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Attendance of Physical and Occupational Therapists Improves Older Hospitalized Adults' Activity Levels

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Abstract

Aims

We hypothesized that the additional attendance of physical therapists (PTs) and occupational therapist (OTs) in clearly defined work assignments 1) increases the patients' physical activity level, 2) broadens the patients' environment by changing their location, 3) increases the time patients spend in the accompaniment of health professionals, and 4) changes the ongoing activity of patients.

Methods

This study utilized a time series design with regard to hospitalized adults 65 years of age and older. Observational behavioral mapping was used to assess the impact on the patients' physical activity levels.

Results

The study demonstrated that the additional attendance of PTs and OTs significantly increased the time the older adults' spent sitting, standing/walking as compared to being bedridden. It also significantly increased the amount of time patients were accompanied by health professionals.

Conclusions

Additional attendance of PTs and OTs has a positive impact on older adults' activity levels.

Keywords: Older adults, physical activity, multidisciplinary collaboration

Introduction

Hospitalized older adults spend the majority of their time in bed,¹⁻³ a proven risk factor for functional decline.⁴⁻⁷ Regular mobility during hospitalization is important to prevent functional decline during hospitalization.⁸

While nursing staff recognize the importance of mobilization, nurse-led mobilization is limited.^{9,10} A major barrier to nurse-led mobilization is limited resources, but other constraints include departments' expectations for walking with the patients, the need to wait for functional assessment, a lack of walking devices, insecurity in mobilization, and the need to prioritize acute assignments.¹¹⁻¹⁷ The unclear assignment of responsibility for patient mobilization may be another constraint. Some nurses deem patient mobilization as their responsibility, whereas others believe physical therapists (PTs) are responsible for this task.¹³

In an acute setting, PTs and occupational therapists (OTs) contribute to patient care by providing them with physical and functional assessments, including respiratory evaluation and dysphagia, and necessary assistive devices.¹⁸ However, the assessments typically result in a recommendation regarding mobilization targeted to the entire nursing staff, entailing an extra workload on the nursing staff and risking a lack of implementation given the unclear assignment of responsibility.¹⁹

As for the patients, they tend to find mobilization during hospitalization to be meaningless and without an association to everyday life. At the same time, they are often bored and require encouragement to engage in physical activity and an explanation of why it is beneficial and even necessary.²⁰⁻²⁴

A lack of physical activity during hospitalization is expected to continue, especially as difficulties in recruiting nursing staff remain present.²⁵ Since difficulties in recruitment do not extend to PTs and OTs, a possible solution to the problem of immobilization is to draw up a new agreement on work assignments that benefits patients as well as healthcare professionals.

We hypothesized that the additional attendance of PTs and OTs in clearly defined work assignments will 1) increase the patients' physical activity level, 2) broaden the patients' environment by changing their location, 3) increase the amount of time patients spend in the accompaniment of health professionals, and 4) change the ongoing activity of patients.

Materials and Methods

Study Design

A time series design was utilized in which the usual practice of health professionals was changed from January 14 to March 8, 2019 by adding additional PT and OT hours with clearly defined work assignments. Observational behavioral mapping was used for assessment with a time sampling technique to provide systematic and accurate observations.²⁶ The observations were recorded on January 9–10, 2019 and on February 20–21, 2019. The first observation period constituted the usual practice, while the second period included additional PT and OT hours with clearly defined work assignments. Patients in the first observation period are hereafter referred to as Group 1 and those in the second period as Group 2 (the intervention group).

Setting

Patients were recruited from two medical departments with a total of 44 beds—the geriatric department and the department of infectious and pulmonary medical diseases—in a medium-sized regional hospital. According to standard procedure, patients in need of acute medical service are admitted either directly to one of the abovementioned departments or after a visit to the short stay unit in the emergency department. Patients admitted to the departments are typically over 65 years of age and discharged from the hospital after an average of 3.6 days.²⁷

The hospital, which serves a mixed urban and rural population, is located in a country with a three-level tax-paid healthcare system. Rehabilitation in this healthcare system begins

in the hospital—the secondary sector—and persists in the municipality—the primary sector, if needed.

Population

For inclusion in the study, patients were required to be 65 years of age or older and hospitalized in one of the aforementioned departments. Patients registered as terminal, patients with delirium, and isolated patients were excluded.

