

## Assessment of Neurological Diagnoses in Patients Applying to the Health Board

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### ABSTRACT

**Objective:** This study aims to identify disability rate cases due to neurological diseases obtained from the neurological healthcare board at Adiyaman University Faculty of Medicine.

**Patients and Methods:** As for participants of the study, the data of the cases applied to the Neurological Health Board of Adiyaman University Faculty of Medicine between January 2017 and December 2017 were evaluated retrospectively. The diagnosis, age, sex, disability rates and interrelationships of the cases were studied. The obtained data was analyzed.

**Results:** 958 cases were evaluated in total. 469 (49%) of these cases were male and 488 (51%) were female. The mean age of all cases was calculated to be  $54.70 \pm 28.8$  (1-114) years, the mean age of men was lower ( $p < 0.01$ ) than that of women. The most common diagnoses were observed as dementia, epilepsy and cerebrovascular disease.

**Conclusion:** Determining the data of cases evaluated by the neurology healthcare board will help prevent disability and will contribute to the future studies on disability.

**Key words:** Neurology, disability rate, health board

### INTRODUCTION

A disabled person is defined as someone who has lost, either congenitally or later, his or her physical, mental, psychological, emotional and social skills at various levels and has difficulties in adapting to social life and meeting his or her daily requirements and thus needs maintenance, rehabilitation, counseling or support services [1]. This disability can be temporary or permanent [2]. The World Health Organization (WHO) recognizes that disabled people make up 10% of the population in developed countries and 12% of the population in developing countries [2, 3]. Some social support and assistance services are offered to disabled people in our country. It is possible for the disabled people to benefit from all these services if they can get a health board report that shows the rate of their disability from an authorized health institution [4]. After the implementation of the Disability Act in our country in 2005; "the Disability Criteria, Classification of Disability and Regulation on

the Health Board Reports to be given to the Disabled " was first published in the Official Gazette, dated 16.07.2006 and numbered as 26230 [5, 6]. This was later replaced by the regulations published in the Official Gazettes numbered 27787 on December 16, 2010 and numbered 28173 on 14 January 2012 [6]. These regulations clarify the concept of disability as well as explaining how disabled people should be evaluated. The Disabled Health Board Report is a document prepared by the disabled health board and dictates the disability and health status of people, the social rights that they can benefit from and the areas in which they cannot be employed [6]. The term "Severely Disabled" is used for people that are determined by the disabled health board from among the people whose disability rate is evaluated to be 50% or more according to the state of their disability and who cannot fulfill their daily life activities without the help of others [2, 5]. The Disabled Health Board consists of specialists in internal diseases, eye diseases, ear-nose-throat diseases,

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general surgery or orthopedics, neurology or mental health illnesses. According to the Turkey disabled people survey results made in 2002, the proportion of disabled population in the total population is 12.29% [7, 8]. According to 2010 dated data of Turkey Statistical Institute (TSI), it has been detected that 58.6% of the registered disabled people are male and the entire disabled group of people lives mostly in urban areas [8].

Diseases causing deficits in primary neurological functions result in a disability that affects activities of daily living such as dressing and walking [6]. There are few studies about the cases of people who have applied to the related health institution due to a neurological disease and has received a rate of disability in our country [6, 9].

In this study, people who applied to receive a disabled health board report in Adiyaman University Medical Faculty of Education and Research Hospital in 2017 were analyzed in terms of neurological diseases from the aspects of their demographic characteristics, the diagnoses they received, the persistence of disability rates and whether they were heavily disabled or not. This study intends to contribute to the statistics of our country by examining the reports of the health board of a university hospital serving in the Southeastern Anatolia Region of Turkey.

## PATIENTS AND METHODS

The cases that were taken into study were selected among the patients who applied to neurology clinic of Adiyaman University Faculty of Medicine between January 1, 2017 and December 20, 2017. The percentage of the disability was determined according to the regulation published in the Official Gazette dated March 30, 2013 and numbered 28603 [10]. The file data of the cases taken into study were retrospectively reviewed and the findings were documented by determining age, gender, diagnosis, rates of disability they had received, and whether their disability was permanent or not.

