Functional Outcomes of Spinal Cord Injury (SCI) Patients after Completing Physical Rehabilitation Program

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Abstract

Objective: To assess the functional outcome of Spinal Cord Injury (SCI) patients after completing Physical Rehabilitation program. Method: A descriptive cross- sectional study design was used for this study. Total 100 samples were selected through purposive sampling method for this study from Spinal Cord Injury (SCI) unit of Centre for the Rehabilitation of the Paralysed (CRP). Data was collected by face to face interview with semi-structured questionnaire. In this study modified Functional Independence Measure (FIM) scale was used in a prescribed form and it was analyzed through using updated version of SPSS. Results: It has found that male (91%) were predominantly higher than female (9%). Most of the patients were young age group and mean age of the patients (33±12) years. Majority of the patients had come from rural areas and they were engaged on agricultures (29%) activity. Traumatic was the main cause following spinal cord injury and traumatic paraplegic were 73%. Significant improvement were observed on active exercise, Rolling, Lying to Sitting, Sitting to Lying, Prone Lying, Sitting balance, Lifting in Wheelchair, Lifting on bed, Lifting to forwards, Lifting to Sideways, Lifting to Backwards, Wheelchair to Bed, High and Low Transfer, Wheelie, Up and Down Slops and Rough Ground. Conclusion: Functional Independent Measure (FIM) is the standard measure of activity of daily living (ADL). So FIM may show the outcome of ADLs after spinal cord injury.

Keywords: Functional outcomes, Spinal cord injury, Physical rehabilitation program.

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Introduction

Spinal Cord Injury (SCI) is damage of the spinal cord that results in loss of function such as mobility or feeling (Spinal cord injury, 2010). It is a major disabling condition often affecting young and healthy individuals around the world (Ackery et al., 2004).In a developing country like Bangladesh, life expectancy of spinal cord injured persons is much lower than in a developed country (Razzak et al., 2011). SCI continues to be a major cause of disability throughout Asia as well as in Bangladesh (Islam et al., 2011). In Asia, the incidence rates of SCI range from 12.06 to 61.6 per million, while the average age range of affected persons is 26.8 to 56.6 years (Ning et al., 2012).

Rational of the study

Spinal cord injury continues to be major causes of disability throughout Asia. As spinal cord injury needs long period of time for rehabilitation so it may create burden in the community, society as well as the country. Spinal cord injuries are major public health problem in Bangladesh (Hoque et al.,1999).

In Centre for the rehabilitation of Paralysed (CRP), functional independence measure (FIM) used for the patient with spinal cord injuries. But in Bangladesh no one can conduct this type of study on functional independence measurement (FIM) scale. The goal of medical rehabilitation is to enhance patients' quality of daily living and build capacity to function independently. Measurement of functional independence in patients with disabilities is an essential component of the rehabilitation process. To find out the outcomes of rehabilitation program in Functional Independence Measure (FIM) is importance to measure the patient status during completing rehabilitation program.

Methodology

Study Design: Descriptive cross- sectional study design was undertaken to assess the functional outcomes of SCI patient after completing Physical Rehabilitation program.

Study site: The study was conducted at the Centre for the Rehabilitation of the Paralysed (CRP).It is the only

specialized Rehabilitation Centre for the patients with spinal cord injury in Bangladesh and also is the biggest Spinal Cord Injury Rehabilitation center in the South Asia.**Data Collection period:** The data was collected from January 2010 to August 2010.

Study Sample: Total 100 Spinal Cord Injury patients were taken as sample for the study according to inclusion criteria.
Inclusion criteria-
Patients with traumatic Spinal Cord Injury
Patients who completed the Rehabilitation program

Results: TheSocio-demographicinformations of the participants were as follows:

Age & Sex Distribution

The study result showed that among the participants 20, 30, 35, 40, 45 years were 6% (n=6), 7% (n=7), 10% (n=10), 8% (n=8) and 8% (n=8) respectively. Male was pre-dominantly higher than female. Out of 100 participants 91 were male and 9 were female.

Living Place

Most of the participants who are suffering from spinal cord injury were from rural areas. Among the participants96%(n=96) were from villages and rest of 4% (n=4) were from urban areas.

Educational Status

Out of 100 participants, 68% (n=68) were primary level that means have the basic knowledge to read and write. After that illiterate was the second most common and number was 16% (n=16).

Occupation

Among 100 participants29% (n=29) were farmer, Businessman were the second most common 18% (n=18) and daily laborer were the third one 15% (n=15).

