Effects of hospital-to-home transitional care on health outcomes of elderly patients in Islamic Republic of Iran

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Abstract

Background: Hospitalization has a negative effect on the functional and clinical outcomes of elderly patients.

Aims: To evaluate the effect of a care transition intervention on functional and clinical outcomes and quality-of-life of elderly patients in the Islamic Republic of Iran after hospital discharge during a 3-month follow-up.

Methods: We conducted a randomized controlled trial of 304 elderly hospitalized patients in Tehran from December 2018 to January 2020. The intervention group (n = 152) received care transition intervention and the control group (n = 152) received routine hospital discharge. All patients were assessed during hospital stay and at 30, 60 and 90 days after hospital discharge. Participants were evaluated using the Minimum Data Set–Home Care form, which assesses daily living activity, instrumental daily living activity, cognitive performance, cognition, pain, and depression. Rehospitalization and quality-of-life were evaluated, and differences between the groups and trends in quality-of-life were assessed.

Results: Only instrumental daily living activity in the functional outcomes and quality-of-life were greater in the intervention group than the controls. The intervention (odds ratio (OR): 0.11; 95% confidence intervals (CI): 0.01–0.97), age (OR: 1.16; 95% CI: 1.01–1.33), and cognition (OR: 1.24; 95% CI: 1.02–1.51) predicted instrumental daily living activity. Age (coefficient: −0.009, P = 0.001), depression (coefficient: −0.157; P < 0.001), cognition (coefficient: −0.023, P < 0.001) and pain (coefficient: −0.106, P = 0.007) predicted quality-of-life.

Conclusion: Care transition interventions can help maintain the independence of older adults after hospital discharge and improve their quality-of-life.

Keywords: home care, transition, hospitals, aged, health outcomes, quality-of-life, Iran.

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Introduction

Hospitalization has some negative effects on elderly people and may increase the risk of disability, dependency, loss of functional capacity, cognitive decline and loss of emotional functioning *(1)* . These problems can adversely affect their quality-of-life *(2)*. Therefore, a comprehensive care approach is required for patient assessment to design and coordinate care plans to meet the needs of patients and those of their caregivers *(3)*.

The Minimum Data Set for Home Care (MDS–HC) is a standard tool for the comprehensive assessment of elderly people in clinical settings *(4)*. This instrument assesses the conditions of patients and evaluates their needs and preferences, which may be useful for care planning *(5)*.

Hospital policies now emphasize the early discharge of patients, especially elderly patients. Shorter hospital stays have led to the development of transitional care models *(6)*, which aim to reduce the likelihood of readmission and improve the functional capacity and quality-of-life of elderly patients at home *(7)*.

The Coleman care transition intervention (CTI) model has produced good results in reducing re-hospitalization and improving physical function and quality-of-life among elderly people *(8)*. The model is patient-centred and focuses on the empowerment of elderly patients and their caregivers *(9)*. Some studies report that older adults who received the CTI experienced lower readmission rates than elderly patients who did not receive this intervention *(10–12)*.

It is not yet clear whether such care models will achieve their goals in any healthcare system and will have positive effects on the clinical outcomes of elderly patients *(6)*. In the Islamic Republic of Iran, studies show that no standard discharge programmes exist in hospitals and that every hospital implements a discharge programme based on its own policies *(13)*. Hence, it can be difficult for elderly patients and their caregivers to understand a lot of information in a few moments during

the discharge time *(14)*. This study aimed to analyse the effects of a CTI on the health outcomes of discharged elderly patients in a randomized control trial.

Methods

Research design and setting

This single-blinded randomized control trial was conducted among the elderly patients at Ziyaiyan Hospital (Geriatric Hospital Centre of Tehran) from December 2018 to January 2020. Ziyaiyan hospital is an educational and medical centre and one of the public hospitals affiliated with the Tehran University of Medical Sciences. The hospital has 162 beds with 12 inpatient wards including intensive care unit, cardiac care unit, post critical care unit, haemodialysis ward, internal medicine ward, geriatric ward, men's surgery, gynaecology surgery, and maternity, paediatric and neonatal care.

Participants

The target age group for the care transition model is elderly patients ≥ 65 years with chronic diseases. Therefore, we considered all patients ≥ 65 years admitted to the hospital for at least 48 hours (n = 304) *(15)*, and included them in the study based on our inclusion criteria.

Data were collected using the MDS–HC which requires accurate responses from patients or their caregivers; thus, the following criteria were mandatory: (i) being admitted to the geriatric ward; (ii) not being admitted to the intensive care unit or the emergency ward; (iii) not being a complex or high-need patient (patients with several comorbidities, functional limitations and disability who needed sub-acute care after discharge); (iv) not being a resident in a nursing home; and (v) being accompanied by a caregiver for consent for patients who were mentally impaired. We excluded elderly patients who had experienced acute medical problems or had complicated problems needing high levels of care or transfer to nursing homes.

Vulnerable elderly people with several comorbid complaints (patients who need to receive sub-acute care after discharge) are not suitable for the CTI because it requires active participation of the patient and their caregiver.