All eligible patients hospitalized in one of the departments were asked to participate, and the time of their hospitalization determined whether they were assigned to either Group 1 or Group 2.

Description of Usual Practice and Intervention

Usual practice – Group 1

The nursing staff or the physician usually request the PTs or OTs to assess the physical and functional performance of hospitalized older adults, especially with a focus to their need for assistive devices during and after hospitalization and the necessity for rehabilitation in primary sector. Furthermore, the PTs are requested to assess and, if relevant, instruct the patients in respiratory physical therapy, both regarding Positive Expiratory Pressure (PEP) devices and Continuous Positive Airway Pressure (CPAP) ventilation. Usually, the PTs follow up once a day on the CPAP ventilation and the nursing staff follow up twice a day. The OTs usual assess dysphagia and the need for help in activities of daily living. The physical and functional assessment is typically followed by a recommendation regarding mobilization, respiratory therapy, and a dysphagia diet that is targeted to the entire nursing staff. With regard to physical activity, the nursing staff usually mobilize patients either to a sitting position around mealtimes or when going to and from the bathroom.

Intervention – Group 2

Each department included an additional 20 hours of physical therapy and two hours of occupational therapy weekly. In addition to supporting usual practice, the added hours were used to guide and help nursing staff in patient mobilization, especially in relation to high-need patients, and to support patients in their participation in daily activities—such as moving to a sitting position for mealtimes in the patient’s room or dining room. PTs were responsible for respiratory physical therapy during the day, including CPAP ventilation twice a day, whereas the additional OT hours were used to assess dysphagia at breakfast time.

Given the need for the clear assignment of responsibility, all the additional tasks outlined were agreed in advance, and the management closely followed the execution instructions. Follow-up meetings were held every second week. The daily coordination of collaborative tasks followed the usual coordination procedure initiated by the nursing staff.

Outcome Measurements

The primary outcome measured in this study was older adults’ activity levels, defined as the time spent sitting, standing, or walking versus being bedridden. Secondary outcomes were the location of patients (wardroom, hospital hallway, dining room), the staff accompanying them (PT, OT, nursing staff, physician), and the patients’ ongoing activity (sleeping, reading, watching TV, and conversation with others).

We collected the following demographic and medical data of the patients: age, gender, living arrangement, use of walking devices, need of help for everyday activities, diagnosis upon admission, and the number of drugs taken.

Data Collection

Observations were performed consistently in each department between 7:30 am and 12:30 pm and from 1 pm to 2:30 pm – observation periods corresponding to the primary time for attendance of PTs and OTs. Two PTs not involved in the study as attending therapists

observed each patient for one minute, taking care to remain as unobtrusive as possible, and documented all observations in a spreadsheet developed for the purpose. The observations were itemized according to the following four categories: 1) the patient's physical activity level; 2) the patient's location; 3) the accompaniment status of the patient (i.e., alone or accompanied by others and, if accompanied, by whom); and 4) the patient's ongoing activity. The spreadsheet also included a place to register the observation time for each Group and for each department. Because the time of discharge can change quickly, a patient's scheduled time of discharge did not influence whether the therapist started observing the patient from the beginning of the day. All those accompanying the patients were registered.

Demographic data were obtained either orally from the patients or from the medical journal and were registered in a form developed for this purpose. Data for Groups 1 and 2 were collected by the same two PTs who developed the spreadsheet. PTs collaborated and coordinated on an ongoing basis during both observation periods.

Analysis

Observations lasting less than a full day were excluded from analysis. All health professionals accompanying the patients in this study were registered during observations. However, during the observation periods, if more than one person accompanied the patient, physicians along with PTs or OTs were prioritized over nursing staff.

Demographic data were compared for homogeneity using Fisher's exact test or the Mann-Whitney test. Homogeneity was confirmed when a comparison of patients observed for one versus two days showed no significant difference. However, a significant difference ($<.001$) was found between observations in Groups 1 and 2. To adjust for this heterogeneity, a median score—the total score for the number of observations—was calculated for each observation category. Quantile regression was used for the comparison of observations in Groups 1 and 2.

