

## RESEARCH / ARAŞTIRMA

# Evaluation of Psychological Symptom Differences Between Disabled and Non-Disabled Individuals

## Engelli Olan Bireylerle Engelli Olmayan Bireyler Arasındaki Psikolojik Semptom Farklılıklarının Değerlendirilmesi

İlknur UZ<sup>1</sup>, Hüseyin ÜNÜBOL<sup>1</sup>, Gökben HIZLI SAYAR<sup>2</sup>

<sup>1</sup>Üsküdar University, Social Sciences Institute, Istanbul, Türkiye

<sup>2</sup>Üsküdar University, Faculty of Humanities and Social Sciences, Psychology Department, Istanbul, Türkiye

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Corresponding Author/Sorumlu Yazar:

İlknur UZ, PhD Candidate

Üsküdar University, Institute of Social Sciences,  
Psychology Department

E-mail: ilknuruz@yandex.com

ilknurphd@gmail.com

ORCID: 0000-0002-5350-1381

Hüseyin ÜNÜBOL, Assoc. Prof. Dr., Director of  
Social Sciences Institute

ORCID: 0000-0003-4404-6062

Gökben HIZLI SAYAR, Prof. Dr.,

ORCID: 0000-0002-2514-5682

### Abstract

**Objective:** The aim of this study was to evaluate the differences in psychological symptoms between disabled and non-disabled individuals.

**Material and Method:** This paper conducts a multi-facet analysis (depression, anxiety, negative self, hostility and somatization) on disabled people for the first time. This study included 24493 people (non-disabled=23391, disabled=1102) from 9 demographic regions in Turkey and participants in the study were 18 years or older. Socio-demographic information form and Brief Symptom Inventory (BSI) were used as data collection tools. The participants' scores from the BSI were evaluated according to their disability status for each of the sub-dimensions of depression, anxiety, negative self, hostility and somatization.

**Results:** When the mean BSI scores of the participants were compared, it was seen that the lowest mean scores in all sub-dimensions belong to non-disabled individuals. When the groups of people with disabilities were compared according to psychological symptoms, there were no differences for the 4 symptoms, whereas the scores of individuals with chronic disease were significantly higher in the somatization sub-dimension than the others. It was observed that hearing impaired individuals had the lowest mean score in anxiety, somatization and hostility sub-dimensions among the groups of disabled individuals.

**Conclusion:** Increasing awareness of disabled people in society and supporting them with psychotherapy methods that will improve the resistance mechanisms and increase adaptation to disability will contribute to social welfare.

**Keywords:** Disabled, psychological symptoms, brief symptom inventory, chronic illness/disease, physical impairment.

### Öz

**Amaç:** Bu araştırmanın amacı, engelli bireylerle engelli olmayan bireyler arasındaki psikolojik semptom farklılıklarının değerlendirilmesidir.

**Gereç ve Yöntem:** Bu makale ilk kez engelli bireyler üzerinde çok yönlü bir analiz (depresyon, kaygı, olumsuz benlik, düşmanlık ve somatizasyon) yapmaktadır. Bu çalışmaya Türkiye geneli 9 demografik bölgeden 24493 kişi (Engelli olmayan=23391, Engelli=1102) dahil edilmiş olup çalışmada yer alan katılımcılar 18 yaş ve üzerindedir. Veri toplama araçları olarak sosyo-demografik bilgi formu ve kısa semptom envanteri (KSE) kullanılmıştır. Katılımcıların kısa semptom envanterinden aldıkları puanlar depresyon, anksiyete, olumsuz benlik, hostilité ve somatizasyon alt boyutlarının her biri için engel durumlarına göre değerlendirilmiştir.

**Bulgular:** Çalışmaya katılan bireylerin KSE puan ortalamaları karşılaştırıldığında, tüm alt boyutlarda en düşük puan ortalamalarının engelli olmayan bireylere ait olduğu görülmüştür. Psikolojik semptomlara göre engelli birey grupları kendi içinde karşılaştırıldığında 4 semptom için farklılık bulunmazken somatizasyon alt boyutunda kronik hastalığa sahip bireylerin puanları anlamlı olarak diğerlerine göre yüksek bulunmuştur. İşitme engelli bireylerin engelli birey grupları içinde anksiyete, somatizasyon ve öfke/saldırganlık alt boyutlarında en düşük puan ortalamasına sahip olduğu görülmüştür.