Impairment grading in ASIA Scale during admission

In this study among 100 participants, Complete - A was higher it was 82% (n=82) and Incomplete- B were 5% (n=5), Incomplete -C 5 %(n=5), Incomplete-D 7% (n=7).

Impairment grading in ASIA Scale during discharge

Among 100 participants, Complete - A was 58% (n=58) and incomplete - D was 21% (n=21).

Functional Independence Measure (FIM) relate information

Discharge Scores of Stretching

Among the participants 53% (n=53) becam independent in stretching after completing rehabilitatio and 20% (n=20) of the participants needs minima assistance in stretching.

Discharge Scores of Active Exercise

Out of 100 participants 60% (n=60) became independent in active exercise after completing rehabilitation and 16% (n=16) needs minima assistance in active exercise.

Discharge Scores of Rolling

Out of 100 participants 74% (n=74) became independent in rolling after completing rehabilitation and 7% (n=7) needs minimal assistance in rolling.
Discharge Scores of Lying to Sitting
Out of 100 participants 70% (n=70) became independent in lying to sitting after completing rehabilitation and 17% (n=17) needs moderate assistance in lying to sitting.

Discharge Scores of Sitting to Lying

Out of 100 participants70% (n=70) became independent in sitting to lying after completing rehabilitation and 17% (n=17) needs moderate assistance in sitting to lying.

Discharge Scores of Prone Lying

Among 100 participants71% (n=71) became independent in prone lying after completing rehabilitation and 15% (n=15) needs moderate assistance in prone lying.

Discharge Scores of Sitting Balance

Among 100 participants 70% (n=70) became independent in sitting balance after completing rehabilitation and 10% (n=10) needs moderate assistance in sitting balance.

Discharge Scores of Lifting in Wheelchair

Out of 100 participants70% (n=70) became independent in lifting in wheelchair after completing rehabilitation and 12% (n=12) needs moderate assistance in lifting in wheelchair.

Discharge Scores of Lifting on Bed

Within 100 participants 67% (n=67) became independent in lifting on bed after completing rehabilitation and 15% (n=15) needs moderate assistance in lifting on bed.

Discharge Scores of Lifting to Forwards

Out of 100 participants 62% (n=62) became independent in lifting to forwards after completing rehabilitation and 15% (n=15) needs moderate assistance in lifting to forwards.

Discharge Scores of Lifting to Sideways

In this study out of 100 participants 63% (n=63) became independent in lifting to sideways after completing rehabilitation and 15% (n=15) needs moderate assistance in lifting to sideways.

Discharge Scores of Lifting to Backwards

Among 100 participants 63% (n=63) became independent in lifting to backwards after completing rehabilitation and 15% (n=15) needs moderate assistance in lifting to backwards.

Discharge Scores of Wheelchair to Bed

Out of 100 participants 62% (n=62) became independent in wheelchair to bed after completing rehabilitation and 14% (n=14) needs moderate assistance in wheelchair to bed.

Discharge Scores of High and Low Transfer

Among 100 participants 40% (n=40) became independent in high and low transfer after completing rehabilitation and 16% (n=16) needs minimal assistance in high and low transfer.

Discharge Scores of Wheelie

Within 100 participants 43% (n=43) became independent in wheelie after completing rehabilitation and 13% (n=13) needs moderate assistance in wheelie.
Discharge Scores of Up and Down Slops

Out of 100 participants 40% (n=40) became independent in up and down slops after completing rehabilitation and 15% (n=15) needs moderate assistance in up and down slops.

Discharge Scores of Rough Ground

Out of 100 participants 40% (n=40) became independent in rough ground after completing rehabilitation and 15% (n=15) needs moderate assistance in rough ground.

Discharge Scores of Small Steps

In this study out of 100 participants 22% (n=22) became independent as well as 22% (n=22) patients unable to do small steps after completing rehabilitation. 16% (n=16) needs moderate assistance in small steps.

Discharge Scores of Sit to Stand

Among 100 participants 30% (n=30) unable to do sit to stand after completing rehabilitation. 17% (n=17) needs maximal assistance in sit to stand.

Discharge Scores of Standing Balance

In this study out of 100 participants 47% (n=47) unable to do sit to stand after completing rehabilitation. 15% (n=15) participants became independent with assisted device in standing balance.