Ethical considerations

This study was approved by the institutional review board of Hospital Lillebaelt and afterwards registered with the Danish Data Protection Agency (19/2025) and undertaken in accordance with research ethics and General Data Protection Regulation legislation.²⁸ After securing oral permission from the patients, we obtained their written consent. Informed consent included information on the purpose of the study, permission to obtain information from medical records, and the patients' right to withdraw from the study at any time. The ethics committee waived the study; due to Danish legislation, an observational behavioral mapping study does not need a permission from the ethics committee.

Results

A total of 52 patients were included in the study. Figure 1 shows the details of the patient inclusion process.

Among the 26 patients in Group 1, 12 patients were admitted to the geriatric department and 16 patients to the infectious and pulmonary medical diseases department. Of the 26 patients in Group 2, 13 patients were admitted to each of the two departments.

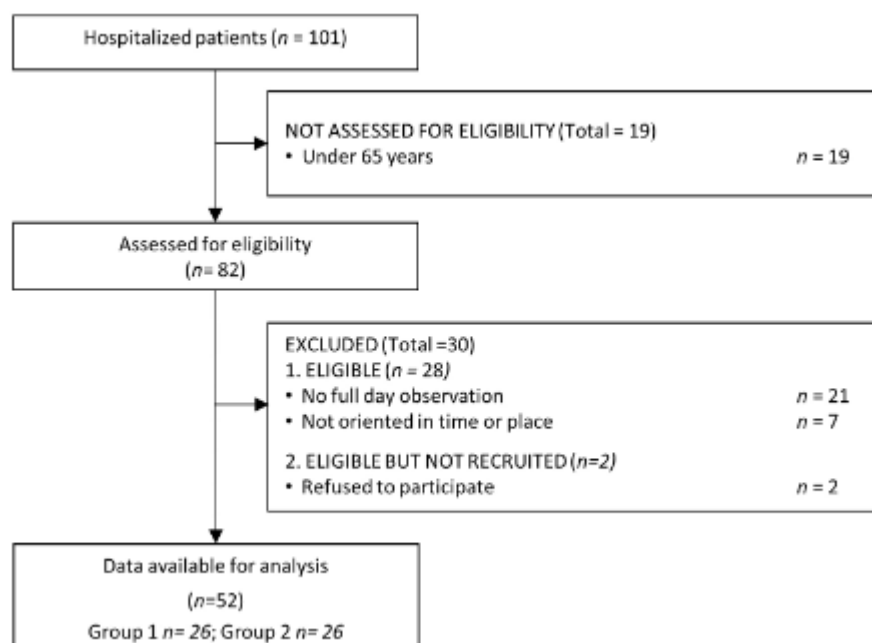


Figure 1.

Flow chart for the patient inclusion process

The total observation period was 1,125 minutes, distributed as 532 and 593 minutes in Groups 1 and 2, respectively.

In Group 1, the daily observation periods for the geriatric department and infectious and pulmonary medical diseases department were 11 minutes (IQR 10–16) and 11 minutes (IQR 9–15), respectively ($p=0.09$). The daily observation periods in Group 2 were 14 minutes (IQR 13–16) and 14 minutes (IQR 14–16) for the geriatric department and infectious and pulmonary medical diseases department, respectively ($p=0.37$).

The homogeneity test on demographic data indicated no difference between Groups 1 and 2.