**Sonuç:** Sonuçlar alanyazındaki verilerle karşılaştırıldığında birbirini destekler niteliktedir. Toplumda engelli bireylere yönelik farkındalığın artması ve engelli bireylerin direnç mekanizmalarını geliştirecek ve engelliliğe uyumu arttıracak psikoterapi yöntemleri ile desteklenmesi, toplumsal refaha katkı sağlayacaktır.

**Anahtar Kelimeler:** Engelli, psikolojik belirti, kısa belirti envanteri, kronik hastalık, fiziksel bozukluk.

## 1. Introduction

The term "disabled" is a concept that means a person cannot attain equal opportunities with other individuals in the society because of his/her certain characteristics or social condition (1). Disability is a human condition. According to a report by World Health Organization, there are more than 1 billion of disabled persons on the world. As the population grows older, the rate of disabled persons is estimated to increase in the upcoming years. As human life gets longer, almost everyone faces the risk of weakening and having difficulties in carrying out functions at a certain point of life (2).

Disabled persons are among the most marginal groups on the world. Disabled individuals are subject to higher rates of poverty than the rest of population, because of reasons such as health issues, difficulties in access to education opportunities and less participation in economic life (3). There are different consequences of having a disabled child on the families due to the structure of the community they belong to, their own subjectivity, their personal characteristics and their sources of support (4). By learning how to approach parents of children with disabilities, healthcare professionals become more familiar with the factors affecting hopelessness and problem-solving skills of these families (5).

According to data from Turkey Disability Survey in 2002 by Turkish Statistical Institute (TÜİK), disabled individuals constitute 12.3% of population in Turkey (6). On the other hand, various public spaces and utilities, such as public transport vehicles, pavements, parks and schools, are yet to be arranged in a manner accessible for the disabled. This fact makes social communication and employment even harder for the disabled (7). Besides, general exclusionary attitude in society towards the disabled, as well as negative stereotypical prejudgments are the invisible obstacles before integration of disabled individuals with the society (8). Promising education will significantly increase acceptance of persons with disabilities and facilitate their inclusion in society (9).

Nevertheless, as the awareness about human rights increases, so do the studies about rights of the disabled. Rights of disabled individuals to acquire profession are defined by law; accordingly, Republic of Turkey has signed the United Nations (UN) Convention on the Rights of Persons with Disabilities, which encourages complete and equal utilization of human rights and fundamental freedoms by all disabled individuals, on 30 March 2007 (10).

According to relevant studies, basic problems of disabled persons vary depending on aspects of life; consequently, not only disabled individuals, but also their families undergo numerous problems (11). Studies attract attention to the fact that the problems of disabled persons are a global problem of human rights, and that it is necessary to raise awareness and ensure comprehension with regard to these persons in the society (12). Certain specific regulations and programs for disabled individuals actually lead to their isolation and exclusion from the society. Participation in social life and self-realization is a requirement for disabled persons, as it is for everybody. In the absence of satisfaction of such requirement, all individuals suffer from the sense of inadequacy, and this impact is even more apparent when it comes to persons with disabilities (13).

Numerous studies have examined the impact of disability on psychological condition and grounded this impact on

various principles and theories (14). Theory of "individual psychology" is one of the most-referred theories in order to explain disability-related psychological processes (15). In his theory of individual psychology, Adler understands human development as a historical conflict of sense of inferiority (inadequacy) and difficulties of life. The sense of inferiority (inadequacy) is the psychological tension that is innate to human nature and that occurs whenever one has difficulty in meeting a requirement. Such tension may have positive or negative impacts on human development (16).

Present study classifies disabilities in four categories, namely, visually-impaired, hearing-impaired, chronic disease and orthopedic disability. The differences of psychological symptoms between individuals with and without one of four abovementioned disabilities is examined in hereby study for the first time.

Within the scope of present study, chronic diseases are also analyzed within the group of disabilities. Chronic diseases are those which often show slow progress; the person has to live with them for a long period or even for entire lifetime since it is mostly impossible to cure; besides, they require periodical follow-up and supportive care in order to decrease the severity level of the illness (17, 18). Chronic diseases may lead to physical functional disorder, restriction in daily activities, loss of independence, pain, emotional distress and changes in self-identity (19, 20). According to data by World Health Organization (WHO) in 2010, noncommunicable chronic diseases are the most common cause of death on the world. In 2008, more than 36 persons died of noncommunicable chronic diseases, which primarily include cardiovascular diseases (48%), cancers (21%), chronic respiratory diseases (12%) and diabetes (3%) (18). Certain factors, which are entailed by chronic diseases (such as treatment process, medications, breakdown of family relationships, change in body image, pain etc.), can be principal sources of stress (21). Therefore, chronic diseases require appropriate administration of not only physiological problems, but also of psychosocial problems (21).

