



# Dependency Levels and Related Factors of Individuals Receiving Home Based Health Care in Turkey

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## Research Article

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## Abstract

**Background:** The need for health services is increasing steadily and hospital resources to meet this need are quite limited. Patients who need home based health care (HBHC) constitute a significant part of this need. The aim of this study was to determine the dependence levels and related factors of HBHC patients in İstanbul.

**Methods:** Our descriptive study was carried out with 134 patients who were enrolled between January 1st and May 15th of 2016 due to the need for HBHC. Sociodemographic information, data on chronic diseases and related to the need for HBHC, were evaluated by means of the questionnaire, and dependence levels were evaluated with Barthel Index.

**Results:** The mean age was  $77.5 \pm 14.7$  years. The group consisted of 61.2% women; 61.9% were single or in widowhood and 43.3% were illiterate. Some 86.6% of the patients who received HBHC services were looked after by one of their family members. The most common diseases were hypertension (59.0%), diabetes mellitus (26.1%), stroke (25.4%), and Alzheimer's disease (23.9%). The most common reason for applying to receive HBHC was neurologic diseases with 56.0%, and old age with 29.8%. Patients were found as fully dependent on others for bathing (97.0%), climbing stairs (77.6%), personal care (66.4%), dressing and undressing (56.0%), and for the toilet (56.7%). According to the Barthel Index, 50.7% of the group was fully dependent, and 29.9% of the group showed more advanced dependency. In those with Alzheimer's disease, the likelihood of being advanced or fully dependent was 9.9 times higher (95% CI: 1.16-85.47;  $p=0.036$ ).

**Conclusion:** The level of dependency in HBHC services is higher than many other specific groups. Alzheimer's disease was found to be the most important factor that increasing the need for HBHC. Therefore, more comprehensive service delivery with a multidisciplinary team approach is required.

**Keywords:** Healthcare at home; Dependency; Barthel Index

**Abbreviations:** HBHC: Home Based Health Care; ADL: Activity of Daily Living; BI: Barthel Index; NCD: Non-Communicable Diseases.

## Introduction

Home-based health care (HBHC) service is the whole of the examination, diagnosis, treatment, medical care, follow-up and rehabilitation services given to individuals

in their home and family environment, including social and psychological counseling services due to various diseases.

HBHC service is an important service model that provides continuity in health care and allows the person to receive services in a familiar environment. Nowadays, home health is an application that will be preferred for the provision of health and social services in many cases, especially in relation to old age, disability and chronic diseases [1-3]. The aim of

home health services is to minimize the effects of disease and disability and to provide the maximum treatment and care. In this way, the quality of life will increase [4,5].

As in the world, in Turkey, the elderly dependent population and the need of the HBHC service is increasing. While life expectancy at birth in Turkey has risen from 68.7 in 2003 to 78 in 2015 [6]. However, according to the "Turkey Disability Survey", the incidence of handicapped population is 12.3% and the incidence of disability due to chronic diseases in this population 9.7% [7]. The dependency ratio of the elderly was 7% in 1990 and 12.2% in 2015 [8,9].

Healthcare needs are progressively increasing and hospital resources that will respond to this requirement are quite limited. On the other hand, an important part of the growing health need is those who need healthcare at home. In line with this service requirement, the organization of HBHC service should be regulated, and the patients who need health services should be well defined. Home-based health care services are provided by the teams established within the state hospitals affiliated with the Ministry of Health in Turkey and by the family physicians.

For the planning of health services which are provided to people at home; it is important to determine the cases of inadequacy of individuals and to reveal their sociodemographic characteristics correctly. The aim of this study was to determine the dependence levels and related factors of HBHC patients.

## Materials and Methods

### Study Design

Our research was a descriptive study. It was carried out in Bahçelievler, one of the most populous districts of Istanbul (district population 598.097). The population of the study consisted of 172 patients who were resident in the region and registered to the Ministry of Health because of the need for HBHC services between January 1<sup>st</sup> - May 15<sup>th</sup>, 2016. It was completed with 134 patients who agreed to participate in the study. The patients were interviewed with the "HBHC service teams" at their homes and the questionnaire was answered by face to face interviews and responses were received from the patient or their relatives.

