Cukurova Medical Journal
ÇUKUROVA ÜNİVERSİTESİ TIP FAKÜLTESİ

Cukurova Med J 2020;45(4):1482-1492
DOI: 10.17826/cumj.735333

ARAŞTIRMA / RESEARCH

Quality of life among persons with intellectual and physical disability in northwestern Turkey

Türkiye'nin kuzeybatısında zihinsel ve bedensel engelli kişilerde yaşam kalitesi

Yeliz Mercan[1], Kevser Tarı Selçuk[2], Sünbül Hülya Arıkan[1], Aylin Aydın Sayılan[1], Erhan Eser[3]

[1]Kırklareli University School of Health, Kırklareli, Turkey
[2]Bandırma Onyedi Eylül University Faculty of Health Sciences, Balıkesir, Turkey
[3]Manisa Celal Bayar University Faculty of Medicine, Manisa, Turkey

Cukurova Medical Journal 2020;45(4):1482-1492

Abstract

Purpose: The aim of this study was to determine the factors that affect the quality of life (QoL) among persons with intellectual and physical disabilities.
Materials and Methods: This study is descriptive. The study involved 157 persons with intellectual or physical disabilities who were 18 years of age or over in Kirklareli, a province in northwestern Turkey. The study data were collected Turkish versions of World Health Organization (WHO) Quality of Life Brief Version (WHOQOL-BREF) and Turkish versions of WHO Quality of Life Disability Module (WHOQOL-DIS-TR).
Results: According to the results of the multivariate linear regression analysis, high education level, living in an urban area, living alone, good-moderate perceived income, good-moderate health level and presence of a physical disability led to an increase in the WHOQOL-BREF and WHOQOL-DIS module scores obtained by the people with disabilities whereas increasing age led to a decrease in their WHOQOL-BREF and WHOQOL-DIS module scores.
Conclusion: People with intellectual disabilities obtained lower scores from the psychological health and social relationships domains of the WHOQOL-BREF, and from the WHOQOL-DIS disability module and its independence module than did people with physical disabilities, and that low education level, living in a rural area, poor income and poor perceived health were among the changeable risk factors leading to poor QoL.
Keywords:. Quality of life, intellectual disability, physically disabled, disabled persons

Öz

Amaç: Bu çalışmada zihinsel ve fiziksel engelli bireylerin yaşam kalitesini etkileyen faktörleri belirlemeyi amaçlanmıştır.
Gereç ve Yöntem: Tanımlayıcı tipteki bu çalışma Türkiye'nin kuzeybatısındaki Kırklareli'nde 18 yaş ve üstü zihinsel veya fiziksel engelli 157 kişiyi ile yürütülmüştür. Çalışma verileri Dünya Sağlık Örgütü Yaşam Kalitesi Kısa Versiyonu'nun (WHOQOL-BREF) engelliler için uyarlanmış sürümü ve DSÖ Engellilerde Yaşam Kalitesi Modülü (WHOQOL-DIS-TR) ile toplanmıştır.
Bulgular: Çok değişkenli lineer regresyon analizi sonuçlarına göre engellilerde WHOQOL-BREF ve WHOQOL-DIS modül skorlarındaki artışın yüksek eğitim düzeyi, kentsel alanda yaşama, yalnız yaşama, iyi-orta düzeyde algılanan gelir, iyi-orta düzeyde sağlık düzeyi ve fiziksel engele sahip olma ile, WHOQOL-BREF ve WHOQOL-DIS modül skorlarındaki azalışın ise artan yaşla ilişkili olduğu belirlenmiştir.
Sonuç: Zihinsel engellilerin WHOQOL-BREF psikolojik ve sosyal ilişkiler boyutu, WHOQOL-DIS engelli modülü ve bağımsızlık modül skorlarının fiziksel engelli bireylere göre düşük olduğu ve düşük eğitim düzeyi, kırsal alanda yaşama, kötü gelir ve sağlık algısının kötü yaşam kalitesi için değiştirilebilir risk faktörleri olduğu belirlenmiştir.