In addition to chronic diseases, hereby study classifies disability statuses as visual, hearing and orthopedic. Hearing-impairment (deafness) is a heterogeneous situation with comprehensive impacts on social, affective, and cognitive development (22). There are numerous studies revealing sensitivity of hearing-impaired individuals with regard to mental health problems. According to general comparisons, persons with hearing-impairment show more explicit symptoms of anxiety and depression than those without such impairment (23, 24).

Visual impairment may be considered as an organic character disability about ocular diseases that affect regular functioning of eyesight. Such impairment may lead to complete absence of eyesight and may occur in genetic or acquired manner, with or without perception of light (25). It is a well-known fact that visual impairment has a negative impact on mental state of individual. Visual loss is one of the prominent reasons of disability in adults and is related with low quality of life and increasing symptoms of depression and anxiety (26).

Orthopedic disability is another category of handicap. Such cases include congenital and actual disorders in muscular and skeletal structure of the person. Presumably, persons with orthopedic disability are more likely to have

psychological difficulties than others. 'Body image', which is brought forward in the society for several reasons, may be impaired due to orthopedic impairment as a result of congenital disorder or eventual accident. Such impairment may lead to damage in psychological well-being. The same situation can also occur in individuals who do not have orthopaedic impairment but who look different than common 'body image' in the society (27).

The objective of present study is to identify psychological symptoms of disabled individuals, whose number is expected to rise together with ever-growing world population, as well as to compare them with persons without disabilities, and to evaluate relevant results. Besides, we will seek responde the question, namely, whether psychological symptoms vary depending on disability variables such as visual impairment, hearing impairment, physical disability and chronic disease. The significance of hereby study is the projected contribution towards raising awareness in society and academic circles with regard to disabled individuals.

## 2. Materials and Methods

Hereby this section includes objective of the study, population of the study, samples, procedure, data collection tools and data evaluation.

The objective of hereby study is to evaluate differences of psychological symptoms between individuals with and without disabilities.

### 2.1. Population

Sampling design and magnitude of Turkey's Addiction and Mental Health Risk Profile Map (TURBAHAR) enables analysis for entire Turkey and 9 demographic regions therein (Mediterranean, Aegean, Western Black Sea, Eastern Black Sea, Eastern Anatolia, Central Anatolia, Western Marmara, Eastern Marmara, Istanbul). In selection of samples, TURBAHAR has principally employed the approach of layered cluster sampling. The sample group is planned upon participation of persons resident in 26 NUTS3 regions. Minimum 200 and maximum 2000 persons are included from each region. The principal criteria for those who are selected as a candidate are to be above 18 years, to be volunteer, and not to have any obstacle against filling in questionnaire. The principal criteria for those who are not are to be individuals between the ages of 0-17; persons with institutional residence (eg hotel, motel, hospital, student dormitory, prison, etc.); those who do not reside permanently in Turkey; non-citizens of the Republic of Turkey and individuals with intellectual disabilities who have difficulty understanding and answering the research questions clearly and accurately. More samples are selected from regions with higher population density. Interviews are carried out with 24990 persons for the study. 125 people from Üsküdar University Clinical Psychology Postgraduate students took part as "field researchers" in the TURBAHAR field study. Each field researcher has been assigned to the regions where the family of origin is located or can reach. While field researchers took charge in coordination with 9 sub-regional representatives, 9 sub-regional representatives coordinated with 4 big regional representatives. The central coordination of the study was carried out by two faculty members from Üsküdar University (64). It is considered appropriate to carry out analyses for 24493 persons among them, since they meet the abovementioned criteria and completely fill the scales.

### 2.2. Sample Group

Sample group of the survey consists of 24493 participants, 1102 with and 23391 without disabilities, who are included in TURBAHAR study and meet relevant criteria. The participants are at or above 18 years, and males and females constitute 50.3% and 49.7%, respectively.

After signing the informed volunteer form, the questionnaires, which were turned into a booklet containing the data collection tools, were delivered to the participants. Volunteers filled the questionnaires individually under the supervision of the researcher and delivered them to the researcher. Instructions regarding the scales were given both verbally and in writing. During the application, the questions of the volunteers who asked for help were answered. All questions were read by the researcher to the illiterate participants. It took an average of 45 minutes to fill out the questionnaires. Since the application took a long time and the participants took time to answer in their busy working environment, there was no time limit for the participants to fill in the scales. Participants were informed after the application and the researcher's name, surname and e-mail address information were shared in order to be able to reach them for questions that may arise in their minds about the research in the future (64).

