

Effectiveness of Fullerton Advanced Balance Scale and Berg Balance Scale in Stroke Patients

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Abstract—Background: The study aimed to find the Effectiveness of Fullerton advance balance scale and Berg balance scale in stroke patients in both the male and female and also no limitation of age group. Stroke is the one of the common problems affecting the young generation as well as the middle and geriatric age group. To find out which scale is more useful to Assis stroke patients. With the help of statistician, the sample size is calculated and that is 58. Then participants are divided equally that is 29 for Fullerton advance balance scale and 29 for Berg balance scale. So, I will be calculated the total score of scale and will calculate the mean of the score. After that which scale score mean is more this scale is better than other scale. This study proved that berg balance scale is more effective than Fullerton advance balance scale. **Method:** Comparative study, after getting institutional ethical committee approval D.Y. Patil education society deemed to be university kolhapur and Wiins hospital Kolhapur concerning subjects will be approached and purpose of study explained, written consent will be taken for subject willing to participate. So, 58 participants were there for study. I had equally divided them in two groups. For half group participants were asked to perform fullerton advance balance scale and another half group participants were asked to perform berg balance scale. Data was analysed by using MS excel software. **Result:** Study shows 25 male participants and 4 female participants with percentage 86% and 14% of berg balance scale. 17 male participants 12 female participants with percentage 59% and 41% of Fullerton advanced balance scale. The mean and standard deviation of Fullerton advanced balance scale is 30.34% and 16.57%. It shows berg balance scale is more effective than Fullerton advanced balance scale. **With significant decrement 0.0043**
conclusion: Berg balance scale and Fullerton advance balance scale is quite equal for assessing the stroke patient. However, berg balance scale is comparatively

better than the fullerton advance balance scale for assessing stroke patient.

Index Terms—Stroke, fullerton advance balance scale, berg balance scale.

I. INTRODUCTION

A stroke, also known as a cerebrovascular accident is a medical condition that occurs when the blood supply to a part of the brain is interrupted or reduced, resulting in the impairment or loss of brain functions. It is a medical emergency that requires immediate attention, as it can cause severe damage to the brain and potentially be life-threatening. The brain relies on a constant supply of oxygen and nutrients carried by blood to function properly. When a stroke occurs, this supply is disrupted due to the blockage of a blood vessel (ischemic stroke) or the rupture of a blood vessel causing bleeding into the brain (hemorrhagic stroke). As a result, the affected brain cells begin to die within minutes due to the lack of oxygen a peutrients Stroke is one of the biggest causes of death in all over would and the biggest reason for long term disability! The definition of stroke used in assessing its impact will be that used by the World Health Organization: 'a syndrome of rapidly developing clinical signs of focal (or global) disturbance of cerebral function, with symptoms lasting 24 hours or longer or leading to death, with no apparent cause other than of vascular origin!' 21 People with balance disease may be unstable in many different daily life situations like for example while seat to stand while standing. There are more than 3.5 million survivors in the United States alone, and the disease remains a major cause of

disability. In practice, 'stroke' refers to a root of conditions caused by the ruptured of blood vessels that supplying the brain (31 By the year 2050, 80% of strokes will occur in low- and middle-income countries. [1] Differences in stroke rates have been noted from some countries like USA, France, Northern Portugal and Spain between urban and rural populations. To check the effectiveness of the both balance scale that is Fullerton advanced balance scale and Berg balance scale in stroke patients it will get more sufficient to get rid from stroke condition [4]

Berg balance scale is strongly associated with reduced lower extremity function, but they do not include items that evaluate impairments in multiple sensory systems such as the vestibular system and vision, which have been found to contribute to balance and a heightened fall risk in independently functioning older adults. [5] The FAB scale is a performance-based measure to identify the changes in balance and to assess the multiple measures of balance. In addition to evaluating the multiple measures of balance such as both static and dynamic environments, sensory reception and integration, and anticipatory and reactive postural control, the Fullerton advanced balance scale includes measures that are specifically designed to change the balance abilities of independently functioning older adults. Fullerton advanced balance scale