Anahtar kelimeler: Yaşam kalitesi, zihinsel engelli, fiziksel engelli, engelli birey

Yazışma Adresi/Address for Correspondence: Dr. Yeliz Mercan, Kırklareli University School of Health, Kırklareli, Turkey. Email: mercan.yeliz@gmail.com
Geliş tarihi/Received: 10.05.2020 Kabul tarihi/Accepted: 06.09.2020 Çevrimiçi yayın/Published online: 30.12.2020

INTRODUCTION

The International Classification of Functioning, Disability and Health (ICF) define disability as prevention of an individual's participation in the society due to the restriction in activities of daily living and thus limitation of the social role of the person[1]. In recent years, the rapidly increasing number of people with disabilities due to aging population and increasing chronic health conditions led to an increase in the global burden of disability[2].

The World Health Organization (WHO) reports that people with disabilities comprise 15.6% of the population of the world[3] and that the rates of poorer health outcomes, lower education, less economic participation and higher poverty are higher in individuals with disabilities than are those in individuals without disabilities due to barriers to access healthcare, education, employment, transportation services, etc.[4] QoL is a multidimensional construct proposed as a health indicator of the population, and its evaluation is used to boost health promotion actions[5,6]. QoL can be defined as an individual's perception of his/her position in life within the context of the culture and value systems in which he/she lives, and in relation to his/her goals, expectations, standards and concerns and involving physical, psychological, social relationships and environment domains[5]. In previous studies it has been reported that the level of the QoL decreases as the level of disability increases[7,8], and QoL has been shown to be markedly worse in people with disabilities due to such factors as low education and income levels, difficulty in accessing health and social services, and discrimination[9-11]. It has been reported that people with disabilities experience more restrictions in community participation due to such factors as poor QoL, poor well-being, increased dependency etc. than do healthy people[12-14].

In the World report on disability of the WHO, empowering of people with disabilities and increasing their community participation emphasized as an important goal[4], and studies conducted to assess the QoL are given priority among health-related studies[3]. In the literature, it has been reported that because the QoL is a subjective concept and influenced by internal and external factors, it is difficult to manage and optimize this concept without predicting its determinants[13]. Within this context, determining the QoL and related factors in people with disabilities is of great importance because this can provide guidance for the initiatives to be planned and implemented to improve the QoL and the participation of people with disabilities. In this study, we aimed to determine the factors that affect the QoL among persons with intellectual and physical disabilities.

MATERIALS AND METHODS

This descriptive study was conducted in Kirklareli between January 2016 and September 2016. This study was approved by the Ethics Committee of the Institute of Health Sciences Kirklareli University (Date Feb 12, 2016, Code: P17R00).

The population of Kirklareli in 2015 was 346.973[15]. According to the Turkey Disability Survey, the prevalence of disability in 2002 was reported as 12.3%[16]. The minimum sample size of the study was calculated as 166 ($N = 346.973$, $p = 0.123$, $\alpha = 0.05$ and $d = 0.05$) in the Epi Info 7.2 program. However, considering the possibility of refusals, withdrawals and/or losses, it was decided to include 20% (design effect 1.2) more people; thus, it was aimed to reach 200 disabled people.

Via the disabled associations, private education centers of public and private institutions, and non-governmental organizations located in Kirklareli district centers, 205 people with disabilities aged 18 and over were contacted. The distribution of these people to the districts was as follows: Central district of Kirklareli (n = 135), Luleburgaz district (n = 24), Vize district (n = 11), and Pinarhisar district (n = 35). The individuals determined to have disabilities were reached using the snowball sampling method. Then they were informed about the purpose and scope of the study and asked whether they volunteered to participate in the study. After appointments to pay home visits were made with those who agreed to participate in the study (n = 196), they were visited at home on the day and time of the appointment. However, five of them who lost their lives before the appointment date were excluded from the study, and visits to their homes were canceled. Of the remaining people, those who stated that they had a disability were included in the study (n = 123). Of the people who stated that they had no disability (n = 68) were asked if they had any chronic illness for a year or more which requires medical care. Those who gave "yes" answer were asked if the disease restricted their activities of daily living. Those whose illness restricted their activities of daily living were also included in the study (n = 57). The study was started

with 180 people with intellectual or physical disabilities. During the analysis phase of the study, those who did not answer the questions completely (n = 23) were also excluded from the study, and thus the data obtained from 157 people with disabilities were analyzed.