Recruitment of participants

A nurse researcher met eligible elderly patients 48 or 72 hours before their discharge from hospital and invited them to participate in the trial. Informed consent was obtained from the patients or their caregivers. Evaluation of each patient in the first session took 45 minutes to an hour. To simplify data collection for the elderly participants, some essential questions that needed to be answered by the patient themselves were asked first; other questions that could be answered by the patient's caregiver were asked later.

Intervention

The care needs of the elderly patients after discharge from the hospital were assessed based on the MDS-HC form and the CTI model was then implemented to respond to patient needs. Figure 1 shows recruitment of the intervention and control participants into the study.

Intervention group

The CTI and routine care were implemented in the intervention group (n = 152). The intervention included a 1-month implementation of the CTI model and telephone follow-up for 2 months after the elderly patient had received CTI.

The CTI is a 4-week intervention conducted by a trained nurse. The programme starts in the hospital 24–72 hours before discharge. During this period, the nurse evaluates the patient's clinical conditions and other important information such as disease complications, risk factors for disease and any question about medicines. The home visit is done 24–72 hours after discharge. The elderly patients and their caregivers are trained by the nurse in the treatment process, adherence to medications, the importance of follow-up appointments and warning signs of worsening conditions. After the first home visit, the nurse communicates with the patients or their caregivers by telephone once a week for up to 4 weeks and assesses the continuity of care followed by the patients *(9)*.

In the telephone follow-up, patients were evaluated for 2 months after the intervention. Each month, telephone interviews were conducted with the elderly patients and their caregivers. MDS–HC and the European Quality of Life-5 Dimensions (EQ–5D) were completed by the nurse. Each phone call evaluation lasted at least 30 minutes.

Control group

In the control group (n = 152), participants received the standard hospital procedure, including only the discharge information before discharge. They were then evaluated during a 3-month follow-up assessment period. The MDS-HC form was used for the first, second and third month follow-up evaluations.

