

Promoting Functional Activity Among Nursing Home Residents: A Cross-Sectional Study on Barriers Experienced by Nursing Staff

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Abstract

Objective: To obtain insight into (a) the prevalence of nursing staff–experienced barriers regarding the promotion of functional activity among nursing home residents, and (b) the association between these barriers and nursing staff–perceived promotion of functional activity. **Method:** Barriers experienced by 368 nurses from 41 nursing homes in the Netherlands were measured with the MAastrlcht Nurses Activity INventory (MAINtAIN)-barriers; perceived promotion of functional activities was measured with the MAINtAIN-behaviors. Descriptive statistics and hierarchical linear regression analyses were performed. **Results:** Most often experienced barriers were

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staffing levels, capabilities of residents, and availability of resources. Barriers that were most strongly associated with the promotion of functional activity were communication within the team, (a lack of) referral to responsibilities, and care routines. **Discussion:** Barriers that are most often experienced among nursing staff are not necessarily the barriers that are most strongly associated with nursing staff–perceived promotion of functional activity.

Keywords

nursing homes, barriers, functional activity, nursing staff, activities of daily living

Introduction

Being functionally active is important for all people, including nursing home residents who are under supervision 24 hr a day. In nursing home residents, being active and performing functional activities is associated with less disruptive behavior (Resnick, Galik, & Boltz, 2013), less anxiety (Resnick et al., 2013), higher self-esteem (Blair, 1997), and a higher quality of life (Edvardsson, Petersson, Sjogren, Lindkvist, & Sandman, 2014). Initiatives to maintain or improve functional activity among nursing homes residents have been proposed worldwide (Peri et al., 2008; Resnick et al., 2013; Slaughter et al., 2015). Nonetheless, several studies have shown that inactivity is common in nursing home residents (den Ouden et al., 2015; Harper Ice, 2002; MacRae, Schnelle, Simmons, & Ouslander, 1996). A recent observation study in the Netherlands showed that nursing home residents, including mobile residents, were sitting or lying for about 90% of the observed moments during the day (den Ouden et al., 2015). To improve functional activity among nursing home residents, nursing staff can play an important role. They can encourage residents to be active and to act as independently as possible during daily care activities (Resnick et al., 2013), strengthen residents' self-efficacy (Sabot et al., 2011), for example, by probing residents to perform activities, or complimenting residents when they have performed certain activities. A recent study among nursing staff found that some functional activities, such as household activities (e.g., setting and clearing the table), are perceived to be less often promoted by the nursing staff than other functional activities, such as activities of daily living (ADLs; Kuk, Bours, Zijlstra, Hamers, & Kempen, 2015). Evidence suggests that nursing staff may be inclined to take over the activities of nursing home residents (Brown, McWilliam, & Ward-Griffin, 2006; Davies, Ellis, & Laker, 2000; Resnick et al., 2009). Den Ouden and colleagues (den Ouden et al., 2016) showed that

in 45% of the observations when nursing staff were involved in residents' activities, the staff performed the activity for the resident instead of allowing the residents to do the activity themselves. The observers in this study indicated that this behavior by the nursing staff was often unnecessary.

On a more general level, previous studies have shown that certain barriers may influence the behavior of nursing staff, for example, when adopting evidence-based practices or using guidelines (Grol & Wensing, 2004; Jun, Kovner, & Stimpfel, 2016; Solomons & Spross, 2011). Less evidence is available on the barriers nursing staff experience with regard to promoting functional activity among older people. Previous studies showed that nursing staff may not encourage residents to perform functional activities because they think residents are not capable of performing them (Kuk, Zijlstra, Bours, Hamers, & Kempen, 2016; Resnick et al., 2008) or nursing staff may think that family expects them to perform certain activities for residents (Galik, Resnick, & Pretzer-Aboff, 2009; Kuk et al., 2016; Resnick et al., 2008). Other barriers that may prevent nursing staff from promoting functional activity are a high workload or a lack of social support (Kuk et al., 2016; Resnick et al., 2006). These barriers can act on different levels. They may be related to the residents (e.g., fear of falling), the nursing staff (e.g., lack of self-efficacy), the social context (e.g., lack of social support), or the organizational and economic context (e.g., lack of resources; Grol & Wensing, 2004; Kuk et al., 2016). Although previous studies revealed some of the barriers nursing staff experience, they do not show how frequently these barriers are experienced and how these barriers are related with the promoting behavior of nursing staff. It is unknown whether the barriers that are most often experienced are also the barriers that are most strongly associated with the behavior of nursing staff. Insight into the prevalence and relative importance of the barriers is important to develop strategies to improve the promotion of functional activity by nursing staff.

The purpose of this study was to obtain an insight into the prevalence of the barriers that nursing staff experience regarding promoting functional activity among nursing home residents, and the association between these barriers and nursing staff-perceived behavior regarding the promotion of functional activity. In this study, a distinction is made between barriers related to the residents, the professionals, the social context, and the organizational and economic context.

Material and Method

Design

In January and February 2014, a nationwide cross-sectional study was conducted to collect data from nursing staff employed at nursing homes in the

Netherlands. The Medical Ethical Review Committee of Maastricht University (14-5-002) approved the study.

Setting, Participants, and Procedures

In the Netherlands, nursing home care is provided in somatic and psychogeriatric wards. Residents with psychogeriatric problems, such as dementia, primarily live in psychogeriatric wards, while somatic wards provide care to residents with physical problems (Schols, Crebolder, & van Weel, 2004). The large majority of the nursing staff in Dutch nursing homes are certified nurse assistants (CNAs), who have followed a secondary vocational training of 3 years. In addition, care is provided by registered nurses (RNs) with 4 years of vocational training and bachelor-educated RNs.