Measures

The study data were collected using the Personal Information Form prepared by the researchers, Turkish versions of WHO Quality of Life Brief Version (WHOQOL-BREF) and Turkish versions of WHO Quality of Life Disability Module (WHOQOL-DIS-TR). Before the data were collected, verbal and written consent was obtained from the people with disabilities or their surrogates indicating that they agreed to participate in the survey. The data were collected by trained interviewers using the face-to-face interview technique.

The WHOQOL-BREF is a generic measure of QoL. It is a 26-item instrument consisting of 4 domains and 26 items: physical health (7 items), psychological health (6 items), social relationships (3 items), and environmental health (8 items). It also contains items questioning QoL and general health. The period refers to the previous two weeks, and the responses given to the items are rated on a 5-point Likert scale. There is no total score for the scale, and the increase in scores from each sub-domain indicates the improvement in QoL. WHOQOL-DIS is an instrument used for people with disabilities in addition to the WHOQOL-BREF questionnaire. This instrument was developed by the WHOQOL-DIS Group, which was carried out as part of the DIS-QOL Project, funded by the European Commission Framework 6 Program and under the auspices of the WHOQOL Group[17-19]. The scale assessing the previous two weeks consists of 13 items and three submodules (Discrimination-Support, Independence, and Community Participation). The higher the score obtained from the scale is the better the QoL is[17-19].

Variables of the study

The dependent variable of the study was the level of QoL. The independent variables of the study were age, sex, education, place of residence, marital status, living alone, perceived income level, perceived health level, disability type, and the number of disabilities. Disability type was classified in line with ICF diagnostic code[1]. Accordingly, those with seeing and related dysfunctions or structural disorders (15.9%), hearing and vestibular dysfunctions or structural disorders (13.4%), voice and speech dysfunctions or structural disorders (17.2%), neuromusculoskeletal and movement-related dysfunctions or structural disorders (70.7%), sensory dysfunctions and pain (3.2%), cardiovascular, hematological, immunological, respiratory systems, digestive, metabolic and endocrine systems, genitourinary and reproductive, skin and related structures dysfunctions (66.9%) defined as physically disabled, and those with mental dysfunctions (14.0%) defined as mentally disabled. At least two obstacles in one person were defined as multiple disabilities.

Education level was specified as illiterate (0 year), literate but not a graduate of any school (1 year), primary school level (5 year), secondary school level (8 year), high school level (12 year) university and above (16 year) according to the year of education. In the analysis, education level was categorized as "5 years and below" including those who had primary school or lower education and "higher than 5 years" including those who had secondary school or higher education.

Statistical analysis

In the study, in the descriptive statistics, numbers, percentages, mean and standard deviation were used. The normality of the distribution checked using the Shapiro Wilk test. The Student's t test and Mann Whitney-U test used in the comparison of the mean values.

A multivariate linear regression analysis (Enter strategy) used to investigate the relationship between independent variables and WHOQOL-BREF and WHOQOL-DIS. In the univariate analysis, variables with a *p*-value < 0.20 were considered significant in the literature[19,20], and were therefore included in the model. Of these variables, being in the 65 age of lower, male sex, having five years or lower education, urban residence, married, not living alone, poor perceived income, poor perceived health, intellectual disability, the number of disabilities is one was used as the reference group (0) and compared with all other categories (1). The explanatory value of the models evaluated using the Adjusted R Square (Adj. R^2). *P-values* < 0.05 considered statistically significant. The analysis performed using the Statistical Package for the Social Sciences, version 22.0 (SPSS Inc., Chicago, IL, USA).

