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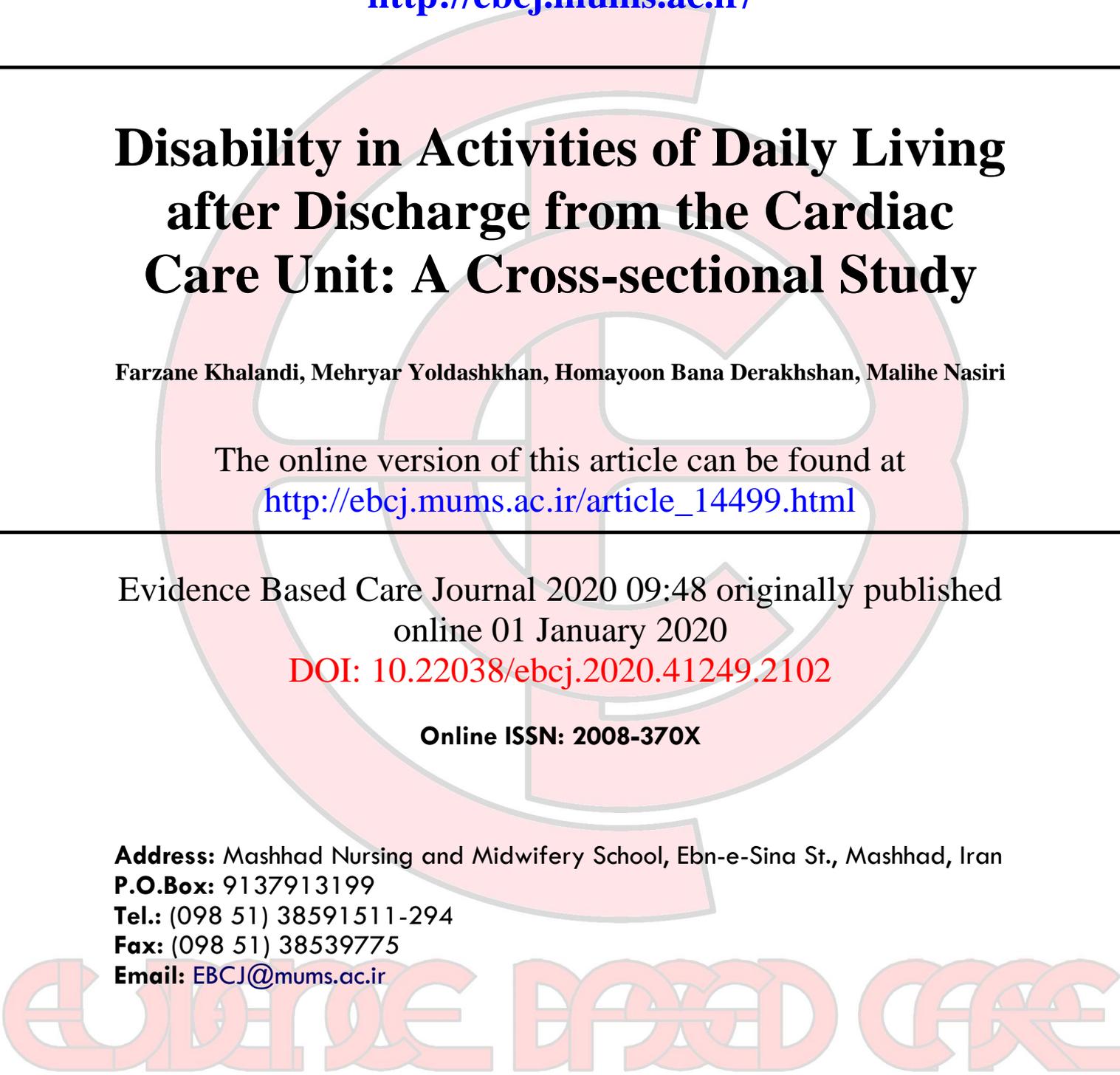
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Short Report

Disability in Activities of Daily Living after Discharge from the Cardiac Care Unit: A Cross-sectional Study

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Abstract

Patients admitted to the cardiac care unit (CCU) are prone to functional degradation and disability due to prolonged hospitalization and cardiovascular diseases. The aim of this study was to assess the activities of daily living (ADLs) after discharge from CCU. This descriptive cross-sectional study was performed on 180 subjects selected through convenience sampling from the patients admitted to the post-CCU of the hospitals affiliated to the three major medical universities of Tehran, Iran. The ADLs were evaluated by the Barthel index and the data were analyzed by the Wilcoxon test using SPSS version 19. $P < 0.05$ was considered significant. Bathing had the highest dependence level (21.1%) and disability in this activity increased from 12.8% to 33.9% after discharge. The lowest dependence was found for feeding (2.8%) and dependence augmented after admission, compared to before (92.96±16.02 and 82.85±22.22, respectively). The findings of this study could be applied in empowering the caregivers and designing home care plans for the patients after discharge from the CCU.