Nursing homes in the Netherlands were stratified according to five regions (north, east, south, west, and central). From each region, a random sample was drawn, proportionate to the total number of nursing homes in that region. In total, 100 nursing homes were invited to participate. To exclude care homes that have a single small nursing home ward but mainly provide care that is less intensive than regular nursing home care, the first author verified by telephone whether the nursing homes provided care to at least 25 somatic and/or 25 psychogeriatric residents. This led to the exclusion of 25 facilities; furthermore, one nursing home was excluded because it had closed its doors at the time of recruitment. Of the remaining 74 nursing homes, 46 agreed to participate.

Based on practical considerations, nursing homes with both psychogeriatric and somatic wards were invited to participate with 16 RNs or CNAs, eight from each ward type. Nursing homes with only somatic or only psychogeriatric wards were asked to participate with a total of 10 RNs or CNAs. In this way, a total of 622 RNs and CNAs could potentially participate. In addition to being an RN or CNA, participating nursing staff had to work at least 12 hr per week, to ensure that they had enough insight into daily practice. Nursing staff working exclusively night shifts were excluded from participation because of the fairly limited opportunities to promote functional activities during this time of day. In each participating nursing home, a local contact person randomly administered a questionnaire among eligible nursing staff and returned the anonymously completed questionnaires within 2 weeks.

Measures

The barriers nursing staff experience regarding promoting functional activity were assessed with the MAastrIcht Nurses Activity INventory (MAINtAIN)-barriers (Kuk et al., 2016). This inventory comprises 33 nine-point scaled

items ranging from *never* to *always*, or *completely disagree* to *completely agree*. A distinction is made between the different levels barriers relate to, namely, (a) the residents, (b) the professionals, (c) the social context, and (d) the organizational and economic context. Data on the extent to which nursing staff *perceive* that they promote functional activities were collected with the MAINtAIN-behaviors (Kuk et al., 2016) inventory. In this article, the phrase “behavior of the nursing staff” is applied to indicate their perceived behavior regarding the promotion of functional activities. The 19-itemed MAINtAIN-behaviors inventory comprises three subscales assessing the extent to which nursing staff promote independence during ADLs, such as bathing or dressing (eight items); household activities, such as setting and clearing the table or preparing a sandwich (six items); and miscellaneous activities, such as encouraging informal caregivers not to take over activities or encouraging residents to participate in organized activities (five items). Respondents rate the items on a nine-point scale ranging from *never* to *always*. The internal consistency for each of the three subscales ranged from .77 to .83 (Kuk et al., 2015). The MAINtAIN-barriers and MAINtAIN-behaviors are the two parts of the MAINtAIN inventory (available via open access; Kuk et al., 2016). A previous study showed MAINtAIN’s usability and content validity (Kuk et al., 2016).

Background characteristics of the nursing staff (age, sex, profession [CNA or RN], the ward type the nursing staff worked in [psychogeriatric or somatic], number of work hours per week, and years of professional experience) were assessed using single-item questions.

Data Analyses

Means and proportions were used to describe the background characteristics. Regarding the MAINtAIN-barriers, the scores of the positively formulated items were reversed so that higher scores always indicate stronger experienced barriers. For each barrier, the mean score and standard deviation were calculated. In addition, to determine the proportion of respondents who experienced a barrier to a lower or higher extent, the answer options of the MAINtAIN-barrier items were categorized into three categories: low (score = 1-3), medium (score = 4-6), and high (score = 7-9). Missing values (0%-2.2%) on the items of the MAINtAIN-barriers were not imputed (i.e., not replaced by other values). Regarding the MAINtAIN-behaviors, mean scores and standard deviations were calculated for the ADLs subscale, household activities subscale, and miscellaneous activities subscale. Missing values on the items of a subscale were imputed with the respondent’s average score for the other items of that subscale, if at least 75% of the items of the

subscale had been completed. Missing data for the ADLs, household, and miscellaneous subscales were imputed for a total of 4.9%, 2.4%, and 1.9% of the respondents, respectively. After imputation, 0.8% remained missing for the ADL and miscellaneous activities subscales, and 0.5% for the household activities subscale, due to respondents who did not complete at least 75% of the items. Given the few remaining missing values on the MAINtAIN-barriers and MAINtAIN-behaviors, these missing values were not imputed as they are unlikely to impact the outcomes.

To determine the association between each nine-point-scaled barrier and each subscale of the MAINtAIN-behaviors, hierarchical linear regression analyses (random intercept; Level 1, nursing staff; Level 2, nursing home) were performed. In each analysis, one barrier and one subscale of the MAINtAIN-behaviors were used. The variables ward type and profession were added to each analysis to control for potential confounding. For each model, unstandardized *B* coefficients (*B*s), standard errors, *p* values, and intra-class coefficients (ICCs) were determined. To account for multiple comparisons, a Bonferroni–Holm correction was used, with the global significance level of .05. Sensitivity analyses were conducted by imputing the missing scores on the MAINtAIN-behaviors subscales (for respondents who completed at least 75% of the items on that scale) with either one or nine and comparing the results of these analyses. To rank the barriers according to the strength of the associations, the mean strength of the association between each barrier and the three functional activity subscales was determined (the mean of the three *B*s). Mean scores for each barrier were used to rank them; barriers were also ranked based on the *B*s following the adjusted hierarchical linear regressions analyses. In addition, simple and hierarchical linear regression analyses were conducted without the potential confounders to determine the *B* coefficients and allow comparison of the ranked mean of the three *B*s with the ranked barriers' mean scores. All statistical analyses were performed using SPSS Statistics (version 22, IBM, Armonk, New York, USA).