RESULTS

In the present study, the data of 157 people with intellectual and physical disabilities were evaluated. Of the participants, 86.0% had a physical disability and 14.0% had an intellectual disability. Of the participants with intellectual disabilities, 27.3% (n = 6) had congenital mental morbidity and 72.7% (n = 16) had acquired psychiatric morbidity. Of the participants with physical disabilities, 10.4% (n = 14) had a congenital physical disability and 89.6% (n = 121) had an acquired physical disability. The mean age of the participants was 69.5 ± 20.4 (min: 18, max: 103) years (Table 1).

Table 1. Characteristics of participants (n =157)

Variables	All groups		Intellectual disabled (n=135)		Physical disabled (n=22)	
	n	%	n	%	n	%
Age						
69.5 ± 20.4 (min: 18, max: 103)						
< 65	48	30.6	13	59.1	35	25.9
≥ 65	109	69.4	9	40.9	100	74.1
Sex						
Male	71	45.2	11	50.0	60	44.4
Female	86	54.8	11	50.0	75	55.6
Education level						
≤ 5	136	86.6	18	81.8	118	87.4
> 5	21	13.4	4	18.2	17	12.6
Place of residence						
Urban	99	63.1	19	86.4	80	59.3
Rural	58	36.9	3	13.6	55	40.7
Marital status						
Married	74	47.1	5	22.7	69	51.1
Single	83	52.9	17	77.3	66	48.9
Living alone						
No	141	89.8	20	90.9	121	89.6
Yes	16	10.2	2	9.1	14	10.4
Perceived income level						
Poor	50	31.8	10	45.5	40	29.6
Good-Moderate	107	68.2	12	54.5	95	70.4
Perceived health level						
Poor	39	24.8	6	27.3	33	24.4
Good- Moderate	118	75.2	16	72.7	102	75.6
The number of disabilities						
One	42	26.8	2	9.1	40	29.6
Multiple	115	73.2	20	90.9	95	70.4

Table 2. Distributions of the participants' WHOQOL-BREF and WHOQOL-DIS scores (n=157)

Variable	n	WHOQOL-BREF								Disability		WHOQOL-DIS					
		Physical		Psychological		Social		Environment				Discrimination-Support		Independence		Community Participation	
		†M	SD	†M	SD	†M	SD	†M	SD	†M	SD	†M	SD	†M	SD	†M	SD
Age																	
< 65	48	39.73	18.44	48.87	18.25	40.10	21.03	55.27	16.63	43.75	17.33	42.02	17.41	43.06	30.08	46.55	16.71
≥ 65	109	33.45	15.09	47.17	17.39	39.07	19.23	53.73	15.83	41.69	14.70	43.40	15.64	34.95	24.51	44.77	16.56
t		*2.073*		*0.556*		*0.302*		*0.555*		*0.765*		*–0.494*		*1.777*		*0.617*	
P		*0.042*		*0.579*		*0.763*		*0.579*		*0.445*		*0.622*		*0.078*		*0.538*	
Sex																	

