processes may have a great influence on the quality experiences of residents and family members, they are hard to measure.

Fourth, in general, staff in nursing homes are educated to a low level and registered nurses are a scarce resource in nursing homes. In a recent study that we conducted in the Netherlands, too few (B)RNs were working in the participating wards to examine the relationship between staff mix (% registered nurses/total staff) and quality of care (43).

Although there is a lack of scientific evidence, it seems necessary to rethink current staff allocations, as the increasing complexity and changes in care models (e.g., a shift towards more person-centered care) in nursing homes have an impact on staff (39). Different stakeholders have stressed that the licensed nurses and nurse assistants currently working in elderly care are not adequately prepared to deal with this complexity (44). They might not be sufficiently trained to consider aspects like residents' autonomy, daily functioning or well-being, and focus on illness and treatment of diseases instead, while we found in this literature study that the employment of activity staff was (slightly) positively associated with the quality of life of residents. Also, due to current workforce shortages, nursing home administrators should consider employing other staff, for example better-educated staff or staff with a different background (e.g., social care workers).

In addition, the uptake of evidence-based practices is considered an important component in improving quality in nursing homes (45), which is beyond the scope of most direct nursing care staff currently working in nursing homes. It might be argued that current employees should be replaced by more highly educated staff, as staff with more developed skills (e.g., skills related to communication or observation) may be better able to adapt quickly to changing residents' preferences or

work in an evidence-based manner (39,46). However, due to budget constraints, highly educated nursing staff working in direct resident care are scarce and this situation is not likely to improve substantially in the near future. Therefore, it seems important to position baccalaureate-educated registered nurses in a way that enables them to supervise and mentor other less well-educated staff.

Implications for research

Due to the methodological and theoretical challenges discussed, conducting large-scale studies on staffing levels and quality in nursing homes may not provide new insights. Instead, the relationship should be assessed on a small scale, focusing on what staff members are actually doing. This may lead to a better understanding of how different direct nursing care staff members work together and how they contribute to quality in nursing homes. To the extent possible, contextual characteristics of an organization that might bias the relationship between staffing levels and quality should be considered. As resident preferences can change quickly, instruments that can provide insight into real-time preferences are desirable. Ideally, to make them feasible for improving daily quality, these instruments should be user-friendly for direct nursing care staff members.

Implications for policy

Governments should encourage local initiatives in which nursing home organizations can experiment with a new mix of staff members (or more differentiated staff roles). The 'lessons learned' in these organizations could inspire and help other organizations to reconsider their staff allocation too. In (inter) national debates on staff and quality in nursing homes, we should think beyond numbers. Instead of focusing on the quantity of staff, we welcome initiatives that consider the quality of a team.

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