Results

Sample Characteristics

Of the 448 respondents from 42 nursing homes (response rate = 72%, range = 50%-100% per nursing home) who completed the MAINtAIN, 80 were excluded because they did not meet the inclusion criteria (i.e., working exclusively night shifts [*n* = 18], not working in a somatic or psychogeriatric ward [*n* = 35], not certified as an RN or CNA [*n* = 24], or a combination of these reasons [*n* = 3]). The 368 eligible respondents represented 41 nursing homes.

Table 1. Sample Characteristics ($N = 368$).^a

	<i>n</i> (%)	<i>M</i> ± <i>SD</i>
Gender		
Female	346 (95)	
Male	20 (5)	
Ward type		
Psychogeriatric ward	231 (63)	
Somatic ward	137 (37)	
Profession		
CNA	275 (75)	
RN	93 (25)	
Age (years)		41.8 ± 11.6
Professional experience (years)		17.3 ± 10.6
Work hours per week		28.7 ± 5.4

Note. CNA = certified nurse assistant; RN = registered nurse (vocationally trained or bachelor educated).

^a*N* does not always add up to 368 due to missing data.

The mean age of the included respondents was 41.8 years ($SD = 11.6$ years), and 231 (63%) of them worked in a psychogeriatric ward. Other sample characteristics are displayed in Table 1.

The extent to which the nursing staff promoted functional activities varied; the mean scores for the ADLs, household activities, and miscellaneous activities were 6.9 ($SD = 1.2$), 4.1 ($SD = 1.9$), and 6.7 ($SD = 1.5$), respectively, out of a theoretical range from 1 to 9 (data not tabulated).

Prevalence of Nursing Staff–Experienced Barriers

Table 2 provides an overview of the barriers nursing staff experienced with regard to promoting functional activity, arranged according to the level to which they relate: the residents, the professionals, the social context, or the organizational and economic context. As the table shows, the mean scores on the barriers ranged from 2.39 (item on sense of importance on the professional level) to 5.47 (item on staffing level on the organizational and economic context level), out of a theoretical range from 1 to 9. Generally, barriers related to the organizational and economic context were rated most often as a barrier, with the top three ranging from a mean score of 5.47 ($SD = 2.48$, 39% “high”) for staffing level to 5.02 ($SD = 2.46$, 33% “high”) for time. Prevalent experienced barriers within the other three levels were the capabilities of the residents ($M = 5.37$, $SD = 2.52$, 39% “high”), conflict: time consuming

Table 2. Mean Scores, Standard Deviations, and Prevalence of Nursing Staff–Experienced Barriers for Promoting Functional Activities ($N = 368$).

Barriers	$M \pm SD$	Low ^a (%)	Medium ^a (%)	High ^a (%)
Residents				
Capabilities residents	5.37 \pm 2.52	29	32	39
Residents' fear	4.61 \pm 1.22	19	76	5
Attitude residents	4.54 \pm 1.74	28	58	13
Attention-seeking behavior	4.37 \pm 1.88	34	54	12
Residents' and families' expectations regarding care	4.34 \pm 2.02	36	49	15
Learned dependency	4.25 \pm 2.10	42	41	17
Relevance for residents	3.32 \pm 2.55	64	19	17
Visibility of results	2.73 \pm 2.00	76	17	7
Professionals				
Conflict: time consuming	5.10 \pm 2.45	28	40	31
Self-efficacy	3.33 \pm 2.37	63	24	13
Prioritizing time over care	3.31 \pm 2.09	62	26	12
Availability of expertise	3.10 \pm 1.92	70	21	9
Sense of difficulty	2.57 \pm 1.91	79	16	5
Task perception: taking responsibility	2.54 \pm 1.72	79	17	4
Outcome expectations	2.50 \pm 2.07	78	14	8
Task perception: task of physiotherapist	2.49 \pm 1.89	79	17	5
Risks for residents	2.45 \pm 1.61	79	19	2
Sense of importance	2.39 \pm 1.63	81	16	4
Social context				
Expectations of colleagues	4.69 \pm 2.61	42	29	29
Care routines	4.36 \pm 2.22	39	38	22
Communication within team	3.58 \pm 2.05	58	31	11
Support of manager	3.20 \pm 2.21	66	24	10
Social support of colleagues	3.18 \pm 2.04	69	20	11
Referral to responsibility	3.10 \pm 1.76	65	31	4
Collaboration with experts	2.94 \pm 2.35	70	17	13
Organizational and economic context				
Staffing level	5.47 \pm 2.48	26	34	39
Availability of resources	5.12 \pm 2.16	24	48	28
Time	5.02 \pm 2.46	35	32	33
Educational opportunities	4.99 \pm 2.55	33	33	34
Organizational readiness	4.93 \pm 2.84	37	27	36
Priority within organization	4.47 \pm 2.25	37	41	22
Rules and regulations	4.17 \pm 2.35	45	36	19
Presence of experts	3.31 \pm 2.08	65	24	11

Note. Barriers presented per level and ranked within that level based on mean scores. A higher mean score indicates a stronger experienced barrier.

^aBarriers scored on the nine-point scales were categorized into *low* (score = 1-3), *medium* (score = 4-6), and *high* (score = 7-9). Percentages may not add up to 100% because of rounding.

($M = 5.10$, $SD = 2.45$, 31% “high”), and the expectations of colleagues ($M = 4.69$, $SD = 2.61$, 29% “high”). The three lowest rated barriers were related to the level of the professionals, with sense of importance having the lowest mean score of all barriers ($M = 2.39$, $SD = 1.63$, 4% “high”).

Associations Between Experienced Barriers and Promotion of Functional Activity

The associations between the extent to which barriers were experienced and the extent to which nursing staff promoted ADLs, household activities, and miscellaneous activities are presented in Table 3. For most barriers, a stronger experience of a barrier is associated with less promotion of ADLs, household activities, and miscellaneous activities. For example, less social support from colleagues is associated with less promotion of all the kinds of activities. There are some exceptions, in particular for the barriers related to the residents; none of these barriers are significantly associated with the promotion of all three kinds of activities.