Male	71	35.26	17.61	49.18	20.09	40.61	21.64	55.02	16.77	44.85	17.00	45.83	16.41	41.73	29.66	46.73	18.69
Female	86	35.47	15.42	46.46	15.29	38.37	18.09	53.52	15.48	40.23	13.95	40.63	15.65	33.88	23.17	44.15	14.60
t		*–0.077*		*0.937*		*0.706*		*0.579*		*1.873*		*2.025*		*1.820*		*0.972*	
P		*0.939*		*0.351*		*0.481*		*0.563*		*0.063*		*0.045*		*0.071*		*0.332*	
Education level																	
≤ 5	136	33.80	15.39	46.23	16.68	37.93	19.11	53.26	15.69	39.85	14.45	41.56	15.10	33.44	24.60	43.14	15.52
> 5	21	45.58	19.26	57.14	20.84	48.81	21.62	60.27	17.35	58.33	12.64	52.17	19.84	63.24	24.27	59.40	16.60
χ		*–3.029*		*–2.392*		*–2.421*		*–1.592*		*–4.987*		*–3.080*		*–4.462*		*–3.875*	
P		*0.002*		*0.017*		*0.015*		*0.111*		*0.000*		*0.002*		*0.000*		*0.000*	
Place of residence																	
Urban	99	37.01	17.37	46.93	17.60	39.90	18.87	57.04	15.71	43.76	15.45	43.34	17.45	38.98	26.50	47.39	15.89
Rural	58	32.57	14.27	48.99	17.72	38.51	21.28	49.35	15.55	39.85	15.48	42.36	13.79	34.77	26.54	41.78	17.24
t		*1.647*		*–0,708*		*0.426*		*2.970*		*1.530*		*0.368*		*0.960*		*2.067*	
P		*0.102*		*0.480*		*0.671*		*0.003*		*0.128*		*0.713*		*0.338*		*0.040*	
Marital status																	
Married	74	35.47	16.03	50.73	18.59	42.57	20.44	56.04	16.60	45.09	15.29	45.54	14.88	41.28	25.99	47.90	17.42
Single	83	35.28	16.80	44.98	16.34	36.55	18.76	52.56	15.43	39.85	15.41	40.70	16.98	34.00	26.65	43.01	15.52
t		*0.072*		*2.063*		*1.924*		*1.360*		*2.134*		*1.888*		*1.728*		*1.861*	
P		*0.943*		*0.041*		*0.056*		*0.176*		*0.034*		*0.061*		*0.086*		*0.065*	
Living alone																	
No	141	34.04	15.75	47.22	18.13	39.01	20.35	53.95	16.33	41.08	15.05	41.74	15.59	35.61	26.28	44.41	16.41
Yes	16	47.10	17.80	51.82	11.88	42.71	13.22	56.45	13.43	53.25	15.79	53.95	17.41	53.43	23.66	53.29	16.28
χ		*–2.617*		*–1.181*		*–0.903*		*–0.486*		*–2.622*		*–2.510*		*–2.478*		*–1.887*	
P		*0.009*		*0.237*		*0.366*		*0.627*		*0.009*		*0.012*		*0.013*		*0.059*	
Perceived income level																	
Poor	50	35.21	19.41	43.75	18.31	37.00	19.65	47.00	15.40	38.54	15.03	38.18	17.51	34.20	26.86	41.50	15.12
Good-Moderate	107	35.45	14.87	49.53	17.06	40.50	19.77	57.56	15.27	44.09	15.50	45.22	15.05	38.94	26.33	47.10	16.98
t		*–0.083*		*–1.933*		*–1.035*		*–4.028*		*–2.109*		*–2.591*		*–1.045*		*–1.994*	
P		*0.934*		*0.055*		*0.302*		*0.000*		*0.037*		*0.010*		*0.298*		*0.048*	
Perceived health level																	
Poor	39	27.56	13.76	40.81	16.70	35.47	19.93	45.91	15.41	37.38	16.42	39.16	18.55	30.43	24.78	40.49	16.79
Good-Moderate	118	37.95	16.42	49.96	17.39	40.68	19.59	56.94	15.34	43.95	14.93	44.24	15.16	39.74	26.75	46.91	16.26
t		*–3.558*		*–2.878*		*–1.433*		*–3.886*		*–2.326*		*–1.714*		*–1.917*		*–2.121*	
P		*0.000*		*0.005*		*0.154*		*0.000*		*0.021*		*0.088*		*0.057*		*0.036*	
Disability type																	
Intellectual	22	35.39	24.91	39.77	18.97	30.30	23.92	53.69	19.06	35.66	17.81	40.75	20.48	24.15	32.69	40.47	16.47

