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Impact of assessment and intervention by a health and social care professional team in the emergency department on the quality, safety, and clinical effectiveness of care for older adults

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ABSTRACT

Background: Older adults often visit the emergency department (ED) and face elevated rates of adverse events post-ED visits. This randomized controlled trial assessed the effects of early assessment and intervention by a specialized team of health and social care professionals (HSCPs) in the ED on the quality, safety, and clinical efficacy of care for older adults.

Methods and Findings: This single-site randomized controlled trial involved 353 patients aged ≥65 years (mean age = 79.6, SD = 7.01; 59.2% female) presenting with lower urgency complaints at a university hospital during HSCP operational hours. The intervention comprised early assessment and intervention by an HSCP team including a senior medical social worker, senior occupational therapist, and senior physiotherapist. The primary outcome was ED length of stay. Secondary outcomes included ED revisits, hospital admissions from the ED, hospital length of stay for admitted patients, patient satisfaction, mortality, nursing home admission, unscheduled hospital admission at 30-day and 6-month follow-up, patient functional status, and quality of life. Demographic data included gender, age, marital status, residential status, mode of arrival to the ED, source of referral, index complaint, triage category, falls, and hospitalization history. Participants in the intervention group (n = 176) had significantly shorter ED stays compared to the control group (n = 177) (6.4 versus 12.1 median hours, $p < 0.001$). Other significant differences (intervention versus control) included lower rates of hospital admissions from the ED, higher satisfaction with the ED visit, better function at 30-day and 6-month follow-up, improved mobility at 30 days, and enhanced self-care at both follow-up points. No significant differences were observed in ED re-presentation or hospital admission at follow-up. Limitations include the inability to blind patients or ED staff due to the intervention's nature, and a focus on early assessment and intervention in the ED rather than post-discharge care integration.

Conclusions: Early assessment and intervention by a dedicated ED-based HSCP team reduced ED length of stay and hospital admission risks among older adults while enhancing patient satisfaction. These findings support the effectiveness of an interdisciplinary care model for key ED outcomes.

INTRODUCTION

Globally, emergency departments (EDs) grapple with significant challenges in delivering timely and high-quality patient care amidst rising patient numbers and limited hospital resources. Factors such as an aging

population and an increase in individuals with multiple health conditions contribute to the growing attendance at EDs, leading to overcrowding. Research indicates that ED overcrowding leads to compromised patient care quality, treatment delays, higher mortality rates, reduced adherence to clinical guidelines, and overall poorer health outcomes. (Morley et al., 2018)

Implementing quality improvement strategies to streamline patient flow in the ED has been shown to improve care quality. These strategies are particularly crucial for older adults, as frequent ED visits and crowding negatively impact their health outcomes. International studies increasingly support the deployment of teams comprising health and social care professionals (HSCPs) in the ED to offer specialized interdisciplinary care, facilitating timely and safer decision-making. A recent systematic review highlighted that HSCP care coordination teams, including physiotherapists, occupational therapists, and medical social workers, providing early assessment and intervention to older ED patients, result in safer discharges and increased satisfaction among patients and staff. However, the quality of evidence varies due to study design weaknesses and diverse patient groups and outcomes. (Shen, 2018)

Conversely, ED stakeholders have reported positive views on HSCPs in the ED, citing the added value of their specialized skills and interdisciplinary collaboration, which can improve care timeliness for older adults and alleviate the workload of ED medical staff. This suggests that ED-based HSCP teams could effectively enhance patient flow and outcomes, especially for those benefiting from holistic interdisciplinary assessment. Yet, robust evaluations of this care model's effectiveness are lacking. (Cassarino et al., 2019)

Following the Medical Research Council (MRC) framework for complex interventions, this randomized controlled trial aimed to assess how a dedicated team of HSCPs in the ED impacts the quality, safety, clinical effectiveness, and cost-effectiveness of care for older adults. This study focuses on the clinical effectiveness of the intervention concerning key ED and patient outcomes, while a separate analysis discusses the intervention's cost-effectiveness. (Hughes et al., 2019)

METHODS/DESIGN

Design and Setting

This study is a single-center parallel group conducted in the emergency department (ED) of a university teaching hospital . The hospital, part of a larger hospital group serving a rural population of approximately 385,000, features a full 24/7/365 emergency care and critical care service, with 455 inpatient beds.

Participants and Recruitment

Eligible participants were aged ≥65 years, medically stable, able to provide written consent, and presented during health and social care professional (HSCP) operational hours in the ED with specific index complaints. Patients were identified through the ED triage system and consultation with ED medical staff. Prospective participants with defined triage categories and complaints were invited to take part. Baseline data collection included demographic information, functional status, health-related quality of life, risk of adverse outcomes, frailty assessment, nutritional status, falls history, and hospitalization history.