The Fullerton advanced balance scale is a performance-based measure that comprehensively addresses the multiple dimensions of balance The scale was specifically designed for use with independently functioning older adults. The task of Fullerton advanced balance scale is Stand with feet together and eyes closed, reach forward to retrieve an object (pencil) held at shoulder height with outstretched arm, turn 360 degrees in right and left directions, step up onto and over a 6-inch bench, Tandem Walk, stand on one leg, stand on foam with eyes closed, Two-footed jump, walk with head turns, Reactive postural control. These are the 10 tasks patients were performed. According to there capacity patients were did task. While they are performing the task I had giving them gradings, after all 10 tasks I will be calculated all the grading numbers which they had while performing the tasks. As follows I give same procedure for all participants which are performing Fullerton advance balance scale.

Berg balance scale contains 14 static and dynamic activities related to everyday living. 8 The BBS assesses balance and risk for falls through direct observation of the participant's performance by trained health care professionals in a variety of settings. The BBS tasks progress in challenges: from sitting to standing, standing with narrow base of support, and finally to tandem and single-leg stance. Scoring is on a 5-point ordinal scale with 0 indicating an inability to complete the task and 4 as independent with completing the task. The scale takes approximately 10 to 20 minutes to complete requiring minimal equipment (chair, stopwatch, ruler, and step) and minimal space.

The tasks of berg balance scale are Sitting to standing, standing unsupported, sitting with back unsupported but feet supported on floor or on stool, standing to sitting, transfers, standing unsupported with eye closed, standing unsupported with feet together, reaching forward with outstretched arm while standing, pickup objects from floor from a standing position, turning to look behind over left and right shoulders while standing, turn 360 degrees, palce alternate foot on step or stool while standing unsupported, standing unsupported one foot in front, standing on one leg there are 14 tasks patients were performed. According to there capacity patients were did tasks. While they are performing the task I will be giving them gradings, after all 14 tasks I had calculated all the grading numbers which they had, while performing the tasks. As follows I give same procedure for all participants which are performing berg balance scale.

II. METHODOLOGY

Materials- Data collection paper, Consent form, Berg balance scale, Chair, Pen, Pencil, Writing board. The experimental Comparative study done for duration 6 Months at Kolhapur city with Sample size of 58. The sample size was calculated by using prevalence: Margin of error is 1%

Inclusion criteria: Subjects who are willing to participate in study and provide informed consent, Diagnosis of stroke, Both female and male subjects. Exclusion criteria: Hemodynamic unstable patients, Uncooperative patients, pre-existing medical condition like heart disease, Severe disability,

Comatose patients, Patients who are not willing to participate in study.

In the present study 58 participants took part in this experimental study which conducted from October 2023 to March 2024.

Participants were selected according to inclusive criteria and participants were selected according to the diagnosis of condition. After approved the study protocol by Research Ethical committee of D. Y. Patil Education society Kolhapur. The whole research / research protocol was explaining to the participants.

After receiving their written and verbal consent participants were divided into 2 groups, 29 participants performed Fullerton advanced balance scale and other 29 participants are performed berg balance scale.

For first group which are performing Fullerton advanced balance scale they have to do the tasks which are there in the Fullerton advanced balance scale. The task of Fullerton advanced balance scale is Stand with feet together and eyes closed, reach forward to retrieve an object (pencil) held at shoulder height with outstretched arm, turn 360 degrees in right and left directions, step up onto and over a 6-inch bench, Tandem Walk, stand on one leg, stand on foam with eyes closed, Two-footed jump, walk with head turns, Reactive postural control. These are the 10 tasks patients were performed. According to there capacity patients were did task. While they are performing the task I had giving them gradings, after all 10 tasks I will be calculated all the grading numbers which they had while performing the tasks. As follows I give same procedure for all participants which are performing Fullerton advance balance scale.