Within the scope of the research, a questionnaire form (sociodemographic characteristics, the need for HBHC, the chronic diseases and the use of multiple drugs (polypharmacy) were questioned) and the Barthel Index (to determine the level activity of daily living (ADL)) were applied [10,11]. Barthel Index (BI) consists of a total of 10 items evaluating such as feeding, bathing, personal care, dressing, defecation and urine control, toilet use, ability to transfer from bed to wheelchair, walking or wheelchair-dependent and climbing stairs. The main objective of this scale is to determine the level of independence in ADL. The score varies between 0-100 and interpreted like 0-20 are fully dependent, 21-61 are highly dependent, 62-90 are moderately dependent, 91-99 dependent on a mild degree, 100 are fully independent.

### Statistical Analysis

Descriptive statistics were reported as numbers (percentage) for categorical variables, the mean, standard deviation, minimum and maximum for continuous. Chi-square test was used for 2x2 contingency tables as appropriate for non-numerical data. The variables were investigated to determine if they are normally distributed. Two groups were compared with independent sample t-test for parametric variables.

For the multivariate analysis, the possible factors identified with univariate analyses were further entered the logistic regression analysis to determine independent predictors of dependence level. Hosmer Lemeshov goodness of fit statistics was used to assess model fit.

For statistical significance, p value <0.05 was accepted as significant in the 95% confidence interval. Statistical analyses were performed by using SPSS v 21.0. This study was approved by the Health Research Ethics Committee, Faculty of Medicine and Istanbul University.

### Results

The mean age of the group was 77.5±14.7 years. The descriptive characteristics of the participants are presented in Table 1. The mean number of medications used daily was 5.0 ± 3.1 drugs (0-15).

Characteristics (n=134)	n	%
<b>Gender</b>		
Female	82	61
Male	52	39
<b>Age</b>		

19-64	18	13
65-74	16	12
75-84	59	44
≥85	41	31
<b>Education</b>		
Illiterate	58	43
Primary/secondary school	67	50
High school and higher education	9	6.7
<b>Marital Status</b>		
Married	51	38
Single/widow/divorced	83	62
<b>Family Income</b>		
<430\$	7	5.2
430- 829\$	70	52
830-1655\$	55	41
>1655\$	2	1.5
<b>Relationship of Caregiver</b>		
The son/ daughter	83	62
Partner	26	19
Caregiver	17	13
Parents/ brothers	7	5.2
No	1	0.7
<b>Number of People Living Together at Home</b>		
1-3 people	78	58
4-5 people	43	32
≥ 6	13	9.7
<b>Smoking Status</b>		
Current smoker	6	4.5
Non-smoker	99	74
Former smoker	29	22
Chronic disease (Yes)	132	99
Polypharmacy (Yes)	117	87

**Table 1:** Frequency distribution of socio-demographic characteristics and medical history, of the studied population.

The distribution of chronic diseases of the participants was presented in Table 2 and 73.1% of them had more than one chronic disease.

	<b>n</b>	<b>%</b>
Hypertension	79	59
Diabetes mellitus	35	26.1
Stroke	34	25.4

Alzheimer's disease	32	23.9
Cardiovascular disease (except hypertension)	25	18.7
Osteoporosis, bone fracture	20	14.9
Other musculoskeletal system diseases	17	12.7
Neurological diseases (except Alzheimer's disease, dementia, stroke, Parkinson's)	16	11.9
Respiratory system diseases	16	11.9
Parkinson's disease	11	8.2
Kidney disease	9	6.7
Cancer	7	5.2
Others*	7	5.2

**Table 2:** Chronic diseases of individuals receiving HBHC.

\*Hyperlipidemia (2), hyperthyroidism (1), obesity (1), chronic hepatitis C disease (1), pleural effusion (1), chronic anemia (1).