### 2.3. Procedure

One hundred twenty five thesis students were employed for field survey of TURBAHAR. Each student reached persons living in regions they are located or can access. Students were appointed in coordination with representatives of 9 subregions, who, in turn, were in coordination with 4 representatives of major regions. Two academic members presided the survey. All employees were responsible towards their superior regional representative. All employees worked in responsibility towards academic members.

Survey participants included individuals from workplaces such as schools, municipal departments, private companies, and other posts or locations such as neighborhood, common public spaces, courses and charities. The survey was explained to potential participants, who were asked eventually asked if they wanted to participate for contribution to relevant purpose. Individuals of or above 18 years of age were included in the survey. Following the signature of informed volunteer sheet, participants were provided with questionnaires in the form of booklets with related data collection tools. Volunteers individually filled the questionnaires, before returning them to respective pollster. Directives about scales were given in verbal and written manner. Any questions of volunteers in terms of application were duly answered. It took an average of 45 minutes to fill the questionnaire. Given the long-lasting application and intense working responsibilities of participants, no time limit was imposed on participants for filling the scales. Participants were duly informed in the wake of implementation; accordingly, they were provided with details about pollster such as name, e-mail etc. for contact in case of any possible eventual questions about the survey. Ethics Committee Approval for the survey was obtained from Nonentrepreneurial Ethics Committee of Üsküdar University.

The teams began their field task in July 2018. Data collection and input was accomplished in October 2018. All data input was carried out into previously prepared and distributed Excel templates. All data was sent to responsible academic member. All data was used to constitute a single data pool, before being uploaded on the software SPSS 21. Data were appropriately organized. Following discharge of incomplete and incorrect data, data of 24456 persons were put to analysis.

The survey makes use of Sociodemographic Information Sheet and Brief Symptom Inventory (BSI), prepared by researchers so as to include questions about demographic details in order to collect relevant data. All participants have signed a consent form on the first page of the booklet, where they indicate their participation in the survey on voluntary basis. The consent form, signed by participants, provides brief information about objective of the survey, and the participants were asked to answer the scales and questionnaires.

#### 2.4. Sociodemographic Information Sheet

Demographic information sheet includes questions about age, educational level, marital status and gender of participants. Level of education is divided in the sections of illiterate, literate, primary school graduate, secondary school graduate, high school graduate, university graduate and postgraduate. Marital status is classified as married, single and divorced. Besides, they were asked if they had any disability (visual, hearing, mental, orthopedic impairment, chronic disease, or no disability).

#### 2.5. Brief Symptom Inventory

This is a self-evaluation scale of 53 items, developed by Derogatis (1992) in order to scan various psychological symptoms. Score for each item varies between 0 to 4 points (0=none, 4=extremely), and the total score varies between 0 and 212 points (28).

The original scale includes nine subscales, namely, obsessive-compulsive disorder, phobic anxiety, hostility/aggression, anxiety disorder, psychoticism, interpersonal sensitivity, depression, somatization and paranoid thoughts. Cronbach's Alpha internal consistency coefficient for subscales is between 0.71 and 0.85. Test-retest reliability is the range between  $r=0.68-0.91$  (29).

Total high score from scale points out higher frequency of symptoms for the individual. Turkish adaptation of BSI was realized by Şahin & Durak (1994) by means of three separate studies. Accordingly, the scale consists of five factors, namely, "Anxiety" (13 items), "Depression" (12 items), "Negative self" (12 items), "Somatization" (9 items) and "Hostility" (7 items). Cronbach's Alpha coefficients of subscales, which are formed on the basis of mentioned factors, vary between .87 and .75 (28).

#### 2.6. Data Evaluation

Survey data is put to analysis by means of SPSS- 21.

Demographic variables with regard to sample group were interpreted according to disability status. Psychological symptom differences within general distribution statistics are examined by means of ANOVA Analysis. Subdimensions

of Brief Symptom Inventory (Anxiety, Depression, Negative self, Somatization and Hostility) employed in the survey were compared with regard to persons with and without disabilities.

### 3. Results

Distribution statistics as to demographic variables of the survey are given in Table 1 below. Accordingly, males and females constitute 50.3% and 49.7%, respectively, of the sample group of 24493 persons. As for marital status, singles constitute 53.3%, whereas 43.1% of participants are married and remaining 3.5% are divorced. In terms of education, university graduates are the most common with 54.5%. 95.5% of participants (n=23391) have no disability. 1102 participants (4.5%) have minimum one disability.