Measurements

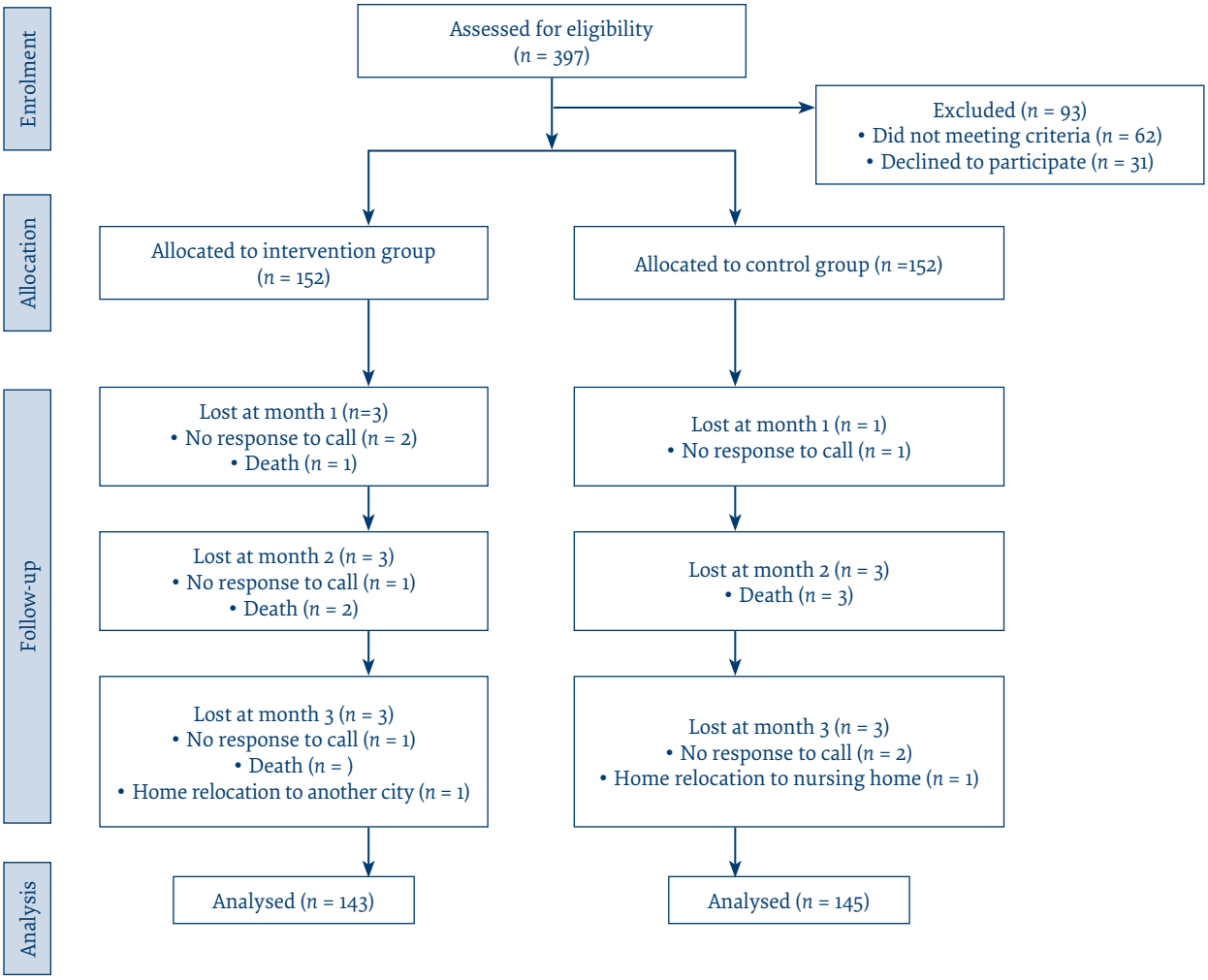
Demographic and clinical information

The research variables included age, sex, education, comorbidities, polypharmacy and length of hospital stay. The baseline assessment was conducted using the MDS-HC. This tool assesses a variety of areas including sociodemographic information, cognition, mood and behaviour, activities of daily living (ADL), instrumental activities of daily living (IADL), incontinence, falls, malnutrition, medications, diagnoses, discharge destination and level of care.

Outcome variables

The outcome variables were classified into 3: functional outcomes; clinical outcomes; and quality-of-life. Functional and clinical outcomes were based on the

Figure 1 The CONSORT flow diagram of recruitment of elderly patients, Islamic Republic of Iran



MDS-HC form, and quality-of-life was assessed using EQ-5D and other instruments.

- EQ-5D. In the descriptive system, mobility, self-care, usual activities, pain and anxiety are evaluated *(16)*. The total scores are translated into the index scores through the interim mapping method. Higher scores indicate better quality of life of patients.
- Euroquality of life – visual analogue scales (EQ.VAS). The EQ.VAS is a self-survey of patients about their health at the moment of assessment with a range of 0 (worst health status today) to 100 (best health status today) *(16)*.
- ADL. This instrument is evaluated by the Barthel index. The 10 items are: mobility in bed, transfer, indoor locomotion, outdoor locomotion, upper body dressing, lower body dressing, eating, toilet use, personal hygiene and bathing *(17)*. Higher scores indicate greater dependency of the elderly patient.
- IADL. The self-reported IADL consists of seven items: ordinary housework, meal preparation, medication management, shopping, transportation, finance management and use of the telephone *(17)*. Higher scores indicate greater dependency of the elderly patient.
- Cognitive performance scale. This scale measures variations in memory and cognition. Scores ranges from 0 (intact cognition) to 6 (very severe impairment) *(18)*.

Clinical outcomes (based on MDS–HC domains) included the following.

- Depression rating scale. This scale evaluates the presence and severity of mood variations. The score ranges from 0 to 14. A cut-off score of ≥ 3 indicates the presence of potential problems in the mood *(19)*.
- Pain. The pain scale assesses the frequency and severity of pain with a range of 1 (no pain) to 4 (severe pain). Higher scores mean more severe pain *(17)*.
- Re-hospitalization and referrals to the emergency department. This index is based on three questions asked to the elderly patients or their caregivers in the MDS–HC.

Sample size determination

The sample size was calculated using G-Power 3.0 software. Based on a probability of error type 1 of 0.05, a power of 0.8 and a standard mean difference (Cohen D) in outcomes between the two groups after the intervention

of 0.1, and one-tailed tests, the sample size was calculated as 132 participants in each group with a total sample of 264 participants. Assuming a maximum 15% loss to follow-up, the sample size was increased to 304 participants – 152 participants in both the intervention and control groups *(20)*.

Randomization and blinding

Random allocation was performed for both groups. A four-block random framework (ABAB, AABB, BBAA, ABBA, BAAB and BABA) was designed by the statistician. Participants were stratified based on age and comorbidity: > 75 years and fewer than 3 comorbidities; < 75 years and fewer than 3 comorbidities; > 75 years and more than 3 comorbidities; and < 75 years and more than 3 comorbidities. Based on the random framework, cards were prepared with 1 number on 1 side that indicated the order in which people were enrolled in the study and on other side the random assignment of each order indicated by A or B. This A/B side was covered by a white label. All the cards from number 1 to number of sample sizes were arranged in order. One of the researchers who was not involved in data collection was responsible for the random allocation of the enrolled participants.

For blinding, the eligible elderly patients were assigned to the groups on separate days in different hospital rooms to minimize the possibility of verbal contact between the control and intervention groups. Hence, the patient and their caregiver were not informed about the study groups. Data collection from the patients required an expert familiar with the MDS-HC form. This assessor was not blinded.

Data collection

The geriatric nurse researcher gathered information about the elderly patients at baseline, and 30, 60 and 90 days after discharge from hospital. In each evaluation, the MDS–HC form, re-hospitalization and the quality-of-life of the elderly patient were evaluated. The MDS–HC form evaluated the ADL, IADL, cognitive performance scale, cognition, pain, and depression rating scale domains. The nurse researcher was not blinded.

Data analysis

We used SPSS 16 for Windows and Stata 11 for the analyses with a *P*-value (two-tailed) of < 0.05 considered statistically significant. Means and standard deviations (SD) were reported for continuous variables and numbers and proportions for categorical variables. We used interval analysis and trend analysis to evaluate the data. In the interval analysis, the differences in parametric variables between intervention and control groups was tested with the chi-squared, Mann–Whitney U and Fisher exact tests. In addition, Cohen D was used to calculate the effect size.

