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Relationship between cognition and functional performance with balance in post stroke patients- observational study

Ashwini N Sakhardande, Mahendra Shende

Dept. of Neurosciences Physiotherapy, Dr. A. P. J. Abdul Kalam College of Physiotherapy, loni, Maharashtra, India

Abstract
Aim of the study is to find out relationship of cognition and balance as well as functional performance and balance in post stroke patients. Total 30 subjects of stroke were selected aged between 25-65 years. They were selected according to inclusive and exclusive criteria and written consents were taken. Participants were assessed for mini-mental status examination for cognition, functional independence measure for functional performance, berg balance scale for balance after stroke incidence. MMSE and FIM are able to explain the balancee in post stroke patients. There is significant relationship between cognition and balance as well as functional performance and balance. cognition and functional performance are some of the factor responsible for balance in post stroke patients and might contribute to balance related problems.

Keywords: mini-mental scale, berg balance scale, functional independence measures

1. Introduction
Stroke is the sudden loss of neurological function caused by an interruption of the blood flow to the brain which is associated various neurological sogns and symptoms which includes alrteration in tone, loss of superficial and deep sensations, weakness, abnormaal synergy patterns, abnormal reflexes, altered co-ordinations, impaired balance, speech and swallowing difficulties. Postutral control disorders are common in patients after post-acute stroke. Impaired postural control is one of the major factors influencing functional performance after stroke. Mobility limitations and cognitive impairments, both common with aging, reduce level of physical and mental activity. Dysfunction of balance control is one of the most common physical impairment observed after stroke. Cognition is the act and process of knowing, including, awareness, reasoning, judgement and memory.

For Cognition: The mini-mental state examination is a sensitive, valid and reliable 30 point questionnaire the is used extensively in clinical and research settings to measure cognitive impairments. Its used for dementia.

Balance: Before 1989 it was 38 balance items. In 1995 Berg K et al found and succeed in research consist of 14 item scale so it named as berg balance scale. These items maintain positions and task of varying levels of difficulty.

Functional Performance: FIM consist of 18 items with 2 subjects- motor and cognition. This scale assess the physical and cognition disability. Its used to measure the patients progress and assess rehabilitation outcomes.

2. Material and Methods
30 subject were taken in this observational study. In this study measure of cognition and balance as well as functional performance and balance were taken to establish the relationship between the above two parameters with the age group of 25-65 years. The information written consent was obtained from the participants regarding the procedure prior to the study. Materials used are towards pen, paper, bed, scale measurements, consent form, MMSE, BBG, FIM procedure is divided by 3 scale. 1. Cognition function of the subject was assessed by mini-mental status examination test. MMSE tests the in dividuals orientation, attenstion, calculation, recall, language and motor skills. Each section of the test involes a related series of questions or commands. The patients receives a maximum score of 30 points. A score below 20 usually indicates cognitive impairments. 2. Functional performance of the subjects was assessed by functional independence measures. Score taken on the level of assistance required for an individual to perform activities of daily living. Scale include 18 items, of which 13 IEMS are physical domains based on barthel index and 5 items cognitive items. Each items scored from 1 to 7 based on level of independence. 1 consist of total independence and 7 consist of complete independence. Possible scores range from 18 to 126. 3. Balance was assessed by berg balance scale. Consist of 14 items. Zero represent inability to complete the item and 4 represent the ability to complete the task independently. Each items scored from 0-4 for a maximum of 56 points.

3. Result and Discussion
The collected data was analysed by using unpaired ‘t’ test. Demographic characteristics:

Table 1: Demographic profile of all participants.

Age	25-65
Gender ratio (boys/girls)	16:14

Table 2: Comparison of FIM and BBS in post stroke.

	FIM	BBS	P Value	T Value	Result
Mean+- SD	85.07	21.73	0.0001	13.8183	Extremely significant

Mean value for FIM and BBS as follows-
Mean +-SD is to be 85.07 for FIM
Mean +- SD is to be 21.73 for BBS
t value is 13.8183
p value is 0.0001
p value and statistical significant p value is less than 0.0001 and this difference is considered to be extremely significant.

Table 3: comparison of BBS and MMSE in post stroke.

	MMSE	BBS	P Value	T Value	Result
Mean+-SD	22.07	21.73	0.0001	14.9000	Significant

Mean value for MMSE and BBS as follows-
Mean +- SD is to be 22.07 for MMSE
Mean +- SD is to be 21.73 for BBS
t value is 14.9000
P value is 0.0001
P value and statistical significance p value is less than 0.0001 and this difference is considered to be extremely significant.

The study conducted and sampling was done from the individual came to the neurosciences department in Dr. A. P. J. Abdul kKalam College of Physiotherapy,loni. The categories of sampling were collected that is performed in FIM, MMSE, and BBS. The test was performed successfully amongst the adolescent age group of 25-65 years which includes both male and female. A comparison of FIMS and BBS also comparison of BBS and MMSE among post stroke patients. In main criteria of study is to be check which test is highly significant for patients with post stroke.

4. Conclusion

The present study concluded between acute and subacute post stroke patients amongst the age group of 25-65 years shown extremely significant association between Functional Independence measure and berg balance scale.

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