95.5% of participants (n=23391) have no disability. 1102 participants (4.5%) have minimum one disability. Distribution of disabled individuals according to disability status is as follows: chronic disease: 56.9% (n=627), orthopedic disability: 20.7% (n=228), visual impairment: 16.2% (n=179), hearing impairment 6.2% (n=68). Among disabilities, chronic disease is the most common with 56.9% (n=627) while hearing impairment is the least common with 6.2% (n=68).

**Table 1. Distribution of Participants According to Sociodemographic Characteristics**

		Persons without Disabilities	Persons with Disabilities	%
		n=23391	n=1102	
<b>Gender</b>	Male	11762	562	50.3
	Female	11629	540	49.7
<b>Marital Status</b>	Married	10037	517	43.1
	Single	12514	534	53.3
	Divorced	823	49	3.5
	Illiterate	23	3	0.1
<b>Educational Background</b>	Literate	237	15	1.0
	Primary School	1149	98	5.0
	Secondary School	1365	100	6.9
	High School	6087	311	26.1
	University	12843	508	54.5
	Postgraduate	1673	67	7.1
		<b>n = 1102</b>		<b>%</b>
<b>Disability Status</b>	Visual impairment		179	16.2
	Hearing impairment		68	6.2
	Chronic disease		627	56.9
	Orthopedic disability		228	20.7

Distribution of disabled participants according to sociodemographic characteristics is given in Table 2. Accordingly, 50.3% (n=562) of disabled participants are male, while 49.7% (n=540) are female. As for marital status of disabled male and female participants, 73% of the visually-impaired and 54% of the orthopedically handicapped are single. The percentage of singles in these two disability groups are higher than others. With regard to educational background, university graduates are the most common among disabled participants. The university graduates constitute 54% of visually-impaired, 46% of hearing-impaired, 45% of those with chronic disease and

42% of orthopedically handicapped. The high level of education among disabled participants is significantly positive. As for age groups of disabled participants, no major change is observed; nevertheless, participants of and above 39 years of age are more common (39%) than other age categories.

Table 3 shows descriptive statistics regarding subdimensions of Psychological Symptom Inventory of participants according to the variable of disability status; accordingly, highest average scores are from subdimensions of depression (24.15) and anxiety (22.8999) for all groups. Lowest average scores in all subdimensions are made by individuals without disability. As for type of disability among disabled individuals, chronic disease leads to highest score in subdimensions of Depression, Anxiety and Somatization, while the visually-impaired score highest points in subdimensions of Negative Self and Hostility. The lowest score also depends on disability status according to relevant subdimensions; nevertheless, the hearing-impaired have the lowest scores in subdimensions of Anxiety, Somatization and Hostility. The following Table 4 shows findings of One-Way Analysis of Variance (ANOVA) about whether the abovementioned average scores vary in significant manner according to disability groups.

According to Table 4: One-Way Analysis of Variance (ANOVA) Findings regarding Average Scores from Brief Symptom Inventory Subdimensions according to Variable of Disability Status, differences in average scores for all subdimensions of brief symptom inventory (anxiety, depression, negative self, somatization and hostility) are statistically significant ( $p < 0.05$ ). Table 5 shows findings of Tukey Post Hoc analysis carried out in order to identify the origin of difference in average scores.

According to Post Hoc Tukey HSD analysis about statistical significance of average scores from Brief Symptom Inventory subdimensions as to disability groups shown

in Table 5, the highest significant difference in Anxiety subdimension is between the persons without disability and those with chronic disease ( $I-J = -2.69514$ ;  $p < 0.05$ ). Average score of persons without disabilities in anxiety subdimension (average 22.8009) is significantly lower than all other groups, except for the hearing-impaired. Besides, no significant difference is found upon within group comparison within any group of disability.

As for mean scores in Depression subdimension according to disability variable, the average score of persons without disabilities (average 24.0361) is significantly lower than all other groups, except for the hearing-impaired. Besides, no significant difference is found upon within group comparison as to depression dimension within any group of disability.

Likewise, mean scores for Negative self show that the average score of persons without disabilities (average 21.5058) is significantly lower than all other groups, except for the hearing-impaired.

Similarly, Somatization subdimension shows that the average score of persons without disabilities (average 15.1071) is significantly lower than all other groups, except for the hearing-impaired. Nevertheless, unlike other Brief Symptom Inventory subdimensions, comparison between disabled groups reveals that the average score of individuals with chronic disease (17.7911) is significantly higher than other groups.