Keywords: Activities of daily living, Barthel index, Cardiac care unit, Disability

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Introduction

Cardiovascular diseases (CVDs) rank first in the list of debilitating diseases (1). Chronic diseases lead to a significant decline in performance (2) and CVD is one of the most common chronic diseases known as the major cause of death throughout the world (3). In Iran, a mortality rate of 39.3% due to CVD has been reported (3) and 3,500 patients per 100,000 people will be added, which might be due to the changing age pyramid and aging population (1). On the other hand, the functional status diminishes in older ages (4).

The mean age of the patients who are hospitalized in the cardiac care unit (CCU) is high and according to the literature, the incidence of heart diseases and heart failure elevates by aging (5). A study reported 97/2% of the patients admitted to the CCU to be over 50 years of age (6). After one week of staying in the intensive care unit (ICU), more than 20% of muscle strength is lost.

Therefore, functional ability measurement along with the early onset of movement in patients can reduce the length of hospital stay and improve the quality of life (7). As a result, the implementation of early rehabilitation programs in patients may lead to a decreased level of dependence in daily activities and a reduction in the need for nursing care (8).

Disability depends on a variety of factors and some studies have shown that the incidence of disability augments with age. According to the reports of the World Health Organization (WHO), the rate of disability is rising worldwide involving about 15% of the world population or one out of seven people (9). Disability incidence was found to be 8.9%, 20.6%, and 38% among the age groups of 15–19, 50-59, and over 60 years, respectively (10). Daily living activities (ADLs) refer to the ability to perform routine self-care activities (11) that include basic ADL (BADL), such as bathing, dressing, grooming, feeding, controlling bowel and bladder, transfer, and use of toilet (12).

Choosing the suitable evaluation tool is crucial for assessing the performance status and the selection of an inappropriate tool can result in inaccurate findings causing the impossibility of timely treatment (13). In rehabilitation programs, the evaluation of functional status indicates the effectiveness of therapeutic interventions (7). In other words, the measurement of disability plays an important role in determining general health and the Katz and Barthel indicators are used to assess disability (14).

Various studies evaluated ADL and the results revealed the importance of ADL in determining the level of dependency. However, no investigation assessed ADL and determined dependency after discharge from CCU. On the other hand, both aging and heart disease as an age-related condition reduce functional capacity and elevate disability. Therefore, measuring the ADL in critical care is important to diagnose patients with disability and dependence. Given the lack of studies in Iran in this regard, this study aimed to examine disability in ADLs after discharge from CCU.

Methods

This descriptive cross-sectional study was conducted on 180 patients admitted to the post-CCU ward during January-April 2019. The Participants were selected through the convenience sampling method from the patients hospitalized in the post-CCU ward of the hospitals affiliated to one of the three major medical universities in Tehran, Iran.

Evaluation of the subjects was carried out by the Barthel index and interviewing the patients about their functional status in the two states of the current condition and before admission to the CCU. Considering a 10% drop out, 95% confidence interval, 80% test power, 0.3% correlation coefficient, and the difference between the two scores of Barthel index as μ_1-μ_2 $_=$ 0.44 (SD=1.7, $z_{\alpha/2}$=1.96, and z_{B}=0.84), the sample size for this study was calculated as 180 patients (15).

The inclusion criteria for the present study entailed being admitted to the post-CCU ward regardless of age or gender, having a satisfactory ability for participating in interviews, and not having musculoskeletal or mental disorders. The study exclusion criterion was the lack of a tendency to continue cooperation in the research.

The data collection tools included a questionnaire of demographic characteristics, such as age, gender, body mass index (BMI), and the duration of stay in the CCU, the Barthel index that determines the degree of functional dependence. The Barthel index encompasses two types of activity, namely basic self-care activities and motor activities.

The basic activities include eating, bathing, dressing, controlling bowel movements, controlling the bladder, using the toilet, and personal hygiene. Transferring, walking, and climbing the stairs are known as motor activities. The total score of 100 in the Barthel scale represents complete

independence and zero indicates complete independence (16). In this study, the scores of < 55, 55-90, and 90 < were regarded as disable, relatively dependent, and independent, respectively (7).

The content validity of the Barthel index was evaluated in the previous studies. In addition, the reliability of the Barthel index was determined through the test-retest method with correlation coefficient of 0.936 (95% CI: 0.895-0.965). Internal consistency of the Iranian version of the Barthel index was obtained significant with the Cronbach's alpha of 0.938 and P < 0.001 (17). In the present investigation, the content validity of the survey was assessed through distributing the questionnaire to 10 faculty members of the Faculty of Nursing and Midwifery, Shahid Beheshti University of Medical Sciences (CVR: 0.98, CVI: 0.93). Moreover, index reliability was evaluated using Cronbach's alpha (ICC=0/88, 0/94).