The strength of the associations varies per barrier. While the barriers related to the residents are not, or weakly, associated with the extent to which ADLs, household activities, and miscellaneous activities are promoted, most barriers related to professionals and to the organizational and economic context are moderately associated. Compared with the barriers related to the residents, professionals, and the organizational and economic context, some barriers related to the social context are slightly more strongly associated with the three outcome measures, in particular (a lack of) communication within the team about the promotion of activities ($B = -0.34$ to -0.36 , $p < .001$) and (a lack of) referring colleagues to their responsibility in not taking over activities ($B = -0.28$ to -0.30 , $p < .001$). The sensitivity analyses, in which missing data on the functional activity subscales were imputed with either 1 or 9, showed similar results (data not shown; available upon request).

Relative Importance of the Experienced Barriers

Table 4 provides an overview of the relative importance of the barriers, based upon (a) how often they are experienced (i.e., the mean score on the nine-point scale) and (b) the mean strength of the association between a barrier and the promotion of ADLs, household activities, and miscellaneous activities (data on mean strength of associations can be derived from the B s in Table 3). The most often experienced barriers are staffing levels, capabilities of residents, and availability of resources. In contrast, the barriers that are most strongly associated with the behavior of nursing staff are communication

Table 3. Associations Between Nursing Staff–Experienced Barriers and the Promotion of ADLs, Household Activities, and Miscellaneous Activities.

	ADL subscale			Household activities subscale			Miscellaneous activities subscale		
	B	SE	p	B	SE	p	B	SE	p
Barriers related to resident									
Learned dependency	−0.10*	−0.03	.001	−0.18*	−0.04	<.001	−0.04	−0.04	.228
Visibility of results	−0.09*	−0.03	.005	−0.06	−0.04	.152	−0.09	−0.04	.021
Attitude residents	−0.07	−0.04	.042	−0.16*	−0.05	.001	−0.01	−0.04	.762
Residents' and families' expectations regarding care	−0.07	−0.03	.021	−0.07	−0.04	.099	−0.02	−0.04	.593
Capabilities residents	0.09*	−0.03	.001	0.00	−0.03	.996	0.07	−0.03	.021
Relevance for residents	−0.01	−0.02	.761	−0.04	−0.03	.193	−0.03	−0.03	.384
Residents' fear	−0.02	−0.05	.743	−0.05	−0.07	.430	0.10	−0.06	.095
Attention-seeking behavior	−0.03	−0.03	.323	−0.01	−0.04	.759	0.02	−0.04	.643
Barriers related to the professionals									
Task perception: taking responsibility	−0.25*	−0.03	<.001	−0.14*	−0.05	.003	−0.28*	−0.04	<.001
Sense of importance	−0.27*	−0.04	<.001	−0.15*	−0.05	.002	−0.23*	−0.05	<.001
Availability of expertise	−0.23*	−0.03	<.001	−0.16*	−0.04	<.001	−0.17*	−0.04	<.001
Prioritizing time over care	−0.16*	−0.03	<.001	−0.16*	−0.04	<.001	−0.12*	−0.04	.001
Conflict: time consuming	−0.08*	−0.03	.002	−0.17*	−0.03	<.001	−0.08	−0.03	.008
Sense of difficulty	−0.11*	−0.03	.001	−0.02	−0.04	.631	−0.16*	−0.04	<.001
Risks for residents	−0.08	−0.04	.042	−0.02	−0.05	.694	−0.05	−0.05	.268
Outcome expectations	−0.02	−0.03	.460	−0.04	−0.04	.292	−0.05	−0.04	.138
Self-efficacy	0.02	−0.03	.361	0.02	−0.03	.656	0.01	−0.03	.824
Task perception: task of physiotherapist	−0.03	−0.03	.354	0.01	−0.04	.813	−0.02	−0.04	.694
Barriers related to the social context									
Communication within team	−0.35*	−0.02	<.001	−0.34*	−0.04	<.001	−0.36*	−0.03	<.001
Referral to responsibility	−0.29*	−0.03	<.001	−0.28*	−0.04	<.001	−0.30*	−0.04	<.001
Care routines	−0.24*	−0.03	<.001	−0.27*	−0.03	<.001	−0.23*	−0.03	<.001
Social support of colleagues	−0.27*	−0.03	<.001	−0.22*	−0.04	<.001	−0.20*	−0.04	<.001
Support of manager	−0.20*	−0.03	<.001	−0.19*	−0.04	<.001	−0.22*	−0.03	<.001
Expectations of colleagues	−0.16*	−0.02	<.001	−0.24*	−0.03	<.001	−0.20*	−0.03	<.001
Collaboration with experts	−0.09*	−0.03	.001	−0.06	−0.03	.096	−0.08	−0.03	.008

(continued)

Table 3. (continued)

	ADL subscale			Household activities subscale			Miscellaneous activities subscale		
	B	SE	p	B	SE	p	B	SE	p
Barriers related to organizational and economic context									
Priority within organization	-0.22*	-0.03	<.001	-0.20*	-0.04	<.001	-0.25*	-0.03	<.001
Presence of experts	-0.20*	-0.03	<.001	-0.18*	-0.04	<.001	-0.23*	-0.03	<.001
Availability of resources	-0.14*	-0.03	<.001	-0.15*	-0.04	<.001	-0.17*	-0.03	<.001
Educational opportunities	-0.12*	-0.02	<.001	-0.16*	-0.03	<.001	-0.17*	-0.03	<.001
Time	-0.13*	-0.03	<.001	-0.18*	-0.03	<.001	-0.13*	-0.03	<.001
Rules and regulations	-0.14*	-0.03	<.001	-0.15*	-0.03	<.001	-0.14*	-0.03	<.001
Organizational readiness	-0.07*	-0.02	.003	-0.19*	-0.03	<.001	-0.07	-0.03	.013
Staffing level	-0.07*	-0.03	.004	-0.13*	-0.03	<.001	-0.05	-0.03	.079

