

Disability in ambulatory patients older than 65 attended in rehabilitation medicine

Abstract

Older adulthood patients are more susceptible to suffer a state of disability, knowing this and the circumstances around them contribute to prevent the disability effects and thus to maintain a good level of quality of life.

Objective: To know the profile of disability presented by patients of 65 and older, who ambulatory attend at a clinic of Rehabilitation Medicine.

Patients and method: We studied prospectively a cohort of patients of age equal to or greater than 65, of any gender, who went to the clinic of Rehabilitation Medicine between 2016 and 2017. They were included consecutively. The Barthel Index instrument (BI) was applied at the beginning of the rehabilitation treatment and at discharge. As a statistical methodology, mean, mode, standard deviation, Student T and Pearson tests were used. The alpha level of statistical significance was 0.05.

Results: 133 patients were studied, of which 23 were eliminated. Of the 110 accepted 80 (73%) were of the female gender and 30 (27%) of the male gender. The average age of the entire population was 73 ± 0.7 . In the occupation of the patients 31% were economically active. The initial BI average was 88.7 ± 18.6 and the final average was 93.3 ± 15.9 . The domains with the highest degree of impact were: transfer, mobility and stairs. Age has an inverse relationship with the BI level (Pearson $r = -0.37$). The causes for which they attended rehabilitation medicine were, in more than 60%, due to muscle-skeletal problems.

Analysis: The distribution of age and gender in this study corresponds to those found by other authors. The prevalence observed in this population was 54%, considering that prevalence for the general population in this hospital is 22% to 23% in the last five years. The BI average observed at baseline was relatively high, although the standard deviation is wide. Slight improvement was found with the treatment applied, the relatively low difference between the initial BI and its final should be considered. The main causes for which patients attended rehabilitation were orthopedic and trauma-type problems. It is very convenient to study thoroughly if the BI is the appropriate instrument for elderly.

Keywords: activities of daily living, disability, elderly, outpatient, geriatric rehabilitation

Introduction

Knowledge of the process of disability in older adults attending a service of rehabilitation medicine as outpatients reveals useful data in epidemiology and rehabilitation. The growth rates of the geriatric population in the world and in Mexico are on the rise. Disability is a process that can potentially affect an individual at any stage of life, but the geriatric age is more susceptible of suffering from a state of disability caused by various conditions. Disability status is almost parallel to the State's quality of life¹ and can affect directly on the fragility of the individual.² Even if disability rates are lower in outpatients than in inpatients, it is still a problem, since the normal human aging process is not stopped.

There are various instruments to measure functionality most of them are based on the assessment of activities of daily living (ADL). The most commonly used instruments are Barthel Index (BI), Katz Index and the Scale of Lawton. In Mexico, there are few references of studies of disability in this age group. The BI is a validated tool in Mexico and is one of the most used in the world. When you know the level of functionality you can infer the degree of disability in a population and this way you can prevent better its causes. On the other hand, BI helps to better associate the index of fragility and thus have elements for a modification of side effects.³ Disability in the elderly usually starts with difficulty of performing complex activities, but as

time goes by, if this situation is not changed, functional dependence associated with moderate or severe disabilities will increase.⁴ The objective of this study is to know the profile of disability with patients 65 and older, who attend the health at a clinic of Rehabilitation Medicine on an outpatient basis.

Patients and method

A population of patients of 65 or more was studied prospectively, they attended the at a clinic of Rehabilitation Medicine between January 2016 and June 2017. These patients met the inclusion criteria: either gender, those coming for the first time to the rehabilitation unit, regardless of the time of evolution and diagnosis. All of them had a clinical card. ADL were evaluated using the original BI, which consists of 10 domains, maximum score is 100 points, <100 is already equivalent to disability. The Spanish instrument is validated in reliability, validity, sensitivity and acceptability.⁵ The valuation was carried out by six therapists, which were trained so that it was performed with a minimum of variation. An initial and final assessment was applied to each patient during their stay; each of the above variables was recorded. Patients who dropped the study were excluded. We included the following variables: gender, age, occupation, marital status, result of the initial BI and final BI, domains of BI when there was a disability. A percentage difference between the normal BI and observed ≥ 5 was considered as meaningful. Measures of

central tendency were used for statistical analysis: mean for numeric variables, mode for categorical variables. One standard deviation is used as measure of dispersion. The Student t test was used to compare averages. The alpha level of statistical significance was 0.05. Pearson test was used for correlating numerical variables. In the averages of the discrete variables, such as age, the nearest decimal integer was approached. In accordance with Mexican law, all patients signed a notice of privacy information. The study was authorized by the Ethics Committee and Research for Studies in Humans of Medica Sur.

Results

133 patients were studied of whom 23 were eliminated by lowering program, 21 by abandonment and 2 deceased; there were 110 patients, 80 (73%) were female and 30 (27%) male. The ages of the patients were among 65 and 93 years old; population limits were lower in the male group (65 to 85) than for female (65 to 93). The average age of the study population was 73 ± 0.7 , the average for women was 73 ± 6.7 , while for males it was 73 ± 5 ; among them there is no significant difference ($p > 0.05$). The distribution by age groups is shown on Table 1, the result is not parametric since it only shows a portion of the general population.