The reasons of applying to HBHC services; 56.0% (n=75) neurological disease, 29.8% (n=40) old age, 21.6% (n=29) musculoskeletal disease, were determined as. In detail, as a reason for application; the proportion of those showing only "old age" is 17.9% (n=24) and only "neurological diseases" is 41.0% (n=55).

The most common complaints mentioned by individuals in the daily life were problems associated with moving, exercising (71.6% (n=96)) pain (41.8% (n=56)) fatigue (26.9% (n=36)).

In questioning ADL; 35.1% (n=47) of people couldn't eat without help, 97.0% (n=130) needed help for bath and 66.4% (n=89) needed help for personal care. 56.7% (n=76) of patients were completely dependent on toilet needs, only 14.2% (n=19) could do independently. While 64.9% of the patients could not walk, 77.6% of them could not climb stairs.

BI total score of the participants was  $31.3 \pm 30.1$  and the median value was 20 (0-100), and 50.7% (n=68) of them were fully dependent, 29.9% (n=40) were in the highly dependent Table 3.

	Fully/highly dependent		Moderately/mildly dependent		p
	n	%	n	%	
<b>Gender</b>					
Female	68	82.9	14	17.1	0.392
Male	40	76.9	12	23.1	
<b>Education</b>					
Illiterate	48	82.8	10	17.2	0.854
Primary/secondary school	53	79.1	14	20.9	
High school and higher education	7	77.8	2	22.2	
<b>Marital Status</b>					
Married	40	78.4	11	21.6	0.619
Single/widow/divorced	68	81.9	15	18.1	
<b>Age*</b>	76.7 $\pm$ 14.7 (19-101)		82.5 $\pm$ 11.4 (53-103)		0.041
<b>Chronic diseases</b>					
Hypertension	58	73.4	21	26.6	0.012
Cardiovascular disease (except hypertension)	20	80	5	20	0.933
Diabetes Mellitus	28	80	7	20	0.917
Alzheimer's Disease	31	96.9	1	3.1	0.008
Stroke	30	88.2	4	11.8	0.192

Polypharmacy (Yes)	93	79.5	24	20.5	0.752
Reason for Contacting HBHC Services					
Neurological diseases	67	89.3	8	10.7	0.004
Musculoskeletal system diseases	24	82.8	5	17.2	0.739
Old age	26	65	14	35	0.003

**Table 3:** Comparison of the dependency groups with independent factors (n=134).

\*Mean±standard deviation (minimum-maximum).

The mean age of the individuals in the fully/highly dependent group was lower ( $p=0.041$ ). It was also found that patients with Alzheimer's disease and those who received service because of neurological disease were more in the fully/highly dependent group ( $p<0,05$ ) (Table 3).

Logistic regression analysis was performed to determine the independent predictor. Among those with Alzheimer's disease, the probability of "highly or fully dependent" was 9.9 times more (% 95 CI 1.16-85.47  $p = 0.036$ ) than those who were not (Table 4).

	Odds Ratio	95% Confidence Interval	Interval	p
Age (year)	0.98	0.94	1.03	0.4
Hypertension	0.35	0.11	1.08	0.1
Alzheimer's disease	9.94	1.16	85.47	0
Elderly (Reason for Contacting HBHC Services)	0.38	0.13	1.11	0.1
Neurological Diseases (Reason for Contacting HBHC Services)	1.44	0.47	4.41	0.5

**Table 4:** Logistic regression analysis of independent variables related to BI dependency groups in individuals receiving HBHC.

## Discussion

Dependence levels and related factors were evaluated in patients receiving HBHC. In our study, prevalence of hypertension was 59%, diabetes mellitus 26.1%, stroke 25.4%, Alzheimer's disease 23.9%. Similar studies have shown that, hypertension was between 46-48%, diabetes mellitus 15.7%, stroke 39.8%, Alzheimer 12.0% [12-14]. In a meta-analysis study, the prevalence of Alzheimer's disease was 8.4% in all age groups and 26.8% in 80 years and older [15]. In a study conducted with dementia patients also found similar increase in elderly [16]. Although the rates were similar to the results of our study, the rate of Alzheimer's disease in our group was high; it may be due to the increase in the diagnosis of Alzheimer's disease and the fact that Alzheimer's patients more resort to HBHC.