Note. Associations between each of the 33 barriers (scale = 1-9) and each subscale of the MAINtAIN-behaviors (scale = 1-9) were determined using hierarchical linear regression analyses (random intercept; Level 1, nursing staff; Level 2, nursing home), including the factors ward type and profession. In each analysis, one barrier and one subscale of the MAINtAIN-behaviors were used. Answer options for positively formulated factors were reversed in these analyses. Within each level, barriers are ranked according to the mean strength of the associations. Due to missing data, sample size for each analysis varies from 356 to 366. ICCs range from .01 to .08, .11 to .18, and .00 to .04, for the analyses with outcome measure ADLs, household activities, and miscellaneous activities, respectively. ADLs = activities of daily living; MAINtAIN = MAastricht Nurses Activity INventory; ICC = intra-class coefficient.

*Statistically significant association after Bonferroni-Holm correction.

within the team, referral to responsibility, and care routines. The fact that these rankings do not correspond implies that the barriers that are most often experienced among the nursing staff are not the barriers that are most strongly associated with the promotion of functional activity. For instance, although staffing level is the number one barrier according to the nursing staff, based upon the strength of the associations, it is ranked 21st of the 33 barriers. The rankings based on the different kinds of regression (simple linear, unadjusted hierarchical linear, and adjusted hierarchical linear) to determine the relationship between the barriers and the extent to which functional activity was promoted, provided similar results; the top six barriers remained the same and, on average, other barriers mainly traded places (data not shown).

Discussion

This study showed that the barriers that are most often experienced among nursing staff are not necessarily the barriers that are most strongly associated with their promotion of functional activity among nursing home residents.

Table 4. Comparison of the Barriers Based on Ranking.

Barriers ranked according to the height of the mean scores on the nine-point scales per item of the MAINtAIN-barriers	Barriers ranked according to the mean strength (mean B) of the associations ^a
1. Staffing level (O)	1. Communication within team (S)
2. Capabilities residents (R)	2. Referral to responsibility (S)
3. Availability of resources (O)	3. Care routines (S)
4. Conflict: time consuming (P)	4. Social support of colleagues (S)
5. Time (O)	5. Priority within organization (O)
6. Educational opportunities (O)	6. Task perception: taking responsibility (P)
7. Organizational readiness (O)	7. Sense of importance (P)
8. Expectations of colleagues (S)	8. Support of manager (S)
9. Residents' fear (R)	9. Presence of experts (O)
10. Attitude residents (R)	10. Expectations of colleagues (S)
11. Priority within organization (O)	11. Availability of expertise (P)
12. Attention-seeking behavior (R)	12. Availability of resources (O)
13. Care routines (S)	13. Educational opportunities (O)
14. Residents' and families' expectations regarding care (R)	14. Prioritizing time over care (P)
15. Learned dependency (R)	15. Time (O)
16. Rules and regulations (O)	16. Rules and regulations (O)
17. Communication within team (S)	17. Conflict: time consuming (P)
18. Self-efficacy (P)	18. Organizational readiness (O)
19. Relevance for residents (R)	19. Learned dependency (R)
20. Prioritizing time over care (P)	20. Sense of difficulty (P)
21. Presence of experts (O)	21. Staffing level (O)
22. Support of manager (S)	22. Visibility of results (R)
23. Social support of colleagues (S)	23. Attitude residents (R)
24. Referral to responsibility (S)	24. Collaboration with experts (S)
25. Availability of expertise (P)	25. Residents' and families' expectations regarding care (R)
26. Collaboration with experts (S)	26. Capabilities residents (R)
27. Visibility of results (R)	27. Risks for residents (P)
28. Sense of difficulty (P)	28. Outcome expectations (P)
29. Task perception: taking responsibility (P)	29. Relevance for residents (R)
30. Outcome expectations (P)	30. Self-efficacy (P)
31. Task perception: task of physiotherapist (P)	31. Task perception: task of physiotherapist (P)
32. Risks for residents (P)	32. Residents' fear (R)
33. Sense of importance (P)	33. Attention-seeking behavior (R)

Note. Barriers related to the residents (R), the professionals (P), the social context (S), and the organizational and economic context (O). MAINtAIN = MAastricht Nurses Activity INventory; ADLs = activities of daily living.

^aRanking based on the mean strength of the associations between a barrier and the ADLs, household activities, and miscellaneous activities subscales (i.e., the mean of the three Bs for each barrier of the adjusted hierarchical linear regression analyses; see Table 3).

Barriers toward promoting functional activity are experienced on all levels, that is, the level of residents, the professionals, the social context, and the organizational and economic context. The most prevalent experienced barriers are on the organizational and economic level, for example, staffing levels and the availability of resources. The barriers related to the social context are generally most strongly associated with the perceived promotion of functional activity by nursing staff, particularly (a lack of) communication within the team and (a lack of) referral to responsibilities.

The findings of this study correspond with a review by Benjamin, Edwards, Ploeg, and Legault (2014) who found that the organizational barriers funding and staffing constraints were among the most mentioned barriers across studies (Benjamin et al., 2014), while fear (of falling) and health-related problems (i.e., “capabilities of residents” in our study) were the most mentioned barriers at resident level. Barriers related to the professionals, for example, the perceived difficulty of promoting functional activity, seem to be less important according to nursing staff. In contrast, studies on evidence-based practice or research utilization often find factors related to the professionals to be major barriers, for instance, a lack of knowledge or skills (Bostrom, Kajermo, Nordstrom, & Wallin, 2008; Sitzia, 2001; Solomons & Spross, 2011). These differences between barriers on different topics reaffirm that barriers are problem specific (Bostrom, Slaughter, Chojecki, & Estabrooks, 2012; Kajermo et al., 2010) and underline the importance of studies that systematically map problem-specific barriers.