Table 1 Age groups. This table represents a tail of the general population

Age	Frequency	RF	ARF
65-69	38	34.5	34.5
70-74	34	30.9	65.4
75-79	19	17.4	82.7
80-84	15	13.6	96.3
85-89	2	1.8	98.1
90-94	2	1.8	99.9
	110	100	

Abbreviations: RF, relative frequency; ARF, accumulated relative frequency

Marital status is shown on Table 2. It's important to see that most of the patients are married (68%) and there are more widows than widowers in the studied population. The occupation of the patients is shown on Table 3. It highlights the fact that approximately 31% of the population is economically active. In this study, 100% of the patients live in an urban environment with all the amenities. The distance from

their homes to the clinic of Rehabilitation Medicine is average less than 5 Km away.

Table 2 Marital Status. The percentage of married men was greater than women, while widow and single women was greater than men.

	Frequency	FR	Women	Men
Married	74	68	48	26
Single	8	7	7	1
Divorced	6	5	4	2
Widow/er	22	20	21	1
	110	100%	80	30

The application of BI by the physiotherapists was direct and individualized; they watched the performance of patients when assessing them and included relevant data, even though it was not part of the study variables. The average initial BI was 88.7 ± 18.6 , while the final BI was 93.3 ± 15.9 . The average initial BI for the female was 88.7; for the male was 88.6. In the final BI the average for women and men was 93.1 and 93.2 respectively. No statistical difference was found between both measurements ($p > 0.05$). Results of BI domains are shown on Table 4. The initial average of each domain was compared with the final one, some of the domains showed no significant difference. However, the difference was larger in domains that require greater mobility, such as *transfer, mobility and stairs*. By correlating the age with the initial BI Pearson's test was $r = -0.34$, while final BI was $r = -0.37$. The causes by which these patients attended rehabilitation medicine were ordered by groups of diseases and are shown on Table 5. Diseases were classified according to the ICD-10. V-2016. Physiotherapy sessions applied to patient averaged 14 ± 13 .

Table 3 Patients activity. 62% of patients have income, while 38% have activities in their home, most of them are women.

Activity	Frequency	RF
Active	34	31
Retired	34	31
Home maker	42	38
	110	100%

Table 4 BI domains. The file includes the normal values, the observed values, the difference between Normal and initial BI and its percentage. In the second group are the values for the final BI. Bathing, Dressing, Transfer, Mobility and Stairs have a percentage above 10%.

	Feeding	Bathing	Dressing	Grooming	Bowels	Bladder	Toilet use	Transfer	Mobility	Stairs
NORMAL	10	5	10	5	10	10	10	15	15	10
Bli media	9.3	4.4	8.7	4.7	9.7	9.5	9.4	13.2	12.4	7.5
Normal - Bli	0.7	0.6	1.3	0.3	0.3	0.5	0.6	1.8	2.6	2.5
% dif	7	12	13	6	3	5	6	12	17	25
BI f media	9.5	4.6	9.4	4.9	9.7	9.5	9.5	14.2	13.5	8.3
BI f - BI i	0.2	0.2	0.7	0.2	0	0	0.1	1	1.1	0.8
% dif	2	4	7	4	0	0	1	7	7	8

Table 5 Referral Diagnosis of the 20 most frequent ailments, most of them correspond to musculoskeletal disorders. Diseases of the nervous system occupy a relatively low place.

Referral Diagnosis	Frequency	Relative Frec.
1 Lumbalgia	13	11.8
2 Shoulder Pain	9	8.2
3 Knee Arthroplasty	7	6.4
4 Lumbar stenosis	5	4.5
5 Lumbociatica	5	4.5
6 Cervical Spondyloarthritis	5	4.5
7 Lumbar Spondyloarthritis	5	4.5
8 Patella dysfunction	5	4.5
9 Hip Arthroplasty	4	3.6
10 Fractures of the lower limbs	4	3.6
11 Achilles Tendinitis	4	3.6
12 Muscle Contracture	3	2.7
13 Fractures of the upper limbs	3	2.7
14 Iliotibial syndrome	3	2.7
15 Plantar fasciitis	3	2.7
16 Parkinson Disease	3	2.7
17 Shoulder Osteoarthritis	2	1.8
18 Coxarthrosis	2	1.8
19 Cervical Sprain	2	1.8
20 Periferic Neuropathy	2	1.8
Others	21	19
	110	100