Then the remaining 29 participants which are going to perform Berg balance scale they have to do some tasks which are there in berg balance scale. The tasks of berg balance scale are Sitting to standing, standing

unsupported, sitting with back unsupported but feet supported on floor or on stool, standing to sitting, transfers, standing unsupported with eye closed, standing unsupported with feet together, reaching forward with outstretched arm while standing, pickup objects from floor from a standing position, turning to look behind over left and right shoulders while standing, turn 360 degrees, palce alternate foot on step or stool while standing unsupported, standing unsupported one foot in front, standing on one leg there are 14 tasks patients were performed. According to there capacity patients were did tasks. While they are performing the task I will be giving them gradings, after all 14 tasks I had calculated all the grading numbers which they had, while performing the tasks. As follows I give same procedure for all participants which are performing berg balance scale.

A written consent was taken from the participants. A brief demographic data Including name of patient, chief complaint, gender, age, height, weight, berg balance scale and Fullerton advanced balance scale were use to assess the participants. The interpretation of the study was done on the basis of Fullerton advanced balance scale and berg balance scale. The study was concluded by statistical analysis of the results of scales.

III. RESULTS

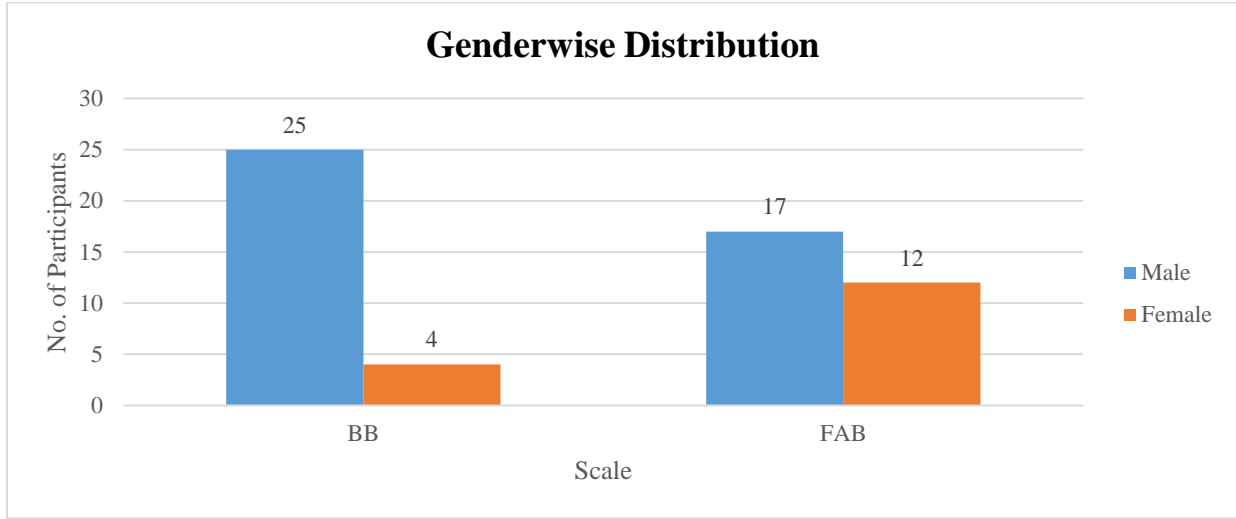
In this observational study total 58 participants were selected, they did not have Hemodynamic unstable patients, Uncooperative patients, pre-existing medical condition like heart disease, Severe disability, Comatose patients, Patients who are not willing to participate in study. The result obtained assessment of Fullerton advanced balance scale and berg balance scale. Data obtained in this study were annualised statistical by Method.

Gender	BB		FAB		Total
	No. of Participants	Percentage	No. of Participants	Percentage	
Male	25	86%	17	59%	42
Female	4	14%	12	41%	16
Total	29	100%	29	100%	58

Table-1: Number of male and female participants and its percentages of Berg balance scale and Fullerton advanced balance scale.

In the table 1 it shows 25 male participants and 4 female participants with percentage 86% and 14% of berg balance scale.

And 17 male participants 12 female participants with percentage 59% and 41% of Fullerton advanced balance scale.