Randomization

Computer-generated random numbers in blocks of 20 were created and stored securely in sealed envelopes. Allocation was revealed after baseline assessment by a research nurse, assigning participants to the experimental (HSCP intervention) or control (routine care) group.

Interventions

The intervention group received early assessment and intervention by a dedicated HSCP team, including physiotherapists, occupational therapists, and medical social workers. The control group received routine care provided by ED medical and nursing staff.

Outcomes

Primary outcome was ED length of stay. Secondary outcomes included hospital admission rates, hospital length of stay, patient satisfaction, ED revisits, unscheduled hospital visits, nursing home admissions at 30 days and 6 months, functional status, and quality of life.

Data Collection and Analysis

Data collection included objective measures from hospital databases and patient-reported outcomes via questionnaires. Statistical analyses were conducted using appropriate tests and regression models.

Sample Size

The sample size was calculated based on the primary outcome (ED length of stay) to achieve adequate power and account for attrition.

Patient and Public Involvement

Patients were involved in informing research questions and outcome measures. Their feedback on the intervention was gathered through satisfaction questionnaires.

Table 1: Patient Eligibility Criteria

Inclusion Criteria	**Exclusion Criteria**
Aged ≥65 years	Aged under 65 years
MTS 3–5	MTS 1–2*
Off baseline mobility and functional status	Neither the patient nor the carer can communicate in English sufficiently to complete informed consent or baseline assessment
Capacity and willingness to provide informed consent	Lacking capacity to provide informed consent**
Presenting during HSCP operational hours (8 AM–5 PM Monday–Friday)	Presenting outside HSCP operational hours (5 PM–8 AM or on Saturday/Sunday)
Presenting with any of the following complaints, as per MTS [24]:	Presenting with complaints other than described in the inclusion list.
Limb problems	
Falls	
Unwell adult	
Back pain	
Urinary problems	
Ear and facial problems	

RESULTS

Recruitment spanned , enrolling 353 participants out of 392 initially identified as eligible. Among those not recruited, reasons included lack of interest or feeling unwell. At the index visit, data on ED length of stay and hospital admissions were collected for all participants. Thirty-five patients did not complete the satisfaction questionnaire.

At the 30-day follow-up, data on objective outcomes were available for all participants, except for a few lost to follow-up due to death or unavailability. Similar follow-up patterns were observed at 6 months, with analyses including adjusted covariates for various outcomes.

Baseline characteristics showed a mean age of 79.6 years, with 59.2% female participants. Differences between groups were noted, with the control group slightly older and more likely to be in a lower triage category.

Regarding outcomes, the intervention group had significantly shorter ED stays and reduced risk of hospital admissions compared to the control group. They also reported higher satisfaction with care received in the ED. No significant differences were found in hospital length of stay for admitted patients.

At 30-day follow-up, there were no significant differences in unscheduled ED revisits, unscheduled hospital admissions, or nursing home admissions between groups. However, the intervention group showed better functional status and certain aspects of quality of life compared to the control group.

Similar trends were observed at the 6-month follow-up, with a lower rate of unscheduled hospital admissions in the intervention group and better self-care reported by participants in this group.

Overall, the intervention group benefited from shorter ED stays, reduced hospital admissions, higher satisfaction, improved functional status, and certain aspects of quality of life compared to the control group across various follow-up periods.

Table 2: Baseline Characteristics

Characteristic	**Control (n = 177)**	**Intervention (n = 176)**	**Overall (N = 353)**
Female, n (%)	101 (57.1)	108 (61.4)	209 (59.2)
Age, mean ± SD	80.6 ± 6.82	78.6 ± 7.08	79.6 ± 7.01
Marital status, n (%)			
Single	28 (15.8)	23 (13.1)	51 (14.5)
Married	65 (36.7)	70 (39.8)	135 (38.2)
Divorced	6 (3.4)	5 (2.8)	11 (3.1)
Widowed	78 (44.1)	75 (42.6)	153 (43.3)
Unknown	0	3 (1.7)	3 (0.9)
Residential status, n (%)			
Lives alone	79 (44.6)	74 (42.1)	153 (43.3)
Lives with family	95 (53.7)	88 (50.0)	183 (51.8)
Nursing home resident	1 (0.6)	6 (3.4)	7 (2.0)
Other*	2 (1.1)	8 (4.6)	10 (2.8)
Mode of entry, n (%)			
Ambulance	86 (48.6)	85 (48.3)	171 (48.4)
Private transport	88 (49.7)	89 (50.6)	177 (50.1)
Public transport	2 (1.1)	2 (1.1)	4 (1.1)
Walk-in	1 (0.6)	0	1 (0.3)
Referral, n (%)			
GP services	71 (40.1)	58 (33.0)	129 (36.5)
Self-referral	102 (57.6)	115 (65.3)	217 (61.5)
Nursing home	3 (1.7)	1 (0.6)	4 (1.1)