In the trend analysis, repeated measure ANOVA checked the trends in quality-of-life over time. Because IADL did not have a normal distribution, the Friedman test was used for IADL in each group. We used logistic regression analysis for binary variables and linear regression for continuous variables to identify the variables influencing the main outcomes of the study.

Ethics

The project was approved by the ethics committee of the University of Social Welfare and Rehabilitation (project number: IR.USWR.REC.1396.296) and was registered with the Iranian Registry of Clinical Trials (registry number: IRCT20180213038710N1). Informed consent was obtained from all participants.

Results

Sample characteristics

This study was conducted on 304 elderly patients during a 3-month evaluation process. In all, 31 patients who were eligible based on the MDS–HC evaluation withdrew from the study before being assigned to any study group. During the study period, 16 patients did not complete the study because of death, failure to answer the telephone on follow-up or relocation (Figure 1). The mean age of the total sample was 75.71 (SD 6.28) years, 225 (74.0 %) of the participants were female and 201 (66.1%) had primary education. The average length of hospital stay was 6.76 (SD 3.34) days. Of the total sample, 51.0% had three or more comorbidities and 71.4% used 5 or more medicines. No significant differences were found between the intervention and control groups at baseline, except for sex and IADL (Table 1).

Interval analysis

Functional outcomes

Based on the Mann–Whitney U test, only IADL changed significantly and improved in the intervention group. No significant differences were found between the 2 groups for ADL and cognition outputs (Table 2).

The effect size indicated that the intervention had a moderate effect on IADL improvement in the intervention group (Table 3).

Clinical outcomes

No significant differences were seen between the 2 groups for pain, depression, readmission to the emergency department and rehospitalization after 3 months of follow-up ($P > 0.05$).

Because of the ordinal scale of clinical outputs, it was not possible to estimate the effect size.

Quality-of-life

Based on the evaluation of EQ-5D in each interval assessment, no significant differences between the control and intervention groups were observed during the assessment period ($P > 0.05$) (Table 2).

The effect size had a moderate effect on the improvement of EQ-5D and EQ-VAS scales of the participants in the intervention group (Table 3).

Table 1 Characteristics of the elderly patients in the total sample and intervention and control groups, Islamic Republic of Iran

Variable	Total	Intervention	Control	P
Demographic variables				
Age in years, mean (SD)[a]	75.71 (6.28)	76.24 (6.02)	75.16 (6.55)	0.932
Sex, no. (%)[b]				
Male	79 (26.0)	23 (15.1)	56 (36.8)	< 0.001
Female	225 (74.0)	129 (84.9)	96 (63.2)	
Marital status, no. (%)[b]				
Single	2 (0.7)	1 (0.7)	1 (0.7)	0.155
Married	137 (45.1)	60 (39.5)	77 (50.7)	
Widow/divorced	165 (54.3)	91 (59.9)	74 (48.7)	
Education, no. (%)[b]				
Illiterate	1 (0.3)	1 (0.7)	0 (0.0)	0.056
Primary school	201 (66.1)	111 (73.0)	90 (59.2)	
Junior middle school	86 (28.3)	35 (23.0)	51 (33.6)	
Senior middle school	9 (3.0)	3 (2.0)	6 (3.9)	
Diploma	5 (1.6)	1 (0.7)	4 (2.6)	
Academic degree	2 (0.7)	1 (0.7)	1 (0.7)	
Length of hospital stay, in days, mean (SD)[a]	6.76 (3.34)	7.0 (3.30)	6.52 (3.37)	0.212
Comorbidities, no. (%)[b]				
< 3	149 (49.0)	74 (48.7)	75 (49.3)	0.365
≥ 3	155 (51.0)	78 (51.3)	77 (50.7)	
Medicines taken, no. (%)[b]				
< 5	87 (28.6)	48 (31.6)	39 (25.7)	0.996
≥ 5	217 (71.4)	104 (68.4)	113 (74.3)	
Medicines taken, mean (SD)[a]	6.74 (1.98)	6.74 (2.05)	6.75 (1.91)	0.488
Main outcomes				
Functional outcomes				
ADL, mean (SD)[a]	5.04 (7.24)	4.64 (7.12)	5.45 (7.27)	0.227
IADL, mean (SD)[a]	11.62 (5.19)	12.62 (4.82)	10.62 (5.56)	0.002
Cognitive performance scale, no. (%)[b]				
Normal (0)	88 (28.9)	47 (30.9)	41 (27.0)	0.298
Borderline impairment (1)	136 (44.7)	73 (48.0)	63 (41.4)	
Mild impairment (2)	77 (25.3)	32 (21.1)	45 (29.6)	
Moderate impairment (3)	3 (1.0)	0 (0.0)	3 (2.0)	
Clinical outcomes, no. (%)[b]				
Pain				
No pain	76 (25.0)	32 (21.1)	44 (28.9)	0.383
< once a day	63 (20.7)	37 (24.3)	26 (17.1)	
Daily mild pain	76 (25.0)	38 (25.0)	38 (25)	
Daily severe pain	89 (29.3)	45 (29.6)	44 (28.9)	
Depression rating scale				
Normal (0)	120 (39.5)	65 (42.8)	55 (36.2)	0.335
Mild/moderate depression (1–3)	96 (31.5)	48 (31.6)	48 (31.6)	
Severe depression (> 3)	88 (29.0)	39 (25.7)	49 (32.2)	
Emergency referral				
No referral	242 (79.6)	118 (77.6)	124 (81.6)	0.740
Once	54 (17.80)	29 (19.1)	25 (16.4)	
Twice	8 (2.63)	5 (3.3)	3 (2.0)	
Rehospitalization				
No rehospitalization	197 (64.80)	108 (71.1)	89 (58.6)	0.087
Once	106 (34.90)	43 (28.3)	63 (41.4)	
Twice	1 (0.30)	1 (0.7)	0 (0.0)	
Quality of life score, mean (SD)				
Euro quality of life-5 dimension[a]	0.57 (0.49)	0.56 (0.31)	0.58 (0.68)	0.671
Euro quality of life – visual analogue scales[a]	49.69 (16.61)	51.12 (17.81)	48.26 (15.41)`	0.622