Although many studies have mapped nursing staff-experienced barriers, to our knowledge, only a few studies have examined the association between barriers and nursing behavior (e.g., Bostrom et al., 2008; Ebben et al., 2015), of which none focused on the promotion of functional activity by nursing staff. In line with our study, Ebben et al. (2015) found that social factors, for a large part, explain nursing staff adherence to protocol. Although the associations found in the present study may not be very strong, together the barriers related to the social context might to a great extent determine nursing behavior. The rankings of the barriers based on our regression analyses showed that generally barriers related to the social context were present in the top of the ranking. Social context barriers may, therefore, be an important target for strategies aiming to improve the promotion of functional activity, that is, behavior change in nursing staff.

Based on our cross-sectional study, it is likely that the barriers that are important according to the nursing staff are not always the barriers that have the greatest influence on their actual behavior. Due to social desirability, it may be easier for nursing staff to report barriers that are outside of their control. Staffing level, for example, is a barrier that is reported in many studies

(Abrahamson, Fox, & Doebbeling, 2012; Benjamin et al., 2014; Jun et al., 2016; Strand & Lindgren, 2010). Although nursing staff may intuitively believe that more nursing staff leads to better quality of care (Arling & Mueller, 2014), research shows that this is not always true (Backhaus, Verbeek, van Rossum, Capezuti, & Hamers, 2015; Spilsbury, Hewitt, Stirk, & Bowman, 2011). This demonstrates that it is important not only to address the most prevalent barriers but also to consider which combination of barriers is likely to have the greatest influence on nursing behavior.

Strengths and Limitations

This study has several strengths. First, our data were obtained from a nationwide sample, the variety in nursing homes making it possible to provide an overview of the barriers that matter the most to nursing staff in nursing homes in the Netherlands. Second, in this study, a wide range of barriers was taken into account, which makes it likely that the most important barriers were measured. Consequently, this study provides valuable input for the development of strategies aiming to overcome barriers and improve nursing staff promotion of functional activity. Conversely, some limitations of this study have to be taken into account. First, the cross-sectional design limits the identification of causal relationships between the experienced barriers and nursing staff-perceived behaviors. Second, this study used self-reported questionnaires assessing nursing staff-perceived behavior. Readers should keep in mind that this does not necessarily reflect their actual behavior (Dorresteijn, Rixt Zijlstra, Van Haastregt, Vlaeyen, & Kempen, 2013; Van de Mortel, 2008); respondents might have overestimated the extent to which they promote functional activity. Future studies could investigate this to determine whether other data collection methods, for example, observations, are of added value to nursing staff's self-reports on promoting functional activity. Third, although a reversed facilitator is not always the same as a barrier (Jun et al., 2016), we chose to reverse the answer options of the positive formulated items, so that a higher score always indicated a stronger experienced barrier. The use of a nine-point scale allowed us to treat the barriers and facilitators as a continuum. In addition, presenting all results as barriers increased the readability of this article. However, we do acknowledge the importance of facilitators and recommend focusing not only on decreasing barriers but also on strengthening facilitators.

Implications

The present study provides implications for research and practice. Future research could include resident perspectives and examine their perceptions of

the barriers toward performing functional activities. Future research with longitudinal designs, using repeated measures, could examine whether changes in nursing staff-experienced barriers are associated with changes in nursing behavior. Furthermore, to reduce the barriers nursing staff experience, strategies are needed. Although strategies are available (Cochrane Effective Practice and Organisation of Care Group [EPoC], 2002; Powell et al., 2015), they are often not very specific or tailored to the nursing home setting. Therefore, further research toward the development, feasibility, and effectiveness of strategies for this setting is warranted.

In nursing practice and nursing education, raising awareness of barriers and their (negative) influence on nursing staff behavior may help to address the barriers. The present study showed that barriers are experienced on different levels and that those related to the social context were generally most strongly associated with promotion of functional activity. Studies in different health care settings (Gifford et al., 2013; Holleman, van Tol, Schoonhoven, Mintjes-de Groot, & van Achterberg, 2014) indicate that the enablement of successful leadership is an example of a potential relevant strategy that could be used to change nursing behavior. By influencing their colleagues, providing feedback, and providing an example, a leader could positively influence the social environment in a ward, reduce barriers, and consequently change nursing behavior. For instance, in addition to rewarding nurses for having someone neat and clean and out of bed before breakfast, a nurse could also be rewarded for promoting a resident's functional activity during the ADLs regarding personal care in the morning, particularly if personal care is expressed as important to the resident. Selecting which (combination of) barriers need to be addressed should not solely be based on the strength of the associations between the barriers and nursing behavior. We recommend taking into account the extent to which barriers are experienced by the nursing staff, the probability that changing these barriers is possible, and the likelihood that changes will actually lead to a change in behavior among nursing staff.

Conclusion

This cross-sectional nationwide study in Dutch nursing homes showed that the barriers that are most often experienced among nursing staff are not the barriers that are most strongly associated with their promotion of functional activity. Nursing staff experience barriers on the level of the residents, the professionals, the social context, and the organizational and economic context. Their most prevalent experienced barriers are related to the organizational and economic context, for example, staffing levels and the availability of resources. However, the barriers that are most strongly associated with the

promotion of functional activity act on the level of social context, in particular (a lack of) communication within the team and (a lack of) referral to responsibilities. Based on the results of our study, we recommend that future studies aiming to improve the extent to which nursing staff promote functional activity among nursing home residents address a combination of barriers, including barriers of social context, taking into account both the extent to which barriers are experienced by the nursing staff and the likelihood that a change will actually lead to a change in behavior among nursing staff.