Discussion

The study began with 133 patients of whom 23 were deleted (17.2%), the most frequent cause was due to drop off the study and only two patients were eliminated by death. 73% of the patients who completed the Protocol were women. This percentage is consistent with other reported studies, in which the largest number of patients in rehabilitation medicine are female.⁶ On the other hand, the maximum female population age limit (93 years) exceeds the males (85 years), these results are consistent with the trends of population in which there is a life expectancy higher for women than for men and therefore, a greater survival.⁷ The activity of the patients shows that 31% remain in economically productive activities and another 31% are retired patients with a pension, while 38% are engaged in household chores. A situation observed in this study is that more than 50% of the patients come alone to get treatment; others do it with family members or companions. Somehow, this shows a good level of independence in commuting to the rehabilitation medicine unit, although it may also reflect some degree of family abandonment. The prevalence of disability in the Clinic of Rehabilitation Medicine in Medica Sur

Hospital has swung in the last five years from 22% to 23%, which is consistent with other studies;⁷ although this prevalence of disability is general for all age groups. In this study the prevalence of disability in patient's ≥ 64 years was 54%, almost twice the prevalence of disability in all ages. In Mexico there is a disability prevalence of 6% in all the country and all the age groups.⁸ In the study of Yoshida, et al,⁹ the prevalence of disability in a population of patients age 65 or older was 20.1%; however, every 5 years it doubled with the increase in age. We also found that after 85 years the prevalence increases more in women than in men, which agree with our study. The initial BI was 88.7 ± 18.6 , in accordance with the degree of disability included in the BI tool, this corresponds to a minimum disability, with mild functional dependence. Five of BI domains had a percentage $\geq 10\%$ of the difference of the normal score against observed, these domains were: *bathing, dressing, transfer, mobility* and *stairs*. Of these five domains, for *bathing* and *dressing* required activity with coordination of all four extremities, while the other three are domains of mobility that require that the patient moves from one place to another. This may be the cause for a larger difference between the normal and the observed difference. In the study by Ohura, et al, elderly patients were studied and found that the 34.1% of them and living in their homes cannot climb stairs. In these study patients are ambulatory and they can leave their homes, it is likely that this will influence the *stairs* domain index, even though it is the lowest of all, is within the range of mild disabilities. The other five domains had a low difference between the normal BI and observed BI at the beginning of the treatment. Interestingly the domains related to the *bladder* or *bowel* control are unchanged in this study population: *bowels, bladder* and *toilet use*, $\leq 1\%$ difference.

Gerst-Emerson et al,¹⁰ reported a study in which the differences between the disability of elderly people in Mexico and that of the United States were compared. As in this study, the main disability domains were *mobility* and *transfer*. The Mexican population had higher disability rates than the United States.¹⁰ When analyzing the results of the final BI in comparison with the initial BI, we can see that, while it is true that the score improved, it did not show statistically significant difference between one measurement with another. It is likely that the improvement of the patients is not significant, but it is also important to note that the level of disability is mild in the initial evaluation, therefore, improvement is not very noticeable and therefore appears as non-significant. However, the feeling of most of the patients was feeling better, even though their final evaluation differed little from the initial. No difference was found between the BI of men with women both at the initial and at the end ($p > 0.05$).

The ailments for which patients were referred to the Clinic of Rehabilitation Medicine are showed on table 5. The 20 most frequent causes are observed, these correspond to the musculoskeletal disorders associated with degenerative diseases in soft tissue. Among them are the low back pain, shoulder pain syndromes and sequelae of arthroplasty of the knee as the most frequent. Nervous system diseases occupy 5.5% of the total number of patients, which differs with other studies since the sequels from falls, stroke and Alzheimer's disease are very common in people over the age of 80.^{11,12} This may be associated with the Clinic of Rehabilitation Medicine serves more patients in acute than chronic state. Functionality and disability measurement allows the physician and therapist have an objective view of the actual state of the patient, as well as its evolution, which is useful to adjust the treatment and get a better idea of their prognosis both in the outpatient and the internship.¹³ The BI is an instrument

which quantifies the functionality, it was invented in the 60's and adjusted to the functional activities of his time. It is still useful, but now people, including the elderly, have other kinds of activities that the original instrument does not evaluate, such as: use electronics, go to an ATM handling, etc. On the other hand, BI only evaluates motor type activities, but not the cognitive type, so these domains are out of their reach. Other instruments such as the FIM evaluate both motor and cognitive aspects but the time invested in the evaluation is much greater than that required in the BI.¹⁴ Throughout the history of the DLA evaluation, several measure instruments have been developed to integrated activities in old age, as well as dysfunctional states in inpatient.¹⁵⁻¹⁷ Similarly, there have been comparative studies of BI with the WHODAS-II instrument¹⁸ and have developed specific modifications to the BI for certain conditions.¹⁹ That is why it is important to investigate through the comparison of various instruments that measure functionality to use the best, if this were not enough then invent another.²⁰

The disability in older adults is presented as a state that is increasing and that it is necessary to detect it to offer alternatives of treatment and thus to improve the possibilities of a better quality of life.²¹ Is important to include more patients for this study and contrast them with quality of life tests. The population of this study do not necessarily represent the state of another people in the country.

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Conflict of interest

Author declares that there are no conflicts of interest.

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