SD: standard deviation; ADL: activities of daily living; IADL: instrumental activities of daily living.
[a]*Chi-squared test.*
[b]*Mann–Whitney U test.*

Table 2 Outcome variables at baseline and after hospital discharge among elderly patients in control and intervention groups, Islamic Republic of Iran

Variables	Measure	Control group	Intervention group	*P* (Mann-Whitney U test)	*P*
IADL					
Baseline	Mean (SD)	10.62 (5.56)	12.62 (4.82)	0.002	< 0.001 (Friedman test for both intervention and control groups)
	Median (IQR)	10.50 (10.00)	13.00 (7.75)		
After 1 month	Mean (SD)	10.75 (5.51)	12.30 (4.77)	0.014	
	Median (IQR)	11.00 (10.00)	12.00 (7.00)		
After 2 months	Mean (SD)	10.86 (5.49)	12.32 (4.84)	0.023	
	Median (IQR)	11.00 (10.00)	12.00 (7.00)		
After 3 months	Mean (SD)	10.96 (5.47)	12.33 (4.84)	0.033	
	Median (IQR)	11.00 (10.00)	13.00 (7.00)		
ED5D					
Baseline	Mean (SD)	0.58 (0.68)	0.56 (0.31)	0.671	0.027 (repeated measures ANOVA)
	Median (IQR)	0.69 (0.28)	0.68 (0.50)		
After 1 month	Mean (SD)	0.50 (0.32)	0.53 (0.32)	0.285	
	Median (IQR)	0.62 (0.58)	0.65 (0.55)		
After 2 months	Mean (SD)	0.49 (0.32)	0.52 (0.33)	0.407	
	Median (IQR)	0.62 (0.58)	0.65 (0.57)		
After 3 months	Mean (SD)	0.48 (0.33)	0.53 (0.32)	0.187	
	Median (IQR)	0.62 (0.58)	0.65 (0.50)		
VAS					
Baseline	Mean (SD)	48.26 (15.41)	51.12 (17.81)	0.622	0.019 (repeated Measures ANOVA)
	Median (IQR)	50.00 (20.00)	50.00 (20.00)		
After 1 month	Mean (SD)	45.25 (15.18)	50.10 (18.34)	0.272	
	Median (IQR)	45.00 (20.00)	50.00 (20.00)		
After 2 months	Mean (SD)	44.40 (15.14)	49.66 (18.38)	0.304	
	Median (IQR)	45.00 (20.00)	50.00 (25.00)		
After 3 months	Mean (SD)	44.01 (15.40)	49.59 (18.35)	0.111	
	Median (IQR)	45.00 (20.00)	50 (25.00)		

IADL: instrumental activities of daily living; ED5D: Euro quality of life-5 dimension; VAS: Euro quality of life – visual analogue scales; SD: standard deviation; IQR: interquartile range.

Trend analysis

Functional outcomes

The IADL trend changed during follow-up after the intervention in both intervention and control groups. Figure 2a shows the trend in IADL from baseline to 3-month follow-up in the two groups. Higher scores indicate greater dependence. Although the intervention group was more dependent than the control group at hospital discharge (baseline assessment), the IADL score decreased (less dependency) in the intervention group during follow-up whereas it increased in the control group, showing higher levels of dependence (Table 2).

Clinical outcomes

No significant differences between the two groups were seen for pain, depression, readmission to the emergency department and rehospitalization after the follow-up ($P > 0.05$).

Quality-of-life

Figure 2 (b and c) shows the trends in quality-of-life (EQ.5D and EQ.VAS) during follow-up in both groups. Higher scores indicate better conditions. While EQ.5D and EQ.VAS scores fell in both the Control and intervention groups, the degree of decline in quality-of-life in the control group was greater than in the intervention group. The intervention group had significantly higher scores in EQ-5D and EQ.VAS than the control group (Table 2).