In addition to all the patients evaluated at our polyclinic for the health board and diagnosed with neurological disorders; patients with neurological diagnoses such as cerebral palsy, brachial plexus injury, poliomyelitis sequelae, and pediatric age group neurological diagnoses that are routinely scored by the physiotherapy and rehabilitation clinic in our hospital were also included in the study. Cases referred from other institutions for consultation or cases referred from courts for obtaining a health status report were excluded from the study. Approval was taken from the ethics committee of our hospital for the study.

SPSS for Windows 19.0 program was used to analyze the results of the study. In the study of the data; in addition to the descriptive statistics (frequency, proportion and percentage), non-parametric tests (Mann-Whitney test) were also used for non-normal dispersive data. The difference of the heavy disability in women and men was assessed by chi-square test. The level of

statistical significance was considered when p value was less than 0.05.

## RESULTS

It was found that there was a total of 4485 patients who applied to the disabled health board and 1157 of them (40.3%) had received a heavy disability report. 958 (22%) of these patients were found to have a neurological diagnosis. 488 (51%) of these cases were female and 469 (49%) were male. The mean age was  $54.7 \pm 28.8$  (min-max: 1-114) years. Whereas the average age of women was  $60.8 \pm 27.3$ ; average age of the men was  $48.3 \pm 28.9$  ( $p < 0.01$ ) (Table 1). The severely disabled rate among the studied cases was 46.2% ( $n = 443$ ).

In addition, neurological diagnoses constituted 38.3% (1157 patients) of all patients who had received a severely disability rate from the healthcare institution (Table 2). 50.6% of the patients with severely disabilities were female and 49.4% were male patients and there was no significant difference in the gender of the participants ( $p = 0.73$ ). In the whole group, the disability of the 234 (24.4%) cases was permanent and the disability durations of 589 (61.5%) cases were 2-3 years. It was determined that 505 (52.71%) of the patients had scores of 40% and more due to their neurological diagnoses.

When the neurological diagnoses of the cases were examined, the most common diagnosis was found out to be dementia with 344 patients (35.90%). 9% ( $n = 31$ ) of the patients with dementia were first diagnosed as dementia, 59.30% ( $n = 204$ ) were at mild stage dementia, 22.09% ( $n = 76$ ) were at the mild to moderate stage, 9.30% ( $n = 32$ ) were at the moderate stage and 0.29% ( $n = 1$ ) were at severe stage of dementia. The second most common diagnosis was Epilepsy in 178 patients (18.6%).

Epilepsy diagnosis was found to have dispersed as no seizure but had the risk of seizure in thirty-three (18.54%) patients, as rare seizures in 115 patients (64.61%), as frequent seizures in 26 patients (14.61%) and as severe epilepsy seizures in four patients (2.25%). Cerebrovascular disease (CVD) was observed in 159 (16.6%) patients with sequelae. Cerebral palsy (CP) was detected in 110 (11.5%) patients with sequelae. Neuropathic pain was detected in 80 patients (8.4%). Parkinson's disease was found in 40 patients (4.2%). Poliomyelitis was observed in 35 patients (3.7%) with sequelae. Moreover; the following diseases were detected in patients: essential tremor in 19 patients, diabetic polyneuropathy in 16 patients, brachial plexus injury in 11 patients, hydrocephalus in 10 patients, hereditary spastic paraparesis in 8 patients, muscular dystrophy in 8 patients, meningitis sequelae in 8 patients, spinocerebellar ataxia in 7 patients, bell palsy in 4 patients, spinal muscular atrophy in 4 patients, ataxia telangiectasia in 4 patients, multiple sclerosis in 3 patients, paraplegia in 3 patients, myopathy in 3 patients, carpal tunnel syndrome in 2 patients, motor neuron disease in 2 patients; and myasthenia gravis, migraine, neurofibromatosis, west syndrome, transverse

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myelitis and multisystem atrophy were detected as only one case in different patients (Figure 1). When the patients were evaluated according to the age groups in terms of whether they were severely handicapped, a significant relationship was found between the age increase and the severity of the disability (Table 3). Also, statistically significant result was obtained when the relationship between the scores obtained from dementia ( $p=0,00$ ), CVD sequelae, epilepsy ( $p=0,00$ ) and CP sequential which were the most frequently diagnosed diagnoses and the severity of disability was evaluated (Table 4, Table 5).

