



Original Article

Association of Early Ambulation and Duration of Hospital Stay in Neurological Indoor Patients

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ABSTRACT

Background: Ambulation is important after surgery to make the patient walk freely. A patient may probably need help before being able to walk freely and reach their ambulation objective. It is critical to get the patient moving as soon as possible after surgery. **Objective:** To find out the association between early ambulation and duration of hospital stay in neurological indoor patients. **Methods:** Data was collected from 191 stroke patients aged between 30 to 60 years, both genders. It was a cross-sectional survey in which data was collected from the University of Lahore teaching hospital and the Ganga Ram hospital in Lahore. Pulse, temperature and body mass index were measured. Patients with severe cognitive impairment and cardiovascular disease were excluded from the study. Non-probability convenient sampling was used to collect the data. The data were analyzed by using the statistical package for the social sciences (SPSS) version 25.0 to provide descriptive statistics. For categorical variables, percentages and frequencies were calculated. For quantitative variables, means and standard deviations were estimated. **Results:** The results regarding the length of stay day showed that the mean and standard deviation were found to be 22.54 ± 1.679 while the curve was normally distributed. The results regarding pre-hospital activity level showed that there were 19.4% of patients were in the general ward, 56.0% were indoors, 16.2% were outdoor, 4.2% were on steps and stairs and 4.2% fell. The results regarding the reason for hospitalization showed that 30.9% of patients were due to high blood pressure, 23.6% were due to ischemic, 20.4% were due to transient ischemic attack and 25.1% were due to pain. **Conclusion:** The findings of the study concluded that early ambulation has a direct impact on the early discharge of patients from the hospital. Moreover, the more distance patients were being ambulated, the speedier and better outcomes were coming in terms of patient's stamina, respiratory rate, heart rate and early discharge.

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INTRODUCTION

Ambulation refers to the ability to walk normally without the need for a cane, crutches or walker.^{1,2} Patients who have just had surgery should be encouraged to begin physical exercise as soon as physically possible. This is because the body's processes slow down after surgery.^{3,4} Even in the absence of medical assistance, ambulation is critical for all age groups, notably for the elderly. A decrease in physical activity leads to a loss of muscle mass and strength. As the condition progresses, mobility becomes more difficult and unpleasant as the muscles tighten and ache.^{5,6}

A reduction in the duration of physical activity results in a loss of muscle mass, strength and the ability of the blood to transport oxygen. Patients who cannot walk without assistance are strongly urged to move about as much as possible. Ambulation is the capacity to walk freely from one location to another with or without assistance.^{7,8} The various benefits of post-operative walking may help all patients, but the elderly stand to profit the most. One of the most essential things older adults can do to lower their risk of postoperative complications is to get up and walk about as soon as possible after surgery.^{9,10}

Patients in long-term critical care units may be diagnosed with a variety of disorders, some of which require the use of a respirator. The patient is allowed to enjoy the bed's amenities as part of the usual treatment in the critical care unit.¹¹ The expanding usage of a category of therapies known as "energy healing" is at the forefront of the surge in complementary therapies being accessed and integrated into their medical care.¹² The nursing staff and other medical workers caring for the patient may conclude that the patient would benefit from a lengthier time of rest

than normal due to the severity of the patient's illness.^{13,14} The breakdown of muscle tissue that happens after six hours of bed rest may result in a forty percent reduction in strength in only one week. Muscle tissue begins to degenerate after six hours of inactivity.¹⁵⁻¹⁷ early mobility has been demonstrated to have several benefits, including a reduction in Intensive Care Unit (ICU) acquired weakness, an increase in functional recovery while still in the hospital, a longer walking distance upon hospital discharge, and a shorter overall hospital stay.^{18,19} Encouragement of very ill patients to get up and move about more rapidly has been demonstrated to mitigate the detrimental consequences of prolonged bed rest.