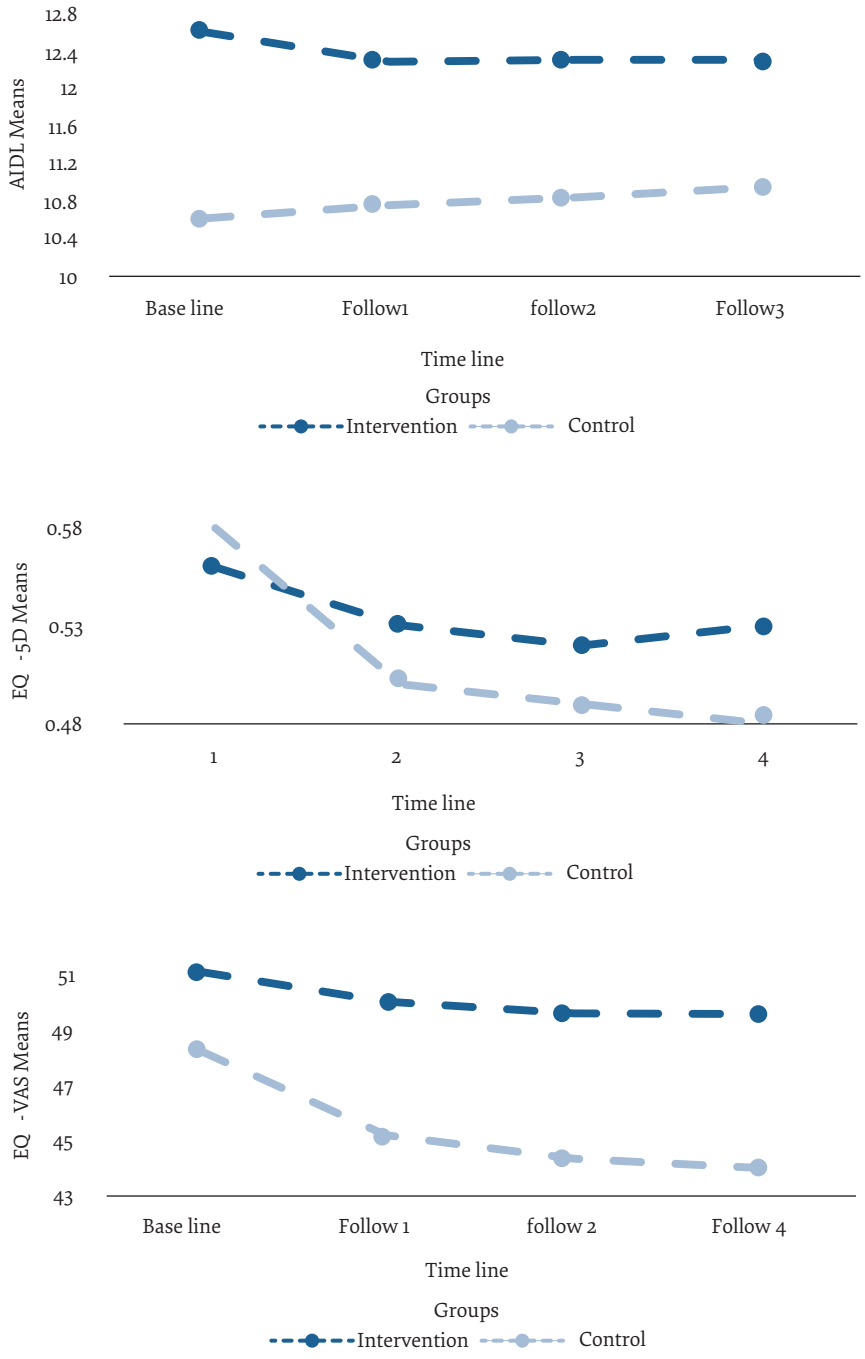
Regression analysis

The intervention [odds ratio (OR): 0.11; 95% confidence intervals (CI): 0.01–0.97, $P = 0.04$], age (OR: 1.16; 95% CI: 1.01–1.33, $P = 0.02$) and cognition (OR: 1.24; 95% CI: 1.02–1.51, $P = 0.02$) were considered predictive factors of IADL status in the fully adjusted logistic regression analysis. In other words, ageing and cognitive impairment decreased the chances of functional independence, whereas

Table 3 Effect size for pairwise differences between 4 interval assessments, Islamic Republic of Iran

Measure	Effect size, Cohen D (95% confidence intervals)		
	Baseline vs after 1 month	Baseline vs after 2 months	Baseline vs after 3 months
Instrumental activities of daily living	0.48 (0.25–0.71)	0.58 (0.35–0.82)	0.60 (0.36–0.84)
Euro quality of life-5 dimension	0.44 (0.21–0.67)	0.40 (0.17–0.63)	0.52 (0.28–0.75)
Euro quality of life – visual analogue scales	0.44 (0.21–0.66)	0.43 (0.19–0.66)	0.47 (0.23–0.70)

Figure 2 Trends in IADL, EQ.5D and EQ.VAS of elderly patients during the evaluation period, Islamic Republic of Iran



IADL: instrumental activities of daily living; ED.5D: Euro quality of life-5 dimension; EQ.VAS: Euro quality of life – visual analogue scales

Note: Higher IADL scores indicate greater dependency; higher EQ.5D and EQ.VAS scores indicate better quality of life.

Table 4 **Linear regression analysis of predictive factors for quality-of-life of elderly patients, Islamic Republic of Iran**

Variable	Coefficient	Standard error	P
Age	−0.009	0.002	0.001
Sex (male/female)	−0.072	0.040	0.073
Depression (normal/depressed)	−0.157	0.038	< 0.001
Cognition (unimpaired/impaired)	−0.0	0.004	< 0.001
Pain (no/yes)	−0.106	0.039	0.007

implementing the CTI improved the functional status of elderly patients.