**Table 1.** Average age at disability

	Mean	Standard deviation
All cases, years	54,7	28,8
Female	60,8	27,3
Male	48,3	28,9

**Table 2.** The number and percentages of patients with severe disability

	n	%
Total health board application	4485	
Total severely handicapped	1157	40,3
Neurological diagnosis	958	
Neurologically severe handicapped	443	46,2

**Table 3.** Relationship between age and severe disability

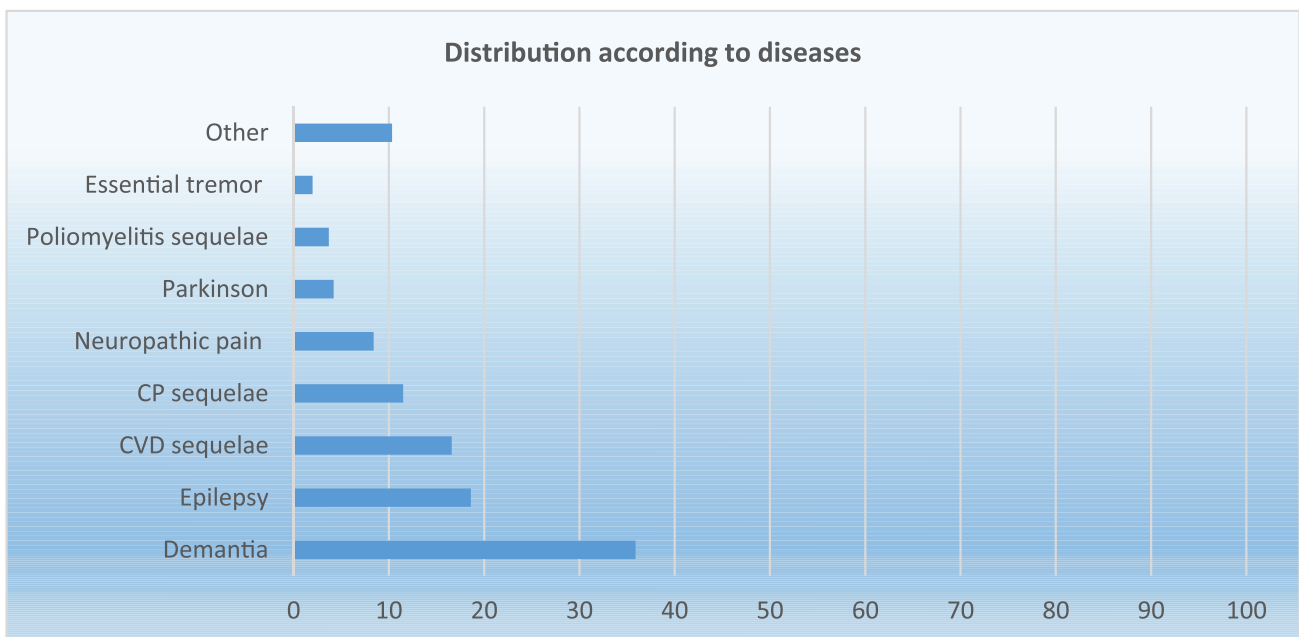
Age, years	Severe disability		P
	No n (%)	Yes n (%)	
1-17	57 (37,3)	96 (62,7)	<0,001
18-65	242 (68,6)	111 (31,4)	
66-79	120 (55,6)	96 (44,4)	
≥80	96 (40,7)	140 (59,3)	

**Table 4.** Relationship between cerebral palsy (CP) sequelae and disability score

CP	Severe disability		P
	No n (%)	Yes n (%)	
No	484 (57,1)	364 (42,9)	<0,001
Yes	31 (28,2)	79 (71,8)	

**Table 5.** Relationship between cerebro-vascular disease (CVD) sequelae and disability score

CVD Sequelae	Severe disability		P
	No n (%)	Yes n (%)	
No	443 (55,4)	356 (44,6)	0,019
Yes	72 (45,3)	87 (54,7)	



