# Functional ambulation scale (FAS) scores of patients with hemiplegia who followed up in home and university hospital

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***Conflict of interest:*** *The authors report no conflict of interest.*

## ABSTRACT

***BACKGROUND****: Stroke is the main cause of disability in adults. Our purpose is to create awareness among social rehabilitation at the university and local governments, to identify gaps in social rehabilitation and to increase the effectiveness of social rehabilitation.*

***METHODS:*** *In this context physical medicine and rehabilitation department depends on the stroke outpatient clinic stroke 48 diagnose the patient and Istanbul Metropolitan Municipality's Home Care Service stroke 108 diagnose the patient nutritional status related forms creating a face to face interview method were filled. We compared the values of functional ambulation scale (FAS) followed three months.*

***RESULTS:*** *The most important result of our study is that a there is no significant difference in both groups FAS value changes. (p>0.05). In both groups, baseline and 3 months the average value of the FAS, while were significantly positive change (p<0.05).*

***CONCLUSİONS:*** *In our study and in studies of stroke patients receiving rehabilitation program has provided some improvements in functional capacity of patients.*

***KEYWORDS:*** *Hemiplegia, functional ambulation scale, rehabilitation.*

## INTRODUCTION

Stroke is the leading cause of serious, long-term disability among adults. Annually, about 16 million first-ever strokes occur in the world, causing a total of 5.7 million deaths (1).

Stroke is the main cause of disability in adults. Although stroke is often associated with older individuals, 45% of survivors are younger than 65 years and 27% are younger than 55 years (2). Report reveals that there were 33 million stroke survivors and 5.9 million stroke-related deaths in 2010 (3). Stroke produces a wide range of neurological impairments, including problems of balance, movement, speech, swallowing, urination, and defecation, all of which contribute to global public health

concerns (4).Patients with chronic stroke are hospitalized during the acute or sub-acute phase, and then receive rehabilitation treatment. However, after their discharge, they do not receive continuous rehabilitation treatment in their community. The number of stroke survivors using community-based public health rehabilitation services is also low (5).

Ambulation levels were evaluated by the FAS, which was developed by the Massachusetts General Hospital and is used for evaluation of patient's ambulation. The FAS is a scale evaluating human assistance rather than devices and supports. (7)

In this context, we followed up hemiplega patients of Istanbul Metropolitan Municipality, they follow under the name of Home Care Service  and hemipeliga patients to taken to the rehabilitation program Bezm-i Alem Foundation University Istanbul rehabilitation of chronic stroke cases were reviewed with the patient in the province.Our purpose is to create awareness among social rehabilitation at the university and local governments, to identify gaps in social rehabilitation and to increase the effectiveness of social rehabilitation.At the same time, TUBITAK and EU projects to produce and make it happend in the real life.

## MATERIALS AND METHODS

This randomized, prospective, controlled, single blind study was conducted in Physical medicine and Rehabilitation stroke outpatient clinic and Istanbul Metropolitan Municipality's Home Care Service. In this context physical medicine and rehabilitation department depends on the stroke outpatient clinic stroke 48 diagnose the patient and Istanbul Metropolitan Municipality's Home Care Service stroke 108 diagnose the patient nutritional status related forms creating a face to face interview method were filled. This form of patient demographics, FAS, concomitant diseases, tobacco and alcohol used, disease duration, and stroke etiology was

completed on. In addition to their demographic characteristics (age, gender, weight, height, body mass index [BMI]), the patients were also questioned for occupation, main symptoms, time of diagnosis. The patients were between the ages of 20 and 75 included in this study. We compared the values of FAS followed three months.

Level 0 (nonambulation): Absolute walking incapacity, even with external help.

Level 1 (nonfunctional ambulation): Dependent walking, which requires the permanent help of others. The patient must be firmly supported by 1 or 2 people, and/or walking is possible only within a therapy session at home, or at the hospital, between parallel bars. This is the only functional level that is not independent and is therefore called nonfunctional.

Level 2 (household ambulation): Walking is only possible indoors, on flat, horizontal surfaces, usually within a known and controlled area, such as in the home.

Level 3 (surroundings of the house ambulation [or neighborhood]): Patients are able to walk indoors and outdoors on uneven surfaces, and they are able to climb an occasional step or stair. Therefore, the patient is able to walk in the street, albeit within a limited and restricted walking distance.

Level 4 (independent community ambulation): Patients are able to walk on all types of irregular surfaces. They can ascend and descend steps or stairs, ramps, curbs, etc. They have a considerable, even unrestricted, walking distance, so much so that they are capable of shopping for food and accomplishing other basic chores.

However, they are not considered normal walkers because they have aesthetic anomalies, such as an obvious limp. Level 5 (normal ambulation): Walking is completely normal in both distance and appearance, both at home and outside and with an unlimited distance; there is no aesthetic

anomaly or limp. They can tiptoe, walk on their heels, and in tandem (8).