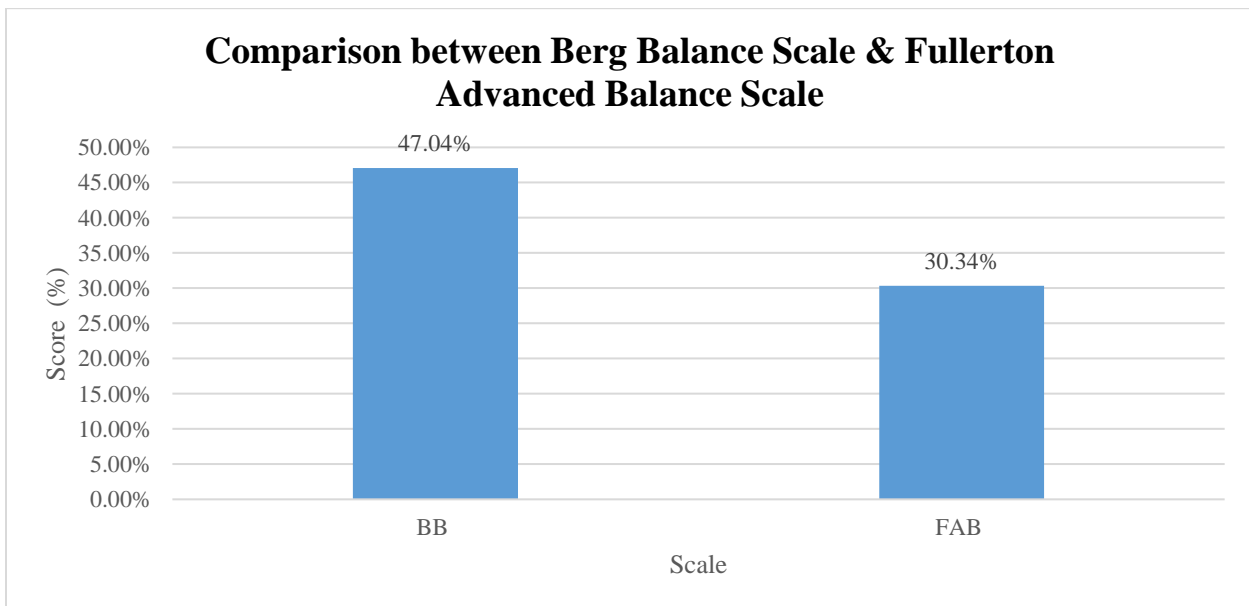
Graph-1

Scale	Mean	SD	P value
BB	47.04%	28.58%	0.0043
FAB	30.34%	16.57%	

Table-2: Mean and SD of berg balance scale and Fullerton advanced balance scale

In table 2 it shows mean and standard deviation of berg balance scale and Fullerton advanced balance scale. The mean and standard deviation of berg balance scale is 47.04% and 28.58%.

The mean and standard deviation of Fullerton advanced balance scale is 30.34% and 16.57%. It shows berg balance scale is more effective than Fullerton advanced balance scale. With significant decrement 0.0043.



Graph-2

IV. DISCUSSION

After receiving approval letter from Ethical committee of D. Y. Patil Education society Kolhapur. With the help of statistical analysis, the sample size was calculated and the sample size is 58. The participants were selected by inclusion criteria. The protocol was explained to participants. I had divided 58 participants in two group for one group I had given Fullerton advanced balance scale and for second group I had given berg balance scale. The total score of Fullerton advanced balance scale of every participant and total score of berg balance scale of every participant were calculated and with the help of the statistician the mean of Fullerton advanced balance scale and berg balance scale were calculated. According to statistical analysis they expressed in terms of mean and standard deviation. Fullerton advanced balance scale and berg balance scale are compared by using unpaired t test. The result calculated by statistician is Berg balance scale and Fullerton advanced balance scale is quite equal for assessing the stroke patient. However, berg balance scale is comparatively better than the Fullerton advanced balance scale for assessing stroke patient.

V. CONCLUSION

According to this study, Berg balance scale and Fullerton advanced balance scale is quite equal for assessing the stroke patient. However, berg balance scale is comparatively better than the Fullerton advanced balance scale for assessing stroke patient.

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