Discharge Scores of Standing Table

Out of 100 participants 34% (n=34) unable to do standing on standing table after completing rehabilitation. 23% (n=23) needs minimal assistance in standing table.

Discharge Scores of Tilt Table

Out of 100 participants 81% (n=81) unable to do tilt table after completing rehabilitation. 7% (n=7) of the participants became independent in tilt table after completing rehabilitation.

Discharge Scores of Flat Surface

Out of 100 participants 59% (n=59) unable to do flat surface after completing rehabilitation. 16% (n=16) of the participants became independent with assisted device in flat surface after completing rehabilitation.

Discharge Scores of Rough Surface

Within 100 participants 63% (n=63) unable to do rough surface after completing rehabilitation. 10% (n=10) of the participants needs minimal assistance as well as independent with assisted device in rough surface after completing rehabilitation.

Discharge Scores of Steps/ Slopes

Among 100 participants 66% (n=66) unable to do steps/ slopes after completing rehabilitation. 13% (n=13) of the participants needs minimal assistance in steps/slopes after completing rehabilitation.

Discharge Scores of Fitting Brace

In this study 100 participants 48% (n=48) became independent to fitting brace after completing rehabilitation. 23% (n=23) of the participants unable to do fitting brace after completing rehabilitation.

Discussion:

Most of the participants were young age and their range was 8 to 65 years. Mean age of the participant was 33 years (±12). Same age group was also obvious in Asia such as India, Pakistan (Rathore et al., 2008). These young people were high because this was the age when people are engage in earning as well as in services. Male was predominantly higher than female which also similar in the study conducted in Asia such as Bangladesh, India and Pakistan(Rathore et al., 2008).

Functional Independence Measure (FIM) records the severity of disability of rehabilitation patients. The FIM employs 18 items in which participants degree of disability and burden of case are apparent. Each item is rated according to the seven level classifications. Rating are accumulated across items to indicate severity of disability and performance each items is rated by the physiotherapist, first at admission of rehabilitation and second at discharge of rehabilitation these ratings are the empirical basis for the examination of the measurement properties of the FIM. According to the admission rating and discharge rating which were required for mathematical manipulation of the measures(Marino &Goin, 1999). FIM shows the effective result after completing rehabilitation on Stretching, Active exercise, Rolling, Lying to Sitting, Sitting to Lying, Prone Lying, Sitting balance, Lifting in Wheelchair, Lifting on bed, Lifting to forwards, Lifting to Sideways, Lifting to Backwards, Wheelchair to Bed, High and Low Transfer, Wheelie, Up and Down Slops and Rough Ground. Significance progress was found among these functional activities after completed rehabilitation program. FIM rating scale shows 53% (n=53) participants became independent in stretching and 60% (n=60) participants became independent in Active Exercise. 74% (n=74) participants became Independent in Rolling at FIM after completed rehabilitation. In lying to sitting and sitting to lying for these two point 70% (n=70) participants became independent after completed rehabilitation. 71% (n=71) participants show independent in prone lying and 70% (n=70) independent in sitting balance at FIM Scale. Significant improvement also show in lifting in wheelchair and the amount was 70% (n=70). 67% (n=67) of the participants shows significant improvement in lifting on bed. In lifting forwards 62% (n=62) of the participants became independent after completed rehabilitation. 63% (n=63) of the participants became independent in lifting sideways and lifting backwards after rehabilitation. 62% (n=62) of the participants became independent in wheelchair to bed. In high and low transfer 40% (n=40) of the participants became independent after completed rehabilitation. 43% (43) of the participants became independent in wheelie. In up and down slops as well as rough ground 40% (n=40) of the participants became independent after completed rehabilitation.

Rehabilitation program should focus on maximizing a person's ability to be independent and assist in making decision about treatment and goals (Hossain et al., 2008).

Conclusion

Spinal cord injury is a public health problem in Bangladesh. Major of cases traumatic spinal cord injury observed in our country which may be preventable. Appropriate rehabilitation program may also enhance the quality of life for the person with spinal cord injury. Full spinal cord injury rehabilitation program may contribute to good Activity of Daily Living (ADL). It promotes improvement in ADLs by enhancing functional activity which will provide independency. Functions might vary for country context due to different reasons such as environment, technology, lifestyle, occupation etc. It is very important to measure the function and independency of a spinal cord injured person after rehabilitation.

Recommendation

Further comparative study could include t-test find out the effectiveness of functional independence measure (FIM) which may test before starting rehabilitation and after rehabilitation.

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