The team of following the home group consisted of 1 specialist doctor of Physical Medicine and Rehabilitation, 1 medicine doctor, and 12 physical therapists. The team of following hospital group consisted of 1 1 specialist doctor of Physical Medicine and Rehabilitation, 1 medicine doctor,  and 6 physiotherapists. Patients with a physiotherapist 2 days a week for 3 months was taken to the rehabilitation program. Neurological rehabilitation to patients as balance-coordination training, hand rehabilitation, stretching and relaxation exercises, walking exercises, posture exercises have been implemented. All the recruited subjects signed informed consent forms before participating in the study and the approval of the local Ethics Committee was obtained. All the subjects gave their consent to the random assignment to the groups.

The calculations were performed using the Statistical Package for Social Sciences for Windows software version 16.0 (SPSS Inc., Chicago, IL, USA). The Kolmogorov-Smirnov test was used to confirm that data within the ranges of normal distribution in both groups. A non-parametric test was employed for the variables outside the normal distribution. The comparison of the data between the groups was carried out through the independent-samples t test. Statistical significance was based on a value of $p < 0.05$ with a 95% confidence interval.

## RESULTS

156 stroke patients were included in the study (Figure 1). The majority of the stroke patients were 97 males (62.5%). The mean age was 65.10 ±11.56 years. The mean disease duration was 2.12 ± 1.56 years. Patient's BMI was 27.52± 4.32.

The hemiparesis was on the right side in 92 patients (59%) and on the left in 64 (41%). The type of stroke was ischemic in 141 patients (91%) and hemorrhagic in 15 (9%). Patients were appraised in terms of smoking and alcohol use in 63 patients (41%) tobacco used, 40 (26%) total patients who had consumed alcohol. According to groups, demographic informations are presented in table 2. FAS values are presented according to groups in tables 2 and 3.

**Table 1.** The demographic data of the Group.

|  | Home (n=108) | Hospital (n=48) | P |
|---|---|---|---|
| **Sex** | 65 male (61%) | 31 male (65%) | >0.05 |
| **Age (year)** | 66.43 ± 12.01 | 65.70 ± 10.54 | >0.05 |
| **Disease Duration (year)** | 1.66 ± 0.76 | 2.1 ±1.34 | >0.05 |
| **BMI (kg/m$^2$)** | 29.32 ± 4.64 | 26.31 ± 3.13 | >0.05 |
| **Tobacco** | 44 (41%) | 19 (41%) | >0.05 |
| **Alcohol** | 29 (27%) | 11 (23%) | >0.05 |
| **Ischemic stroke** | 97 (90%) | 44(93%) | >0.05 |
| **Hemorrhagic stroke** | 11 (10%) | 4(7%) | >0.05 |
| **Right side** | 64 (60%) | 28 (59%) | >0.05 |
| **Left side** | 44(40%) | 20 (41%) | >0.05 |

**Table 2.** Difference between the groups baseline and 3. Month FAS values

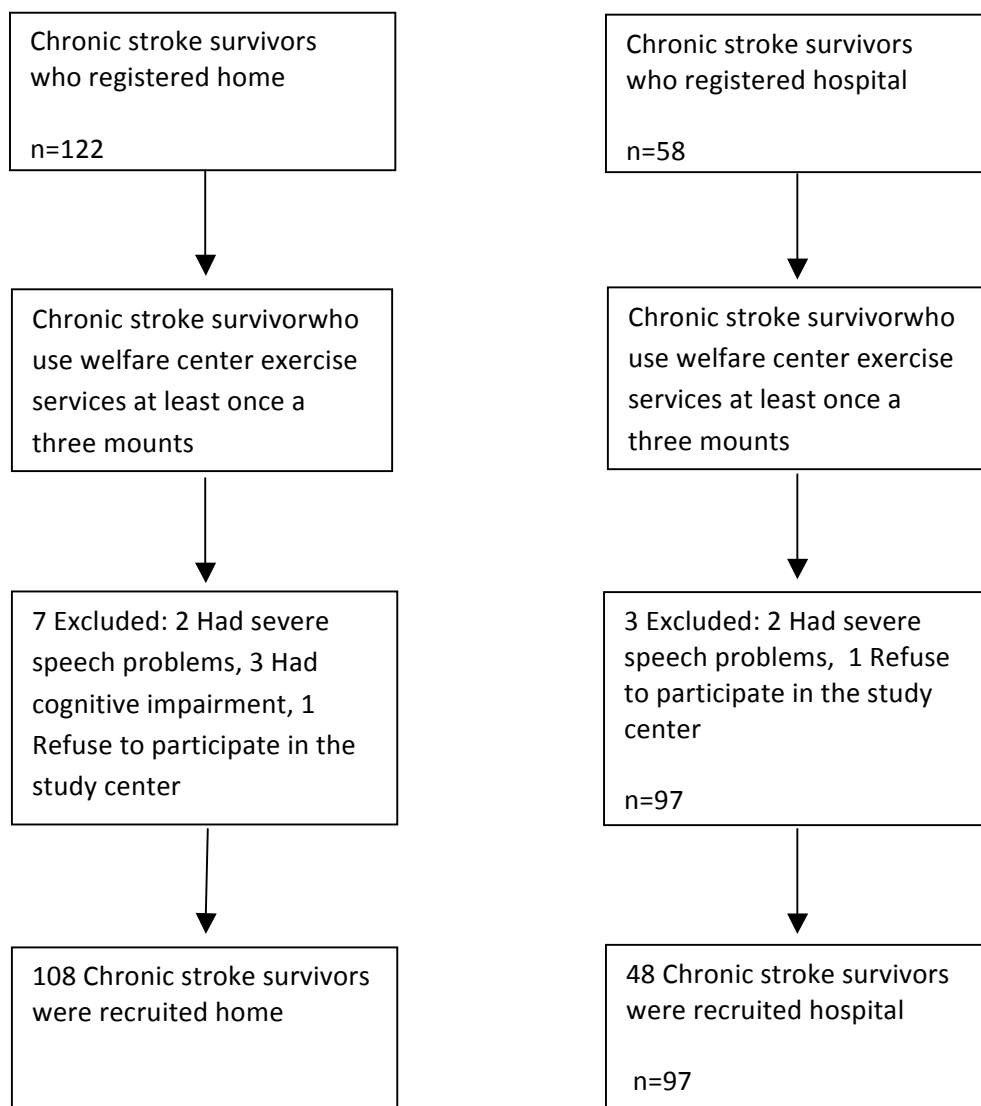|  |  | Home | Hospital | p |
|---|---|---|---|---|
| FAS | Baseline | 0.88 ± 1.166 | 1.45 ± 1.63 | >0.05 |
|  | 3. month | 2.22 ± 1.72 | 2.33 ± 1.86 | >0.05 |