As for Hostility subdimension, comparison between mean scores of persons without disabilities and other groups reveals no significant difference among hearing-impaired and orthopedically-handicapped, but it does in the visually-impaired ( $I-J = -1.62993^*$ ;  $p < 0.01$ ) and persons with chronic disease ( $I-J = 0.92500^*$ ;  $p < 0.05$ ). Then again, intragroup comparisons did not put forth any significant difference.

**Table 2. Distribution of Disabled Participants according to Sociodemographic Characteristics**

		Visually-Impaired n= 179	Hearing-Impaired n= 68	Chronic Disease n= 627	Orthopedically- Handicapped n= 228
<b>Gender</b>	Male	110	31	263	136
	Female	69	37	364	92
<b>Marital Status</b>	Married	44	34	344	95
	Single	131	30	250	123
	Divorced	3	4	33	9
<b>Educational Background</b>	Illiterate	1	0	0	2
	Literate	4	0	8	3
	Primary School	8	7	60	23
	Secondary School	13	5	59	23
	High School	50	22	167	72
	University	98	31	283	96
<b>Age Groups</b>	Postgraduate	5	3	50	9
	18-23	73	17	113	43
	24-29	49	14	132	49
	30-38	26	12	114	53
	39 and above	30	25	268	82

**Table 3. Distribution of Average Scores as to Disability Status within Subdimensions of Brief Symptom Inventory (BSI)**

Brief Symptom Inventory Dimensions	Disability Status	n	Average	Standard deviation	Average for confidence interval of 95%		Min	Max
					Lower limit	Upper limit		
<b>Anxiety</b>	No disability	23392	22.8009	7.52493	22.7044	22.8973	13	65
	Visual impairment	179	24.5866	7.51456	23.4782	25.695	13	65
	Hearing impairm.	68	23.5441	8.16149	21.5686	25.5196	13	52
	Chronic Disease	627	25.496	8.87531	24.8	26.1921	13	63
	Orthopedic impai.	228	24.4079	8.67247	23.2762	25.5396	13	55
<b>Depression</b>	No disability	23392	24.0361	8.25341	23.9304	24.1419	12	60
	Visual impairment	179	26.3296	8.56946	25.0656	27.5936	12	60
	Hearing impairm.	68	26.4118	10.05394	23.9782	28.8453	13	49
	Chronic Disease	627	26.6683	9.50609	25.9227	27.4138	12	60
	Orthopedic impai.	228	26.5263	9.93211	25.2302	27.8224	12	60
<b>Negative Self</b>	No disability	23392	21.5058	7.24185	21.413	21.5986	12	60
	Visual impairment	179	23.6034	7.78822	22.4546	24.7521	12	60
	Hearing impairm.	68	23.3529	8.18948	21.3707	25.3352	12	43
	Chronic Disease	627	23.429	8.40808	22.7696	24.0884	12	58
	Orthopedic impai.	228	23.0175	8.59821	21.8955	24.1396	12	55
<b>Somatization</b>	No disability	23392	15.1071	4.88043	15.0445	15.1696	9	45
	Visual impairment	179	16.6145	5.12342	15.8588	17.3702	9	45
	Hearing impairm.	68	15.9118	5.38859	14.6074	17.2161	9	34
	Chronic Disease	627	17.7911	6.0898	17.3135	18.2687	9	44
	Orthopedic impai.	228	16.7061	5.61045	15.974	17.4383	9	41
<b>Hostility</b>	No disability	23392	14.3477	4.72208	14.2872	14.4082	7	35
	Visual impairment	179	15.9777	5.17444	15.2144	16.7409	7	31
	Hearing impairm.	68	14.8382	4.98538	13.6315	16.045	7	32
	Chronic Disease	627	15.2727	5.13124	14.8703	15.6751	7	35
	Orthopedic impai.	228	15.0526	5.18273	14.3763	15.729	7	32

**Table 4. One-Way Analysis of Variance (ANOVA) Findings Regarding Average Scores from Brief Symptom Inventory Subdimensions according to Variable of Disability Status**