Details are presented in Table 1

Table 1. Demographic characteristics at time of observation

		Observations – characteristics by group						<i>P</i> -value
		All participants (<i>n</i> = 52)		Group 1 (<i>n</i> = 26)		Group 2 (<i>n</i> = 26)		
		median	IQR	median	IQR	median	IQR	
Age (years)		78	(71–85)	75	71–84	82	71–86	0.18
Gender	Women	19	37	10	38	9	33	1.00
Habitual function								
<i>Self-reported information</i>								
Living arrangement	Alone	27	52	14	54	13	50	1.00
	Cohabitation	23	44	11	42	12	46	
	Nursing home	2	4	1	4	1	4	
Using walking device indoors	Always	16	31	8	31	8	31	1.00
	Sometimes	5	10	2	8	3	12	
	Never	29	56	15	58	14	54	
	Wheelchair user	2	4	1	4	1	4	
Using walking device outdoors	Always	20	39	10	38	10	38	0.94
	Sometimes	5	10	2	8	3	12	
	Never	24	46	13	50	11	42	
	Wheelchair user/Not going out	3	6	1	4	2	8	
Everyday activities								
Dressing	Independent	42	81	22	85	20	77	0.85
	Needs help	8	15	3	11	5	20	
	Dependent	2	4	1	4	1	4	
Toilet use	Independent	44	85	22	85	22	85	1.00
	Needs help	6	11	3	11	3	11	
	Dependent	2	4	1	4	1	4	
Bathing	Independent	40	77	21	81	19	73	0.86
	Needs help	10	19	4	15	6	23	
	Dependent	2	4	1	4	1	4	
Cooking	Independent	25	48	15	58	10	38	0.28
	Needs help	18	35	6	23	12	47	
	Unable	9	17	5	19	4	15	
Cleaning	Independent	18	35	11	42	7	27	0.30
	Needs help	18	35	6	23	12	46	
	Unable	16	31	9	35	7	27	
Shopping	Independent	24	46	12	46	12	46	0.73
	Needs help	12	23	5	19	7	27	
	Unable	16	31	9	35	7	27	
Gardening	Independent	14	27	9	35	5	19	0.50
	Needs help	9	17	4	15	5	19	
	Unable	29	56	13	50	16	62	
Number of drugs* ¹	At time of discharge	median	IQR	median	IQR	median	IQR	0.18
		12	8–15	12	9–14	14	8–17	
Admission diagnoses* ¹	Respiratory disorder	n	%	n	%	n	%	0.20
	Infection without infection focus	28	54	14	53	14	53	
	Infection	6	11	4	15	2	8	
	Rhabdomyolysis	4	8	2	8	2	8	
	Cancer	2	4	2	8	0	0	
	Other	3	6	2	8	1	4	
Deceased * ¹		n	%	n	%	n	%	
		5	0.1	1	0.04	4	0.1	

*¹ Extracted from medical record

The patients in this study, all older adults, were significantly more likely to be sitting, standing, or walking during the period of increased attendance and clear work assignments.

Details are presented in Table 2.

Table 2: Overview of activity, location, company, and ongoing activity

		Group 1 (<i>n</i> = 44* ¹)		Group 2 (<i>n</i> = 43* ¹)		<i>p</i> -value	
		min	%	min	%		
Activity level	Bedridden	310	58	269	45		
	Sitting* ² /Standing/Walking	222	42	324	55		
The total score for the activity level median (IQR)		0.60	(0.5-0.8)	0.74	(0.6-0.9)	0.03	
Location	In the ward room	491	92	545	92		
	In the hospital hallway	22	4	19	3		
	In the dining room	19	4	29	5		
The total score for the location median (IQR)		1.00	(1.0-1.1)	1	(1.0-1.3)	1.00	
In the company of	None	352	77	377	71		
	Occupational therapist	3	1	2	0		
	Physician	13	3	20	4		
	Nursing staff	75	16	103	19		
	Physical therapist	14	3	32	6		
The total score for the company median (IQR)		1.41	(0.8-2.1)	2.06	(1.5-2.4)	0.01	
Ongoing activity	Sleeping/relaxing	185	35	210	36		
	Having a conversation/phone call	68	13	49	8		
	Everyday activity	64	12	85	14		
	Reading, watching/listening	96	18	76	13		
	Activity outside the ward	14	3	11	2		
	Activity with the physical therapist	14	3	32	5		
	Activity with the occupational therapist	3	0	2	0		
	Doctor/nursing contact	86	16	123	21		
	Others incl. laboratory technician	2	0	5	1		
	The total score for the ongoing activity median (IQR)		3.28	(2.7-3.9)	3.67	(3.2-4.2)	0.12

*¹ n refers to number of observations in each group.

*²The patient may be sitting on the edge of the bed, on a toilet, in a chair, or in a wheelchair.

The patients also had significantly more contact with health professionals during the study period. Regarding time spent with those other than health professionals, the patients in Groups 1 and 2 spent a total of 69 minutes (10%) and a total of 49 minutes (8%), respectively, with relatives ($p=0.18$).

No significant difference was observed between Groups 1 and 2 regarding patient location and ongoing activities. However, it was interesting to note that, despite advanced patient age, 18% and 13% of patients in Groups 1 and 2, respectively, utilized mobile phones or tablets for reading, watching, and listening.