Physical	135	35.37	14.68	48.98	17.12	40.86	18.66	54.28	15.57	43.40	14.91	43.34	15.40	39.59	24.84	46.11	16.51
t		*–0.053*		*–2.130*		*–2.140*		*–0.043*		*–1.767*		*–0.347*		*–2.644*		*–1.213*	
P		*0.958*		*0.033*		*0.032*		*0.966*		*0.077*		*0.729*		*0.008*		*0.225*	
The number of disabilities																	
One	42	37.84	16.41	50.60	15.63	39.09	18.72	54.69	12.88	42.63	14.05	45.25	15.58	38.93	22.19	43.70	14.40
Multiple	115	34.47	16.36	46.63	18.24	39.49	20.17	54.02	17.10	42.21	16.09	42.15	16.35	36.88	27.99	45.91	17.31
t		*1.141*		*1.251*		*–0.114*		*0.261*		*0.150*		*1.067*		*0.476*		*–0.738*	
P		*0.256*		*0.213*		*0.910*		*0.794*		*0.881*		*0.288*		*0.635*		*0.462*	

†Standardized dimension scores in 100 scale, M: mean; SD: standard of deviance.

Table 2 showed the distribution of the scores obtained from the WHOQOL-BREF and WHOQOL-DIS in terms of the participants' sociodemographic characteristics.

Table 3 presented the relationship between WHOQOL-BREF and WHOQOL-DIS scores and independent variables. The explanatory power (Adjusted R square) of the multivariate linear regression model developed using the Enter method ranges from 5.7% to 25.7%. While the association between the score for the physical domain of the WHOQOL-BREF and the age variable was statistically significantly negative, it was statistically significantly positive between the physical domain score and the variables such as education level, living alone and good to moderate health level ($p < 0.05$). The relationship between the psychological domain score and perceived health level and disability type, between the social domain score and education level and physical disability type, and the environment domain score and place of residence, perceived income level and perceived health level was statistically significant ($p < 0.05$).

There was a statistically significantly positive association between the education level variable and the mean scores for the WHOQOL-DIS disability module and Discrimination-Support, Independence, and Community Participation sub-dimensions ($p < 0.05$). In addition, the relationship between the disability module score and the variables such as living alone and disability type, between the discrimination-support domain score and the variables such as living alone and perceived income level, and between the independence domain score and the variables such as living alone and disability type was statistically significant ($p<0.05$) (Table 3).

Table 3. Results of the multivariate analysis of the factors associated with WHOQOL-BREF and WHOQOL-DIS (n=157)

Predictors	WHOQOL-BREF Dimension											
	Physical			Psychological			Social			Environment		
	β	SE	p	β	SE	p	β	SE	p	β	SE	p
Age	–0.167	0.063	0.034	–0.091	0.070	0.265	–0.055	0.081	0.513	0.016	0.010	0.837
Sex (female)	0.027	2.467	0.722	–0.006	3.007	0.943	0.014	3.426	0.874	0.007	0.415	0.928
Education	0.166	3.729	0.034	0.125	2.863	0.123	0.169	4.728	0.041	0.100	0.574	0.193
Place of residence (rural)	–0.066	2.581	0.386	—	—	—	—	—	—	–0.154	0.404	0.044
Marital status (single)	—	—	—	–0.079	3.122	0.372	–0.113	3.498	0.206	–0.037	0.427	0.656
Living alone (yes)	0.207	4.058	0.007				—	—	—	—	—	—
Perceived income level (good-moderate)	—	—	—	0.127	2.944	0.105	—	—	—	0.282	0.413	<0.001

Perceived health level (good-moderate)	0.213	2.834	0.005	0.214	3.123	0.006	0.075	3.592	0.345	0.274	0.436	<0.001
Disability type (physical)	0.054	3.639	0.488	0.166	4.061	0.041	0.185	4.633	0.025	–0.002	0.576	0.975
Adj. R2	*0.155*			*0.095*			*0.057*			*0.181*		
F	*5.077***			*3.335***			*2.568**			*5.312***		