The total score of quality-of-life had near normal distribution. In a linear regression analysis of the predictive factors of quality-of-life, age, depression, cognitive status and pain were all significantly associated with quality-of-life. Therefore, elderly patients who were depressed, had cognitive impairment, or suffered from pain had a lower quality-of-life (Table 4).

Discussion

This study was a single-blinded randomized control trial that aimed to evaluate the effectiveness of CTI on functional indicators, clinical indicators and quality-of-life among hospitalized elderly patients after discharge from hospital.

Our results show that providing a CTI and a 3-month follow-up after discharge led to significant changes in IADL and quality-of-life. However, the intervention did not produce better functional and clinical outcomes. The intervention, age and cognition were predictive factors of IADL status in the regression analysis, whereas age, depression, cognition status and pain predicted quality-of-life.

IADL

Post-discharge care significantly reduced the dependence of elderly patients in the intervention group compared with the control group. A 2011 study also reported that the use of CTI in elderly patients after hospital discharge improved IADL functions of the elderly compared with before the intervention *(21)*. Providing a home rehabilitation programme for elderly people with musculoskeletal problems was reported to significantly change their functional dependence during the assessment period and improve their IADL dependence levels *(20)*. However, a study in Australia found no significant changes in IADL functional status with provision of CTI for elderly people *(6)*. An analysis of the effects of home care programmes on elderly people in Germany found that implementation of CTI did not change the IADL of the elderly participants *(22)*.

It seems IADL is affected by the clinical situation of elderly people after hospital discharge. For example, in longitudinal studies, IADL trends after critical illness and after discharge from hospital were downward and upward, respectively *(23)*. It may be argued that the post-discharge care programme leads to greater awareness among families and elderly people about the treatment process and reduces fears of the unknown dimensions of illnesses. Such programmes are also assumed to result in the greater likelihood of elderly people and their families to seek medical care. In the CTI model, the focus of the care team is on empowering the patient and their family in areas such as drug management, awareness of danger signs and attendance of follow-up appointments with the physician. On the other hand, in this care model, the elderly patient communicates with the care team by telephone. Drug management and making telephone calls are two items of the IADL that are reinforced in this care model. Therefore, the CTI model could be effective in increasing the independence of elderly people.

The intervention, age and cognition impairment were the predictive factors of IADL in our regression analysis. These factors were also predictive in another study *(24)*. Performing some IADL activities requires coordination and unimpaired brain activity. If a patient has some degree of cognitive impairment, they may have difficulty performing some IADL activities *(25)*. It is not unreasonable to expect that IADL activities will decline with age. Cognitive problems will also greatly affect the elderly, and the first symptoms in people with cognitive impairment are deficits in IADL activities.

Quality-of-life

The main goal of the CTI for elderly patients is to improve quality-of-life. Lack of or inadequacy of discharge programmes may lead to distress, anxiety, medication errors and insufficient adherence to the treatment process. This will lead to a decline in quality-of-life among elderly patients *(26)*. In our study, the quality-of-life of participants in the intervention group was significantly better than the control group. This finding was also reported in a 2014 study that assessed patients with chronic obstructive pulmonary disease *(27)*. However, a 2019 study in which home care was provided to elderly people with chronic obstructive pulmonary disease found no improvement in their quality-of-life *(28)*. In another study, providing CTI improved the self-management ability of elderly people, decreased dependency and changed their lifestyles *(29)*. CTI affected their cognitive, behavioural and emotional responses and hence helped maintain quality-of-life *(29)*.

Many older adults live alone. Implementing the CTI model, in addition to providing the opportunity for a specialist medical visit at home, allows elderly people

to interact by telephone with the care team. Hence, the feeling of being supported and interacting with the care team can reduce some of their anxiety about disease management and indirectly affect their sense of well-being and quality-of-life.

Age, depression, cognition status and pain were predictive factors of quality-of-life in our regression model which has been found in other studies *(30,31)*. As people age, they may have chronic pain, cognitive impairment and a combination of pain and decreased mobility which may cause depression and dependency and poorer quality-of-life status.

Our study had some limitations. Only one researcher evaluated the elderly participants in the two groups (completing the MDS-HC and accurate coding of the data required a trained and skilled evaluator), and hence the evaluator could not be blinded. We followed the participants for 3 months and it is possible that more follow-up time is needed to detect changes in cognition and mood among elderly patients and obtain clearer results.

To conclude, the CTI model appeared to be effective in maintaining the independence of older adults after hospital discharge and improving their quality-of-life. In the Islamic Republic of Iran, there are no formal guidelines for CTI and older adults are discharged with verbal training provided by a nurse. Consideration should be given to implementing formal transitional care for an elderly patient being discharged from a hospital in the Islamic Republic of Iran.

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Effets des soins de transition entre l'hôpital et le domicile sur l'état de santé des patients âgés en République islamique d'Iran

Résumé

Contexte : L'hospitalisation a un effet négatif sur les performances fonctionnelles et cliniques des patients âgés.