**Figure 1.** Study flowchart.

## DISCUSSION

The most important result of our study is that a there is no significant difference in both groups FAS value changes. (p>0.05) (Table 2). In both groups, baseline and 3 months the average value of the FAS, while were significantly positive change (p<0.05) (Table 3).

**Table 3.** Difference between the  change of groups baseline and 3. Month FAS values

|  |  | Baseline | 3. month | p |
|---|---|---|---|---|
| **FAS** | Home | 0.88 ± 1.166 | 2.22 ± 1.72 | <0.05 |
|  | Hospital | 1.45 ± 1.63 | 2.33 ± 1.86 | <0.05 |

The average age of our patients was 65.10 ±11.56 (min.25 - max.80). It is reported stated in the literature that the incidence of cerebrovascular disorders increases with age and that only 28% of hemiplegic patients are under 65 (7). As of 1997, it was estimated that the average age in Turkey was 72.37 (9).

Many studies have observed more frequently in women, according to the rate of stroke in men (10). In our study, 36.5% of our patients were female and 62.5% were male, and the ratio of females to males was approximately 1/3. Our study is consistent with the literature in this regard. In our study there was a significant improvement in the ambulation levels of patients under the rehabilitation program. Hesse et al. determined that the FAS level was 0, 1 or 2 in all patients before rehabilitation, and that this increased to the FAS levels 3 and 4 in all patients after the rehabilitation program (11). Lee and friends of stroke patients were followed for 6 months is significantly positive values of FAS statistics as they found significant changes. While this change more apparent within the first 3 months after the month decreased by 4 pace. (12). In a previous review by Kwakkel et al., most functional recovery occurred within 6 months after stroke; however, the authors noted a nonlinear relationship between motor impairment and functional recovery. (13) The greatest degree of recovery occurred relatively rapidly during the first 4 weeks after treatment (i.e. neurologic impairments); recovery was also observed during from 3 to 6 months after stroke, but to a lesser extent. This is important because most previous studies report little to no observable recovery between 3 and 6 months after stroke (14). In 2021, Luanjiao Hu et al. investigated the effects of early rehabilitation education on neurological functions (ERN), quality of life (QOL), European Stroke Scale (ESS), Barthel Index (BI) and Fugl-Meyer Assessment (FMA) in patients with ischemic hemiplegia. After intervention, ESS, BI, and FMA scores increased in both groups, but were considerably higher in the study group (p<0.05). There were significantly better quality of life indicators (p<0.05) and higher nursing satisfaction (p<0.05). Studies have shown that from the aspects of proprioception and cognitive methods, the rehabilitation of patients with ISH has improved after ERN (15,16). In our study, there were significant differences in the neurological and functional capacities of the patients.In our study and in studies of stroke patients receiving rehabilitation program has provided some improvements in functional capacity of patients. Istanbul Metropolitan Municipality in his study at home under the care reveals the name of the stroke patients can be monitored without the need for a hospital. This positive concept should be made more widely He received physical therapy and rehabilitation at the hospital after being left to their fate of stroke patients new hope to break this vicious cycle. In this context, this project can be extended by making it.

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