Discussion

Our study demonstrated that additional attendance of PTs and OTs enhanced the activity level of older adults and increased the time they were accompanied by health professionals. Extra hours with PTs and OTs did not have an observable effect on the location of older hospitalized adults or their ongoing activity.

Increased activity levels during hospitalization correspond with findings from other studies that have assessed the implementation of initiatives led by nursing staff, PTs, and OTs,^{29,30} as well as structured walking^{31,32} during hospitalization. However, our study demonstrated that additional hours with PTs and OTs in clearly defined work assignments also increased the amount of time that older adults spent in the company of a health professional.

Studies of nursing staff have revealed that monodisciplinary assignments such as acute assignments prompt nursing staff to deprioritize mobilization.^{10,16} Our study demonstrated that adding PT and OT hours had the positive impact of allowing more time for nursing staff to be with patients, which may improve their ability perform the monodisciplinary assignments. Moreover, we likely underestimated the presence of nursing staff, as our analysis strategy prioritized physicians, PTs, and OTs.

Early and sustained mobilization is important to prevent hospital-acquired illness and functional decline.^{8,32-34} Yet, to cover all aspects of mobilization, multidisciplinary collaboration is required, especially if the definition of mobilization includes the processes of getting patients out of bed, seating them in a chair, ensuring toileting in the bathroom, and

helping patients to stand or walk.¹⁵ Nurse-led mobilization is often confined to placing the patient in a standing position or transferring the patient. Only 9% of older adults are supported while walking by a nurse and 13% by PTs / OTs, while the majority (47%) of patients walk unaided.^{9,35} Barriers to nurse-led mobilization include a lack of confidence in mobilizing older adults with poor physical ability.^{9,10,15,16,36} In comparison, monodisciplinary assignments by a PT and OT are centered on the assessment and treatment of older adults with reduced physical and functional ability.^{29,30,37}

In a multidisciplinary collaboration, the clear assignment of responsibility is needed to prevent both uncertainty about responsibility and a resource-driven deprioritization due to the monodisciplinary assignment. In this study, the focus was on the support of PTs and OTs to ensure the patient remained active in everyday activities—support that included patient mobilization to a sitting position for mealtimes and for walking to the dining room. The decision to ensure everyday activities were carried out was based on a motivational need, the patients stating that being active was meaningful, gave them purpose, and provided them with a feeling of autonomy.^{23,24}

The activities performed by PTs and OTs in this study were different from those in other studies, in which the assessment was conducted by a PT, but another staff member performed the mobilization.^{30,32,37} The decision to expand the activity of PTs and OTs was driven in part by the short hospital stay of 3.6 days. In this context, passing on the patient to other healthcare staff necessitates that older patients become familiar in a very short timeframe with several healthcare workers, and it complicates the follow-up of the patient's physical assessment.²⁷ Furthermore, this decision was in line with the views of both patients and other health professionals, who assert that in conjunction with physical activity, respectful, continuous, and close relationships between patients and healthcare staff are critical to patient care.²²

Notably, the improvement in transferring the patient to a sitting position in either the patient's room or the dining room was important for managing dysphagia, a medical issue for many geriatric patients.³⁸ While we observed no significant differences in patients' ongoing activity and location within the hospital, our findings indicate that older adults are becoming active users of IT devices such as mobile phones and tablets. In the future, patients' need for social contact with other patients might thus change, precluding the need for walks in the hallways for social contact.²⁴

Similar studies have found that health professionals cited lack of motivation as a barrier to activity among older adults, even though the majority of older adults regardless of age are inactive during admission.^{14,39,40} The hospital environment and organizational routines are likely important contributors to the lack of physical activity among patients.^{23,24,41} Motivational factors for physical activity—such as social contact and the environment—must be considered in the future, especially with the increasing number of single rooms with single toilets within each room.

This study was strengthened by including a broader perspective than physical activity alone; however, the sample size may have affected results regarding patient location, especially since some of the older adults preferred to stay in their rooms. The starting point for the study was to assess of the impact of increased attendance of PTs and OTs in clearly defined work assignments measured by observations. In accordance with the positive result in this study, further studies using standardized outcome measures are needed.

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Declaration of interest

The authors report there are no competing interests to declare.

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