The term "mobilization" in the ICU refers to any motion that is progressively introduced to the patient. This might range from slight passive motions to full ambulation.^{20,21} The technique for allowing patients to move about in neurological intensive care units varies from that used in medical intensive care units.²² Early exercise and extended sitting upright have been demonstrated to assist patients in neurological critical care units.^{4,23} Exercising in the neuro-intensive care unit has been found to reduce hospital stays as well as the prevalence of ventilator-associated pneumonia and other hospital-acquired infections.⁶

This research is significant because it uncovers practice patterns regarding the preference for early ambulation.^{19,24} The association between early ambulation and shorter hospital stays benefits patients in several ways. For example, a shorter length of stay may reduce costs, the number of caregivers needed and the amount of labor required by physicians.²⁵ A longer stay at the hospital may increase costs, the number of caregivers and the amount of labor required by

physicians. If a patient ambulates early, his stay at the hospital can get shorter, and discomfort and burden of expenses can be reduced which will be beneficial for the patients. The purpose of the study was to find out the association between early ambulation and the duration of hospital stay in neurological indoor patients.

METHODS

Data was collected from 191 stroke patients aged between 30 to 60 years, both genders. It was a cross-sectional survey in which data was collected from the University of Lahore teaching hospital and the Ganga Ram hospital in Lahore. Pulse, temperature and body mass index were measured. Patients with severe cognitive impairment and cardiovascular disease were excluded from the study. Non-probability convenient sampling was used to collect the data. The data were analyzed by using the statistical package for the social sciences (SPSS) version 25.0 to provide descriptive statistics. For categorical variables, percentages and frequencies were calculated. For quantitative variables, means and standard deviations were estimated.

RESULTS

According to the study findings, the mean and standard deviation for age were determined to be 43.91 ± 8.445 with a normally distributed curve. The studies also revealed a linear age distribution studies also revealed a linear temperature distribution.

Pulse rate measurement: The pulse rate measurements showed a mean and standard deviation of 80.05 ± 12.01 , with a consistently distributed curve. The findings also suggested that the curve was normal. The mean and standard deviation for O_2 Saturation were 96.08 ± 1.353 and the curve was normally

distributed according to the data. According to the data, the mean and standard deviation for weight were 80.04 ± 5.629 and the curve was regularly distributed.

BMI measurement: According to the data, the mean and standard deviation for body mass index were 29.26 ± 1.91 and the curve was normally distributed. The distance traversed in one ambulation session meter yielded a mean and standard deviation of 19.60 ± 5.74 with a regularly distributed curve. The mean and standard deviation of the duration of each day's stay was 22.54 ± 1.679 and the curve was normally distributed. The results regarding pre-hospital activity level showed that there were 19.4% of patients were in the general ward, 56.0% were indoor patients, 16.2% were outdoor patients, 4.2% were steps and stairs and 4.2% fell. The results regarding the reason for hospitalization showed that 30.9% of patients were admitted due to high blood pressure, 23.6% were due to ischemia, 20.4% were due to transient ischemic attacks and 25.1% were due to pain. (Table I).

The results regarding the start of ambulation showed that 62.8% of patients had started from 1st day, 14.1% from 2nd day, 13.6% from 3rd day and 9.4% from 4th day or later. The results regarding previous surgery showed that there were 48.2% of patients had previous surgery and 51.8% had no previous surgery. There were 35.6% had hypertension and 64.4% had no hypertension and 27.7% had diabetes and 72.3% had no diabetes (Table I). The findings regarding the number of ambulation sessions showed that 40.8% of patients completed one ambulation session, 44% completed two sessions and 15.2% three sessions. The results regarding walking aid showed that 45.5% of patients used a cane and 54.5% of patients were dependent.