**Figure 1.** Distribution of diseases in study population

CVD: cerebrovascular disease, CP: cerebral palsy

## DISCUSSION

The World Health Organization (WHO) reports the disability frequency rate as 10% (600 million) worldwide. The number of this disabled population is expected to increase more and more because of war injuries, inadequate nutrition, chronic diseases, accidents etc. [11]. While the neurological loss is the psychological, physiological or anatomical structure or loss of function or deviation from normality; disability is the reduction or limitation of the ability of the person to fulfill an activity relative to a normally considered person because of inadequacy [12]. There are a small number of studies on neurological loss and disability in our country and one of these is about epilepsy disability [6, 9, 13, 14]. On the other hand, the association between impaired neurological loss and disability has been reported in some clinical observations and few studies carried out abroad [16, 17]. In a study carried out by Çabalar et al., it was found that 19143 people applied to their disabled healthcare board and 2082 (10,87%) of those received a neurological disability rate [6]. However, we found that a higher number of patients, 958 (44%) of the 4485 cases who applied to our disabled healthcare board, had received a neurological diagnosis. In two studies evaluating disability in neurological diseases; Çabalar et al. determined the 56.2% of the patients as male and 43.8% as female; and Evlice et al. determined 66% of the patients as male and 34% as female [6, 9]. We found 51% of the cases evaluated as female and 49% as male. In our study, we determined that 51% of the cases were female and 49% were male.

In their study, Evlice et al. found an average age of  $51.72 \pm 21,149$  and detected that male cases were younger than women [9]. Similarly, we also found that the average age was  $54.70 \pm 28.79$  and males were younger than females ( $p < 0.01$ ); but differently from Evlice et al., we noticed a significant relationship between age-related disability scores and severe disability. The reason behind the younger age and more frequent disability in men is that there is a high rate of housewives in our country and even if they are working, they don't work in a hard work. Thus, it may be thought that they are less exposed to conditions that may lead to disability.

Evlice et al. determined the most common neurological diagnoses respectively as CVD sequelae, dementia and epilepsy in their study [9]. Çabalar et al. found the most common neurological diagnoses as CVD sequelae (30.2%), dementia (15.1%), epilepsy (11%) and CP sequential (10.4%) in their study [6]. Similarly, we also determined four of the most common neurological diagnoses as dementia (35.9%), epilepsy (18.6%), CVD sequential (16.6) and CP sequential (11.5%); and we found that there was a significant relationship among the disability scores, the severity of disability and these most frequently detected diagnoses. However, different from the other studies, the most common detected

diagnosis was dementia with a high rate of 35.9% in our study. Moreover, 68.3% of these patients were in the first diagnosis stage or mild stage dementia and this was also a higher rate than the diagnosis of early stage dementia in our routine polyclinic practice. This state can show that the patient and his / her relatives are influenced by their environment in applying to the health board in order to be able to collect the disability scores needed to benefit from state support and they have awareness in this issue; however, this may also make us think that they apply to clinics late for clinical and follow-up treatment of dementia. Due to this reason, we think that it is necessary to take measures against this issue and put immediate actions into practice to raise consciousness level of patients about this matter and direct them to act in the early periods of dementia.

In our study, only one of the 958 patients who had neurological diagnoses and a disability rate had migraine diagnosis. Although migraine has a high prevalence [18] in our country and it is the primary disease among the most common diseases in our routine neurology clinic outpatient; we think that the reason behind migraine having a less frequent diagnosis of disability in the disabled healthcare board may be that whereas patients hear and experience from their neighborhood and / or from the social media that diseases such as CVD sequelae, dementia and epilepsy have a score value, they do not know such a relation for migraine.

According to the legislation; while individuals with below 40% disability cannot claim any demand from the state, patients with a disability of 40-100% have a different range of rights depending on the rates of their disability [10]. In this study, the number of cases with a disability rate of 40% or more was determined to be 505 (52.71%) and it was observed that 53% of the cases who received a percentage of disability because of neurological diagnoses deserved to get a salary from the state.

Restriction of this study is that only primary diagnoses were considered in diagnostic groups and only the last one year's data was examined. It will be possible to obtain more valuable results if a wider range of time intervals with detailed diagnoses are assessed.

In conclusion, neurological diseases cause a high rate of disability both in men and women. Interventions to prevent and reduce neurologic disability should be one of the priorities for better planning of services to individuals. For this reason, it is necessary to diagnose individuals correctly and determine the rates of their disability arising from these diagnoses.

We hope that the better recognition of patients and the approaches to help them will be improved by future comprehensive and long-term studies to be carried out in our country.

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