According to the Turkish Health Survey 2012 report, hypertension (11.3%) and diabetes mellitus (6.5%) are among the 5 most common diseases diagnosed by physicians [17]. The prevalence of hypertension in Turkey is 30.3%, and 80 years and older is known to rise to 76.3% [18]. Similarly, the prevalence of diabetes mellitus is 16.5%, which increases to 35% over the age of 80 [19].

Nowadays, non-communicable diseases (NCD) are one of the leading causes of mortality and morbidity. It is known

that about 86% of the deaths in Turkey are due to NCD and that cardiovascular diseases are the first place with 47% [20]. The prevalence of these diseases increases with age. The increase in life expectancy at birth and effective treatments in the control of chronic diseases is very effective in increasing the NCD prevalence. HBHC patients are a group of patients with an increased incidence of chronic diseases and multiple illnesses. Chronic diseases such as hypertension and diabetes, which are not controlled, may complicate existing problems in people (delay in wound healing etc.), at the same time may also cause secondary problems. Therefore, control of chronic diseases in the HBHC group is an important step in preventing especially the complications and decreasing the related health expenditures [21].

The reasons of applying to HBHC services; 56.0% neurological disease, 29.8% old age, was determined as. Also, in the related literature, neurological diseases (%19.3-50.3) have been identified as the most common reason for receiving HBHC [22-24].

In this study patients' dependency rate in ADL were; 97.0% for bathing, 66.4% for personal care, 56.7% for toilet needs, 64.9% for walking, 35.1% for eating.

Inability to walk ratio in the urban centers in Turkey was

3.1%, this rate rises to 36.5% over 75 years and older. When evaluating ADL in Turkey 75 years and older “difficulty/not being able to self” expression was used for bathing 31%, for dressing 25%, for toilet use 24%, for eating without help 17% [17]. In literature evaluating the ADL of individuals receiving HBHC services, high rates of dependency were determined like in our study and “not possible to do / fully dependent” expression was used 30.6-85.3% for bathing, 17.6-81.9% for dressing up, 28.2-41.7% for toilet use, 9.3-14.1% for eating [3,12,22,23].

According to the BI 80.6% of patients “highly or fully dependent” (50.7% were fully dependent) have been detected. In the group 75 years and older who were living in urban centers Turkey, the rate of severely restricted ADL within the past 6 months was 77.3% [17]. In the studies evaluating the ADL in patients receiving HBHC, fully dependency was found in 27.8-44.2% [12,14].

In a study conducted with patients who had stroke by Gorgulu, et al. 65% of the patients were found to be highly/fully dependent [25]. It is evident that those with stroke have aggravated the level of dependence according to the normal population. In our study, other neurological diseases present may have altered this effect in patients receiving HBHC.

It was determined that those who received home health care services due to neurological diseases were in fully/highly dependent group mostly. On the other hand, it was found that people who received home health care because of old age were moderately/ mildly dependent. Although it is known that dependency increases with old age, the reason why the result of our univariate analysis is completely opposite; may be that elderly people generally have been included in the home health care for sociocultural reasons [26]. As a matter of fact, when multivariate analyzes were performed, it was found that Alzheimer’s Disease may increase the risk of fully/highly dependent up to 10 times in individuals receiving home health care.

## Conclusion

As in our study group, people who receive HBHC are usually in elderly group and have many disease burdens. The population projections show that the population is getting older and the life expectancy at birth is increasing. With the rapidly increasing elderly population, the increase in chronic diseases and disability rates increase the need for care. In this study, Alzheimer’s disease was found to be the most important factor that increasing the need for HBHC. Studies in the literature have also shown that the increased prevalence of Alzheimer’s each year.

This shows that the need for HBHC services, which

provides effective protection and treatment at low cost from health care services, will progressively increase. Therefore, it should be kept in mind that the HBHC should be presented in a multidisciplinary approach and that the caregiver should be specially trained and equipped.

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## Conflict of Interest

The authors declare no conflict of interest.

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