Objectifs : Évaluer l'effet d'une intervention de transition des soins sur l'évolution fonctionnelle et clinique et sur la qualité de vie des patients âgés en République islamique d'Iran après leur sortie de l'hôpital au cours d'une période de suivi de trois mois.

Méthodes : Nous avons mené un essai contrôlé randomisé auprès de 304 patients âgés hospitalisés à Téhéran entre décembre 2018 et janvier 2020. Le groupe d'intervention (n = 152) a bénéficié d'une intervention de transition des soins, tandis que le groupe témoin (n = 152) a suivi une procédure de sortie d'hôpital habituelle. Tous les patients ont été évalués pendant leur séjour à l'hôpital, puis 30, 60 et 90 jours après leur sortie de l'hôpital. Les participants ont été évalués à l'aide du formulaire Minimum Data Set–Home Care (ensemble minimal de données pour les soins à domicile), qui évalue les activités de la vie quotidienne, l'activité instrumentale de la vie quotidienne, les performances cognitives, la cognition, la douleur et la dépression. Le taux de réadmission à l'hôpital et la qualité de vie ont été évalués, ainsi que les différences entre les groupes et les tendances en matière de qualité de vie.

Résultats : Seule l'activité instrumentale de la vie quotidienne dans les résultats fonctionnels et la qualité de vie étaient supérieures chez les patients du groupe d'intervention à ceux du groupe témoin. L'intervention (odds ratio (OR) : 0,11 % ; intervalle de confiance (IC) à 95 % : 0,01-0,97), l'âge (OR : 1,16 ; IC à 95 % : 1,01-1,33) et la cognition (OR : 1,24 ; IC à 95 % : 1,02-1,51) ont permis de prédire l'activité instrumentale de la vie quotidienne. L'âge (coefficient : –0,009, p = 0,001), la dépression (coefficient : –0,157 ; p < 0,001), la cognition (coefficient : –0,023, p < 0,001) et la douleur (coefficient : –0,106, p = 0,007) ont permis de définir la qualité de vie.

Conclusion : Les interventions de transition des soins peuvent contribuer à maintenir l'indépendance des personnes âgées après leur sortie de l'hôpital et à améliorer leur qualité de vie.

آثار الرعاية الانتقالية من المستشفى إلى المنزل على المخرجات الصحية للمرضى المسنين في جمهورية إيران الإسلامية

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الخلاصة

الخلفية: يؤثر الإدخال إلى المستشفى تأثيرًا سلبيًّا على المخرجات الوظيفية والسريرية للمرضى المسنين.

الأهداف: هدفت هذه الدراسة الى تقييم تأثير التدخل أثناء الفترة الانتقالية للرعاية على المخرجات الوظيفية والسريرية وجودة الحياة للمرضى المسنين في جمهورية إيران الإسلامية بعد خروجهم من المستشفى أثناء فترة المتابعة التي استمرت 3 أشهر.

طرق البحث: أجرينا تجربة عشوائية مضبوطة شملت 304 مرضى مسنين في المستشفى في طهران في الفترة من ديسمبر/ كانون الأول 2018 إلى يناير/ كانون الثاني 2020. وحصلت مجموعة التدخل (العدد = 152) على التدخل أثناء الفترة الانتقالية للرعاية، بينما شهدت المجموعة الضابطة (العدد = 152) تخريجًا روتينيًّا من المستشفى. وخضع جميع المرضى للتقييم أثناء إقامتهم بالمستشفى، وبعد مرور 30، و60، و90 يومًا بعد تخريجهم من المستشفى. وقد قيَّم المشاركون باستخدام الحد الأدنى من مجموعة البيانات–استمارة الرعاية المنزلية، التي تُقيِّم النشاط المعيشي اليومي، والنشاط المعيشي اليومي الأساسي، والأداء المعلوماتي، والإدراك، والألم، والاكتئاب. وقُيِّم كلٌّ من إعادة الإدخال إلى المستشفى وجودة الحياة، وأوجه التباين بين المجموعتين والاتجاهات السائدة في جودة الحياة.

النتائج: كان النشاط المعيشي اليومي الأساسي فقط من حيث المخرجات الوظيفية وجودة الحياة أكبر في مجموعة التدخل من المجموعة الضابطة. وتنبأ التدخل (نسبة الأرجحية: 0.11؛ فاصل الثقة 95٪: 0.01–0.97) والعمر (نسبة الأرجحية: 1.16، فاصل الثقة 95٪: 1.01–1.33)، والإدراك (نسبة الأرجحية: 1.24؛ فاصل الثقة 95٪: 1.02–1.51) بالنشاط المعيشي اليومي الأساسي. وتنبأ العمر (معامل: 0.009–، القيمة الاحتمالية = 0.001)، والاكتئاب (معامل: 0.157–، القيمة الاحتمالية < 0.001)، والإدراك (معامل: 0.023–، القيمة الاحتمالية < 0.001)، والألم (معامل: 0.106–، القيمة الاحتمالية = 0.007)، بجودة الحياة.

الاستنتاجات: من شأن التدخلات أثناء الفترة الانتقالية للرعاية أن تساعد على الحفاظ على استقلال البالغين من كبار السن بعد خروجهم من المستشفى، وتحسين جودة حياتهم.

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