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References

- Abrahamson, K. A., Fox, R. L., & Doebbeling, B. N. (2012). Original research: Facilitators and barriers to clinical practice guideline use among nurses. *AJN: The American Journal of Nursing*, 112(7), 26-35. doi:10.1016/j.jamda.2013.12.080
- Arling, G., & Mueller, C. (2014). Nurse staffing and quality: The unanswered question. *Journal of the American Medical Directors Association*, 15, 376-378. doi:10.1016/j.jamda.2014.02.008
- Backhaus, R., Verbeek, H., van Rossum, E., Capezuti, E., & Hamers, J. P. (2015). Future distinguishing competencies of baccalaureate-educated registered nurses in nursing homes. *Geriatric Nursing*, 36, 438-444. doi:10.1016/j.gerinurse.2015.06.012
- Benjamin, K., Edwards, N., Ploeg, J., & Legault, F. (2014). Barriers to physical activity and restorative care for residents in long-term care: A review of the literature. *Journal of Aging and Physical Activity*, 22, 154-165. doi:10.1123/japa.2012-0139
- Blair, C. E. (1997). Effect of self-care ADLs on self-esteem of intact nursing home residents. *Issues in Mental Health Nursing*, 20, 559-570. doi:10.1080/016128499248367
- Bostrom, A. M., Kajermo, K. N., Nordstrom, G., & Wallin, L. (2008). Barriers to research utilization and research use among registered nurses working in the care

- of older people: Does the BARRIERS scale discriminate between research users and non-research users on perceptions of barriers? *Implementation Science: IS*, 3, Article 24. doi:10.1186/1748-5908-3-24
- Bostrom, A. M., Slaughter, S. E., Chojecki, D., & Estabrooks, C. A. (2012). What do we know about knowledge translation in the care of older adults? A scoping review. *Journal of the American Medical Directors Association*, 13, 210-219. doi:10.1016/j.jamda.2010.12.004
- Brown, D., McWilliam, C., & Ward-Griffin, C. (2006). Client-centred empowering partnering in nursing. *Journal of Advanced Nursing*, 53, 160-168.
- Cochrane Effective Practice and Organisation of Care Group. (2002). *Data Collection Checklist*. Retrieved from <http://epoc.cochrane.org/sites/epoc.cochrane.org/files/uploads/datacollectionchecklist.pdf>
- Davies, S., Ellis, L., & Laker, S. (2000). Promoting autonomy and independence for older people within nursing practice: An observational study. *Journal of Clinical Nursing*, 9, 127-136.
- den Ouden, M., Bleijlevens, M. H., Meijers, J. M., Zwakhalen, S. M., Braun, S. M., Tan, F. E., & Hamers, J. P. (2015). Daily (in)activities of nursing home residents in their wards: An observation study. *Journal of the American Medical Directors Association*, 16, 963-968. doi:10.1016/j.jamda.2015.05.016
- den Ouden, M., Kuk, N. O., Zwakhalen, S. M. G., Bleijlevens, M. H. C., Meijers, J. M. M., & Hamers, J. P. H. (2016). The role of nursing staff in the activities of daily living of nursing home residents. *Geriatric Nursing*. Advance online publication. doi:10.1016/j.gerinurse.2016.11.002
- Dorresteijn, T. A., Rixt Zijlstra, G. A., Van Haastregt, J. C., Vlaeyen, J. W., & Kempen, G. I. (2013). Feasibility of a nurse-led in-home cognitive behavioral program to manage concerns about falls in frail older people: A process evaluation. *Research in Nursing and Health*, 36, 257-270. doi:10.1002/nur.21534
- Ebben, R. H., Vloet, L. C., van Grunsven, P. M., Breeman, W., Goosselink, B., Lichtveld, R. A., . . . van Achterberg, T. (2015). Factors influencing ambulance nurses' adherence to a national protocol ambulance care: An implementation study in the Netherlands. *European Journal of Emergency Medicine*, 22, 199-205. doi:10.1097/MEJ.0000000000000133
- Edvardsson, D., Petersson, L., Sjogren, K., Lindkvist, M., & Sandman, P. O. (2014). Everyday activities for people with dementia in residential aged care: Associations with person-centredness and quality of life. *International Journal of Older People Nursing*, 9, 269-276. doi:10.1111/opn.12030
- Galik, E. M., Resnick, B., & Pretzer-Abhoff, I. (2009). "Knowing what makes them tick": Motivating cognitively impaired older adults to participate in restorative care. *International Journal of Nursing Practice*, 15, 48-55. doi:10.1111/j.1440-172X.2008.01721.x
- Gifford, W. A., Davies, B. L., Graham, I. D., Tourangeau, A., Woodend, A. K., & Lefebvre, N. (2013). Developing leadership capacity for guideline use: A pilot cluster randomized control trial. *Worldviews on Evidence-Based Nursing*, 10, 51-65. doi:10.1111/j.1741-6787.2012.00254.x