Brief Symptom Inventory Dimensions	Disability status	Square total	df	Mean square	F	Significance (p)
Anxiety	Between	5511.196	4	1377.799	24.008	.000
	Within	1405402.543	24489	57.389		
	Total	1410913.740	24493			
Depression	Between	6765.275	4	1691.319	24.477	.000
	Within	1692172.340	24489	69.099		
	Total	1698937.615	24493			
Negative Self	Between	3688.046	4	922.012	17.328	.000
	Within	1303055.110	24489	53.210		
	Total	1306743.156	24493			
Somatization	Between	5320.823	4	1330.206	54.830	.000
	Within	594119.559	24489	24.261		
	Total	599440.382	24493			
Hostility	Between	1095.298	4	273.824	12.179	.000
	Within	550584.462	24489	22.483		
	Total	551679.760	24493			

**Table 5. Tukey HSD Test Findings as to Difference in Average Scores for Brief Symptom Inventory Subdimensions**

Anxiety	No disability	Visually-impaired	Hearing-impaired	Chronic Disease	Orthopedic Disability
<b>Mean difference</b>					
No disability		-1.78 *		-2.69 *	-1.60 *
Visually-impaired	1.78 *				
Hearing-impaired					
Chronic Disease	2.69 *				
Orthopedic Disabled	1.60 *				
Depression	No disability	Visually-impaired	Hearing-impaired	Chronic Disease	Orthopedic Disability
<b>Mean difference</b>					
No disability		-2.29 *		-2.63 *	-2.49 *
Visually-impaired	2.29 *				
Hearing-impaired					
Chronic Disease	2.63 *				
Orthopedic Disabled	2.49 *				
Negative Self	No disability	Visually-impaired	Hearing-impaired	Chronic Disease	Orthopedic Disability
<b>Mean difference</b>					
No disability		-2.09 *		-1.92 *	-1.51 *
Visually-impaired	2.09 *				
Hearing-impaired					
Chronic Disease	1.92 *				
Orthopedic Disabled	1.51 *				
Somatization	No disability	Visually-impaired	Hearing-impaired	Chronic Disease	Orthopedic Disability
<b>Mean difference</b>					
No disability		-1.50 *		-2.68 *	-1.59 *
Visually-impaired	1.50 *			-1.17 *	
Hearing-impaired				-1.87 *	
Chronic Disease	2.68 *	1.17 *	1.87 *		1.08 *
Orthopedic Disabled	1.59 *			-1.08 *	
Hostility/Aggression	No disability	Visually-impaired	Hearing-impaired	Chronic Disease	Orthopedic Disability
<b>Mean difference</b>					
No disability		-1.62 *		-0.92 *	
Visually-impaired	1.62 *				
Hearing-impaired					
Chronic Disease	0.92 *				
Orthopedic Disabled					

Note: \* Significance;  $p < 0.05$ .

#### 4. Discussion

Objective of hereby survey is to compare differences in psychological symptoms of individuals with and without disability.

Pursuant to findings of present study, persons without disabilities have scored the lowest average points in all subdimensions of Brief Symptom Inventory. Relevant literature includes studies where the hypothesis that frequency of psychological symptoms is higher among disabled individuals is directly or indirectly supported (30, 31) or not supported (32, 33). The supportive studies generally underline difference of psychological symptoms depending on groups with and without disability. As for non-supportive studies, the situations, where the restrictions of the survey, such as educational background and number of samples, can be influential on findings, come to the forefront.

Relevant literature has limited number of studies on the mood of the disabled; besides, it is rare to come across studies where demographic factors are considered as a variable in researches about disability (34).

According to McDaniel (1976), body perception plays an important part in development of self-perception; low satisfaction in body perception affects the physically-disabled more than others and paves way for certain mood problems, such as anxiety. Studies demonstrate that the satisfaction level of disabled individuals regarding body perception is lower than those without disability, whereas social appearance anxieties of the disabled are higher than others. Relevant literature (35 - 45) seems to support the findings of hereby survey.

According to findings of present survey, the hearing-impaired have the lowest average scores in subdimensions of Anxiety, Somatization and Hostility among disabled

groups. Relevant literature findings show that the hearing-impaired are disadvantageous in terms of improvement of social skills because of hearing loss and incompetency in verbal communication, and that this fact leads to more frequent academic, behavioral and affective problems in comparison to persons with normal hearing. According to related studies, the hearing-impaired display weaker social adaptation, empathy and insufficient self-perception than others (46). Researches inform about relationship between visual and auditory perceptual disorders and psychological disorders (47, 48). Nevertheless, there are also studies supporting the findings of hereby survey (49). Accordingly, the quality of life is higher among the hearing-impaired than the visually-impaired. This fact is explained by means of the argument that eyesight is more influential on interaction with living environment. Results regarding subdimensions of Anxiety, Somatization and Hostility may be explained through relative ease in processing environmental data and information, as well as in environmental adaptation among the hearing-impaired.