Walk-in clinic	1 (0.6)	1 (0.6)	2 (0.6)
Other**	0	1 (0.6)	1 (0.3)
Index complaint, n (%)***			
Limb problems	61 (34.5)	73 (41.5)	134 (38.0)
Unwell adult	39 (22.0)	24 (13.6)	63 (17.9)
Falls	28 (15.8)	26 (14.8)	54 (15.3)
Back pain	15 (8.5)	22 (12.5)	37 (10.5)
Other†	34 (19.2)	31 (17.6)	65 (18.4)
Triage category, n (%)			
2	11 (6.2)	25 (14.2)	36 (10.2)
3	155 (87.6)	140 (79.6)	295 (83.6)
4	11 (6.2)	11 (6.3)	22 (6.2)
Falls in the past 3 months, n (%)	92 (52.3)	96 (54.6)	188 (53.4)
Hospitalised in the past 6 months, n (%)	63 (35.59)	50 (28.57)	113 (32.10)
Barthel index, mean ± SD	16.3 ± 3.68	16.8 ± 3.13	16.6 ± 3.43
EQ-5D-5L, mean ± SD			
Mobility (n = 353)	2.86 ± 1.35	2.64 ± 1.29	2.75 ± 1.32
Self-care (n = 353)	2.54 ± 1.34	2.38 ± 1.33	2.45 ± 1.34
Usual activities (n = 353)	2.99 ± 1.27	2.80 ± 1.26	2.91 ± 1.27
Pain/discomfort (n = 353)	2.57 ± 1.17	2.84 ± 1.16	2.70 ± 1.17
Anxiety/depression (n = 351)	1.60 ± 0.89	1.53 ± 0.84	1.57 ± 0.86
ISAR score, n (%)			
<2	34 (19.2)	41 (23.3)	75 (21.3)
≥2	143 (80.8)	135 (76.7)	278 (78.7)
Clinical Frailty Score, n (%)			
1. Very fit	4 (2.3)	8 (4.5)	12 (3.4)
2. Well	20 (11.3)	15 (8.5)	35 (9.9)
3. Managing well	34 (19.2)	48 (27.3)	82 (23.2)
4. Vulnerable	43 (24.3)	51 (28.9)	94 (26.6)
5. Mildly frail	36 (20.3)	31 (17.6)	67 (18.9)
6. Moderately frail	35 (19.7)	19 (10.8)	54 (15.3)
7. Severely frail	4 (2.3)	3 (2.3)	8 (2.3)
9. Terminally ill	1 (0.6)	0	1 (0.3)
Nutritional status, n (%)			
Malnourished	16 (9.0)	11 (6.3)	27 (7.7)
Risk of malnutrition	58 (32.8)	41 (23.3)	99 (28.1)
Normal status	103 (58.2)	124 (70.5)	227 (64.3)

DISCUSSION

In this study we evaluated the impact of early assessment and intervention by a dedicated Health and Social Care Partnership (HSCP) team on older adults in the emergency department (ED) compared to usual care.

Our findings show that the intervention led to shorter ED stays, reduced hospital admissions, and higher patient satisfaction. Additionally, patients in the intervention group had better functional outcomes at both 30-day and 6-month follow-ups, along with improved mobility and self-care. (Carter et al., 2014)

These results align with existing evidence supporting the role of interdisciplinary teams in the ED, which have been shown to improve patient care and experience while reducing hospital admissions. Our study contributes to this body of knowledge by demonstrating the effectiveness of a specific HSCP intervention for older adults. (Oredsson et al., 2011)

However, our study has some limitations, including its focus on a specific cohort of lower-urgency patients and its single-center design, which may limit generalizability. Additionally, the nature of the intervention precluded blinding of patients and staff, potentially introducing bias. (James et al., 2016)

Looking ahead, future research should explore integrated care models that extend beyond the ED visit to improve outcomes for older adults. Understanding the reasons for ED attendance among lower-urgency patients is also important for developing targeted interventions that address their specific needs and reduce unnecessary ED visits. (Hickman et al., 2015)

In conclusion, our study highlights the effectiveness of early assessment and intervention by an HSCP team in the ED for improving key outcomes in older adults. This underscores the importance of optimizing intervention strategies to enhance care delivery in this setting. (Innes et al., 2016).

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