- Grol, R. P., & Wensing, M. (2004). What drives change? Barriers to and incentives for achieving evidence-based practice. *Medical Journal of Australia*, 180(6, Suppl.), S57-S60.
- Harper Ice, G. (2002). Daily life in a nursing home: Has it changed in 25 years? *Journal of Aging Studies*, 16, 345-359.
- Holleman, G., van Tol, M., Schoonhoven, L., Mintjes-de Groot, J., & van Achterberg, T. (2014). Empowering nurses to handle the guideline implementation process: Identification of implementation competencies. *Journal of Nursing Care Quality*, 29(3), E1-E6. doi:10.1097/NCQ.0000000000000052
- Jun, J., Kovner, C. T., & Stimpfel, A. W. (2016). Barriers and facilitators of nurses' use of clinical practice guidelines: An integrative review. *International Journal of Nursing Studies*, 60, 54-68. doi:10.1016/j.ijnurstu.2016.03.006
- Kajermo, K. N., Bostrom, A. M., Thompson, D. S., Hutchinson, A. M., Estabrooks, C. A., & Wallin, L. (2010). The BARRIERS scale—The barriers to research utilization scale: A systematic review. *Implementation Science: IS*, 5, Article 32. doi:10.1186/1748-5908-5-32
- Kuk, N. O., Bours, G., Zijlstra, G., Hamers, J. P., & Kempen, G. I. (2015). *Nurses' behaviors and perceived barriers to optimize function among nursing home residents* [Special issue: Paper presented at the Gerontological Society of America, 68th Annual Scientific Meeting, Orlando, FL, USA]. *Gerontologist*, 55(Suppl. 2), 702.
- Kuk, N. O., Zijlstra, G. A. R., Bours, G. J. J. W., Hamers, J. P. H., & Kempen, G. I. J. M. (2016). Development and usability of the MAINtAIN, an inventory assessing nursing staff behavior to optimize and maintain functional activity among nursing home residents: A mixed-methods approach. *BMC Health Services Research*, 16(1), Article 38. doi:10.1186/s12913-016-1288-7
- MacRae, P. G., Schnelle, J. F., Simmons, S. F., & Ouslander, J. G. (1996). Physical activity levels of ambulatory nursing home residents. *Journal of Aging and Physical Activity*, 4, 264-278.
- Peri, K., Kerse, N., Robinson, E., Parsons, M., Parsons, J., & Latham, N. (2008). Does functionally based activity make a difference to health status and mobility? A randomised controlled trial in residential care facilities (The Promoting Independent Living Study; PILS). *Age and Ageing*, 37, 57-63. doi:10.1093/ageing/afm135
- Powell, B. J., Waltz, T. J., Chinman, M. J., Damschroder, L. J., Smith, J. L., Matthieu, M. M., . . . Kirchner, J. E. (2015). A refined compilation of implementation strategies: Results from the Expert Recommendations for Implementing Change (ERIC) project. *Implementation Science: IS*, 10, Article 21. doi:10.1186/s13012-015-0209-1
- Resnick, B., Galik, E., & Boltz, M. (2013). Function focused care approaches: Literature review of progress and future possibilities. *Journal of the American Medical Directors Association*, 14, 313-318. doi:10.1016/j.jamda.2012.10.019
- Resnick, B., Gruber-Baldini, A. L., Zimmerman, S., Galik, E., Pretzer-Aboff, I., Russ, K., & Hebel, J. R. (2009). Nursing home resident outcomes from the

- res-care intervention. *Journal of the American Geriatrics Society*, 57, 1156-1165. doi:10.1111/j.1532-5415.2009.02327.x
- Resnick, B., Petzer-Aboff, I., Galik, E., Russ, K., Cayo, J., Simpson, M., & Zimmerman, S. (2008). Barriers and benefits to implementing a restorative care intervention in nursing homes. *Journal of the American Medical Directors Association*, 9, 102-108. doi:10.1016/j.jamda.2007.08.011
- Resnick, B., Simpson, M., Galik, E., Bercovitz, A., Gruber-Baldini, A. L., Zimmerman, S., & Magaziner, J. (2006). Making a difference: Nursing assistants' perspectives of restorative care nursing. *Rehabilitation Nursing*, 31, 78-86. doi:10.1002/j.2048-7940.2006.tb00131.x
- Sabol, V. K., Resnick, B., Galik, E., Gruber-Baldini, A. L., Morton, P. G., & Hicks, G. E. (2011). Exploring the factors that influence functional performance among nursing home residents. *Journal of Aging and Health*, 23, 112-134. doi:10.1177/0898264310383157
- Schols, J. M. G. A., Crebolder, H. F. J. M., & van Weel, C. (2004). Nursing home and nursing home physician: The Dutch experience. *Journal of the American Medical Directors Association*, 5, 207-212. doi:10.1016/S1525-8610(04)70116-4
- Sitzia, J. (2001). Barriers to research utilization: The clinical setting and nurses themselves. *European Journal of Oncology Nursing*, 5, 154-164. doi:10.1054/ejon.2000.0115
- Slaughter, S. E., Wagg, A. S., Jones, C. A., Schopflocher, D., Ickert, C., Bampton, E., . . . Estabrooks, C. A. (2015). Mobility of Vulnerable Elders Study: Effect of the sit-to-stand activity on mobility, function, and quality of life. *Journal of the American Medical Directors Association*, 16, 138-143. doi:10.1016/j.jamda.2014.07.020
- Solomons, N. M., & Spross, J. A. (2011). Evidence-based practice barriers and facilitators from a continuous quality improvement perspective: An integrative review. *Journal of Nursing Management*, 19, 109-120. doi:10.1111/j.1365-2834.2010.01144.x
- Spilsbury, K., Hewitt, C., Stirk, L., & Bowman, C. (2011). The relationship between nurse staffing and quality of care in nursing homes: A systematic review. *International Journal of Nursing Studies*, 48, 732-750. doi:10.1016/j.ijnurstu.2011.02.014
- Strand, T., & Lindgren, M. (2010). Knowledge, attitudes and barriers towards prevention of pressure ulcers in intensive care units: A descriptive cross-sectional study. *Intensive and Critical Care Nursing*, 26, 335-342. doi:10.1016/j.iccn.2010.08.006
- Van de Mortel, T. F. (2008). Faking it: Social desirability response bias in self-report research. *Australian Journal of Advanced Nursing*, 25(4), 40-48.