The present survey demonstrates that persons with chronic disease score the highest average points in subdimensions of Depression, Anxiety and Somatization. Chronic diseases are long-term situations which often show slow progress, hard to cure through medical attempts, and require long-term follow-up and care (17, 18). In parallel with the findings of hereby survey, relevant studies (50 - 57) reveal psychological problems in numerous chronic disease groups such as diabetes, cancer, cardiovascular diseases, respiratory diseases etc. Nonetheless, there are certain studies that ground the relationship between depression and chronic diseases on other reasons. Depression may be outcome of denial of the disease or side effect of medications used for treatment of the disease; or even, it may be a characteristic symptom of the disease (20). Within the scope of hereby study, no result has been indicated as to difference in reasons of depression between the persons with and without disabilities. Such differences may have statistical significance in terms of the specific sample group.

As for Hostility subdimension, the mean scores of persons with disability and chronic disease are significantly lower than others. There is no study about hostility status of disabled individuals in relevant literature; nevertheless, surveys on children and adolescent can either reveal rise in psychopathology (58) or even similar psychopathology between peers with and without disabilities (59, 60).

Difficulties faced by the disabled persons cannot be completely interpreted as negative experience of life; on the contrary, the shortages and difficulties may have a stimulating role on the individual (61). Disability does lead to numerous difficulties for individual; nevertheless, according to certain researchers, this fact does not necessarily mean higher psychopathology among the disabled than others. Hancock & Cobb (1980) approach with suspicion to the argument that affective and social development of individuals with physical disabilities is behind others (62). Likewise, Thompson (2002) asserts that disability does not automatically place a person into depression (63).

We think this hitherto untouched field can be enriched by means of future studies through development of hypotheses in consideration of moods of disabled individuals.

## 5. Conclusion and Recommendations

Prevention of discrimination in a society against the disabled is not a grace or favor, but a human duty towards these individuals. This battle can only be won through common effort and collective act of all individuals, regardless of whether they are disabled or not. Hereby study aims at raising awareness and contributing for providing a more central role for disabled individuals within the science of psychology.

Pursuant to findings of the survey, psychological symptoms are more common among disabled individuals than persons without disabilities in present sample group. These and other supportive findings in the literature underline the necessity for providing higher support for disabled individual in terms of their affective and social aspects, than persons without disabilities. In this respect, it may be recommended to provide support for disabled individuals through psychotherapy, which can improve their mood and resistance mechanism. Studies in recent years introduce successful recommendations of methods in positive psychology to enhance adaptation to chronic disease and disability.

Survey findings does not aim at putting forth fundamental reasons for differences between groups with and without disability, and among disabled subgroups. There is particular requirement for study designs to explain the reasons behind such differences. In this context, higher number of and more qualitative variables should be included in survey sample groups. For instance, predictors of statistical differences between persons with and without disabilities as to Anxiety, Depression, Negative Self and Hostility dimensions should be appropriately examined. In addition, it is necessary to find out the variables influential on differences between visually-impaired, hearing-impaired, persons with chronic disease and orthopedic disability as to somatization. In this regard, formation of sample groups in consideration of abovementioned issues will be useful in future studies.

## 6. Contribution to the Field

This paper conducts a multi-facet analysis (depression, anxiety, negative self, hostility and somatization) on disabled people for the first time.

## Ethical Aspect of the Research

The research was limited to the application made in 2018 (Turkey in General and 9 Demographic Regions: Mediterranean, Aegean, Western Black Sea, Eastern Black Sea, Eastern Anatolia, Central Anatolia, Western Marmara, Eastern Marmara, Istanbul) completed by Scientific Research Programme of Uskudar University under the research project entitled "Turkey's Addiction and Mental Health Risk Profile Map (TURBAHAR)". This project is found ethically appropriate at the meeting numbered 09 of Üsküdar University Non-Interventional Research Ethics Committee held on 03/09/2018.

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## Conflict of Interest

There is no conflict of interest regarding any person and/or institution.

## Authorship Contribution

**Concept:** İU, HÜ, GHS; **Design:** İU, HÜ, GHS; **Supervision:** İU, HÜ, GHS; **Funding:** İU, HÜ, GHS; **Materials:** İU, HÜ, GHS; **Data Collection/Processing:** İU, HÜ, GHS; **Analysis/ Interpretation:** İU, HÜ, GHS; **Literature Review:** İU, HÜ, GHS; **Manuscript Writing:** İU, HÜ, GHS; **Critical Review:** İU, HÜ, GHS.

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