The protocol of this study was approved by the Ethics Committee of the Faculty of Nursing and Midwifery of Shahid Beheshti University of Medical Sciences. Sampling was completed based on the inclusion and exclusion criteria of the study. Following the explanation of the study procedure to the participants and ensuring them regarding data confidentiality, the study was conducted by an interviewer. All the data were analyzed by the nonparametric Wilcoxon test using the SPSS software version 19. P = 0.05 was considered statistically significant.

Results

Our findings demonstrated that the mean age of the patients was 63.04±12.66 years and 50% aged 60-80 years. Furthermore, 61.1% and 38.9% of the patients were male and female, respectively. The mean duration of stay in the CCU was found as 3.31±2.73 days and the mean BMI of the subjects was 27.41±3.7 kg/m². We observed that the incidence rate of disability increased from 5.6% to 13.3% and independence of the patients declined from 81.1 to 60. In the post-CCU ward, the highest and lowest disabilities were in terms of bathing (13.3%) and feeding, respectively. However, in the pre-CCU

Table 1. Frequency of any activity before and after hospitalization at the CCU based on the Barthel index

Barthel Index (BI)		Disability N (%)	Relatively dependent N (%)	Independent N (%)	P-value*
Feeding	Before	0	7 (3.9)	173 (96.1)	<0.001
	After	5 (2.8)	12 (6.7)	163 (90.5)	
Transfer (bed to chair and back)	Before	5 (2.8)	23 (12.8)	152 (84.4)	<0.001
	After	21 (11.6)	23 (12.8)	136 (75.6)	
Personal hygiene	Before	16 (8.9)	0	164 (91.1)	<0.001
	After	30 (16.7)	0	150 (83.3)	
Toilet use	Before	3 (1.6)	16 (8.9)	161 (89.5)	<0.001
	After	20 (11.1)	18 (10)	142 (78.9)	
Bathing	Before	24 (13.3)	0	156 (86.7)	<0.001
	After	61 (33.9)	0	119 (66.1s)	
Mobility	Before	8 (4.4)	19 (10.6)	153 (85)	<0.001
	After	21 (11.7)	33 (18.3)	126 (70)	
Climbing stairs	Before	12 (6.7)	23 (12.8)	145 (80.5)	<0.001
	After	28 (15.6)	46 (25.6)	106 (58.8)	
Dressing	Before	2 (1.1)	23 (12.8)	155(86.1)	<0.001
	After	18 (10)	40 (22.2)	122 (67.8)	
Stool continence	Before	2 (1.1)	4 (2.2)	174 (96.7)	<0.001
	After	5 (2.8)	6 (3.3)	169 (93.9)	
Urinary continence	Before	2 (1.1)	13 (7.2)	165 (91.7)	<0.001
	After	26 (14.4)	7 (3.9)	147 (81.7)	
Total	Before	10 (5.6)	24 (13.3)	146 (81.1)	<0.001
	After	24 (13.3)	48 (26.7)	108 (60)	

*Wilcoxon; 55 > indicated disability, 55-90 indicated relative dependence, 90 < indicated independence

status, bathing (33.9%) was the most prominent disability, while feeding and stool continence (2.8%) had the lowest rate of dependency (Table1).

According to the Barthel score of the patients, compared to their previous condition (assessed by interview), less than 55 individuals indicated the highest level of dependency. There was a 7.6 percent increase in disability and level of dependency. The scores in the range of 55-90 indicated relative dependency augmented by 13.4% after discharge. Moreover, scores above 90 that represented the highest independent condition, decreased from 81.1% to 60% showing a 21.1% elevation in the number of dependent patients after discharge from the CCU (P<0.001) (Table 1).

The mean score of Barthel index in the pre-CCU and post-CCU steps was found as 92.96 and 82.85, respectively. Therefore, the results of this study showed that after discharge from the CCU the patients did not return to the level of activity they had before admission at the CCU. In other words, the level of dependency elevated following hospitalization at the CCU, compared to before admission.

Implications for Practice

In order to implement rehabilitation programs, nurses can use the Barthel index to determine the level of care and identify the patients at risk for dependency or disability. The ability to perform ADLs can make the patients independent leading to accelerated recovery and reduced length of stay in the hospital. Furthermore, the level of independence for ADLs is one of the criteria to assess the eligibility of patients for discharge from the CCU. The findings of this study could be applied in empowering the caregivers and designing the home care plans of patients after discharge from the CCU.

Acknowledgments

Conflicts of Interest

The authors of this study declare no conflict of interest for the present investigation.

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