Table I: Descriptive Statistics

Variables		Frequency	Percent
Pre-Hospital Activity Level	General ward patients	37	19.4
	Indoor patients	107	56.0
	Outdoor patients	31	16.2
	Steps and Stairs	8	4.2
	Falls	8	4.2
Previous Surgery	Yes	92	48.2
	No	99	51.8
Socioeconomic status	Lower	61	31.9
	Middle	70	36.6
	Upper	60	31.4
Total		191	100.0

Table II: Association Between Length of Stay and Start of Ambulation

	Mean	Standard Deviation	Pearson's R	Spearman Correlation	p-value
Length of Stay (Days)	22.54	1.67	-.004	-.005	0.043
Start of Ambulation	1.70	1.02			

The results regarding the association between length of stay and start of ambulation showed that the mean and standard deviation found to be 22.54 ± 1.67 for the length of stay and 1.70 ± 1.02 for the start of ambulation while Pearson's correlation value -0.04 and Spearman's correlation -0.005 showed a significant association between these (p -value < 0.05). A

moderate negative correlation was found which means that if the start of ambulation increases then the length of stay decreases (Table II).

DISCUSSION

There was an association between greater treatment quality connected with early

intensive evidence-based care and a shorter duration of stay in this population-based follow-up study of stroke patients assigned to specialized stroke units. According to the findings of the study, this relationship is significant. So according to Poletto SR et al, the main goal was accomplished by proving that early mobilization (within 24 to 48 hours of stroke) is possible and secure in the emergency department setting.¹

All of the sensitivity tests looked to be consistent with a dose-response relationship, which appeared to be the most likely explanation for the observed pattern. Furthermore, the association persisted even when the reference group was limited to patients who met the certain quality of care criteria within the first 48 hours of hospitalization. According to Yen HC et al. the dose-matched therapy in the standard care protocol, particularly in acute intracerebral hemorrhage stroke patients, facility starting within 24 to 72 hours of stroke onset. These findings showed that the early mobilization versus standard early rehabilitation strategy yielded noticeably higher FIM motor scores and may hasten the recovery of ADLs within three months after intracerebral hemorrhage.¹⁰

According to the study findings, the great majority of neurological critical care unit patients received access to at least one kind of physical activity. This result is supported by the mobilization tactics utilized in acute care institutions in India, Italy and Australia respectively. According to Paolucci S et al. at the 1-year follow-up in this trial, over 40% of the patient's mobility status had decreased. There could be many causes for this, including the mobility level upon discharge not being sufficiently consolidated to be maintained at home, logistical issues, environmental limitations or comorbidities that made it more difficult.¹⁷

Several physiotherapists performed mobilizations on the individuals throughout the trial. Daily mobilization should take place once or twice a day according to the instructions. Although 33 respondents said they worked overnight in neurological critical care units, just a few (n=8) physiotherapists helped patients with mobility. A much smaller percentage of physiotherapists worked overnight in European critical care units. According to these numbers, a far higher proportion of physiotherapists work at night in Europe than in the United States. About 43.9% of physiotherapists assisted their patients with mobility exercises on weekends and holidays. Only 41% of physiotherapists said they used the tilt table sometimes when it was beneficial to the patient's rehabilitation.²⁶

In this study, the data collection was difficult because the questionnaire was to explain neurological impaired patients. The patient who was already doing exercise before being hospitalized, performed better but could not be separated due to the limitation of the research design.

CONCLUSION

The findings of the study concluded that early ambulation has a direct impact on the early discharge of patients from the hospital. Walking may help a wound heal faster because it increases blood flow to the area. It has been shown that early mobilization improves a variety of patient outcomes and is strongly associated with shorter hospital stays. Moreover, the more distance patients were being ambulated, the speedier and better outcomes were coming in terms of patient's stamina, respiratory rate, heart rate and early discharge. All hospitalized patients must be mobilized in ICUs if not contraindicated so that mobilization starts and early discharge from the hospital occurs.

DECLARATIONS

Consent to participate: Written consent had been taken from patients. All methods were performed following the relevant guidelines and regulations.

Availability of data and materials: Data will be available on request. The corresponding author will submit all dataset files.

Competing interests: None

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Authors' contributions: All authors read and approved the final manuscript.

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