Predictors	Disability			WHOQOL-DIS Dimension								
				Discrimination-Support			Independence			Community Participation		
	β	SE	p	β	SE	p	β	SE	p	β	SE	p
Age	–0.062	0.057	0.412	–0.025	0.064	0.761	–0.115	0.099	0.132	–0.052	0.065	0.517
Sex (female)	–0.079	2.404	0.311	–0.117	2.716	0.166	–0.094	4.188	0.234	0.001	2.738	0.988
Education	0.356	3.316	<0.001	0.175	3.740	0.028	0.331	5.767	<0.001	0.295	3.776	<0.001
Place of residence (rural)	–0.055	2.343	0.454	—	—	—	—	—	—	–0.107	2.669	0.174
Marital status (single)	–0.061	2.459	0.444	-0.063	2.768	0.467	-0.046	4.258	0.568	–0.082	2.801	0.336
Living alone (yes)	0.204	3.605	0.004	0.216	4.046	0.005	0.191	6.232	0.008	0.120	4.106	0.113
Perceived income level (good-moderate)	0.131	2.384	0.071	0.183	2.649	0.018	—	—	—	0.123	2.715	0.111
Perceived health level (good-moderate)	0.097	2.523	0.171	0.084	2.847	0.272	0.068	4.391	0.343	0.096	2.874	0.205
Disability type (physical)	0.190	3.320	0.012	0.038	3.665	0.635	0.240	5.639	0.001	0.134	3.782	0.094
Adj. R2	*0.257*			*0.123*			*0.226*			*0.154*		
F	*6.984***			*3.744***			*7.490***			*4.148***		

Adj.R^2: Adjusted R square; β: Standard partial regression coefficient; 95% CI: 95% confidence interval.

DISCUSSION

Disability is a complex phenomenon and includes factors that directly affect QoL. In community-based studies, the decrease in QoL scores has been shown to be correlated with socio-demographic characteristics such as older age, female gender, low education level, low income level, living in a rural area, and poor perceived health[6,8,21]. In the present study, while a negative relationship was determined between age and the score for the physical health domain of the WHOQOL-BREF, no relation was found between age and WHOQOL-DIS disability module and sub-module scores. In a study conducted in Brazil, older adults with physical disabilities obtained significantly low scores from the psychological and social relationships domains, which support our findings regarding WHOQOL-BREF and WHOQOL-DIS[22]. While older adults with mental disabilities obtained low scores from the physical health and environment domains of the WHOQOL-BREF[7], older adults with physical disabilities due to neurodegenerative disorders, older adults with intellectual or physical disabilities and older hemodialysis patients obtained significantly low scores from the social relationships domain of the WHOQOL-BREF and from the WHOQOL-DIS disability module[19,20,23]. In the literature, it has been

reported that as the age increases so does the severity of the disability[24]. In their study, Rajati et al.[13] reported that in people with physical disabilities, the physical component score decreased as the age increased, consistent with the current study. The differences between the results of studies in the literature may stem from the differences between the measurement tools used in the assessment of types of disabilities and QoL.

In the present study, the mean scores obtained from the WHOQOL-BREF and WHOQOL-DIS by the female participants were, although not statistically significant, lower than were those obtained by the male participants. Lucas-Carrasco et al.[20] reported that male participants with physical disabilities obtained higher scores from the environment domain of the WHOQOL-BREF and that the sex variable did not affect the mean scores obtained from the other domains of the WHOQOL-BREF and from the WHOQOL-DIS disability module. In many studies in the literature, it has been stated that there is no significant difference between men and women in terms of their QoL scores[7,13,23]. In studies conducted in developing countries, it is reported that general health levels of men are higher than are those of women[21,25]. In the current study, the female participants' having lower QoL scores is thought to be related to their low general health levels.

In our study, the mean scores obtained from the physical health and social relationships domains of the WHOQOL-BREF and from the WHOQOL-DIS disability module and its sub-module significantly increased as the participants' education levels increased. In Eser et al.'s[19] study, a positive correlation was determined between the education levels of the participants with intellectual and / or physical disabilities and the scores obtained from the WHOQOL-BREF and sub-modules of the WHOQOL-DIS. In studies conducted with people with physical disabilities, positive relationships were reported between education levels and QoL scores[13,20,26] whereas in studies conducted with breast cancer or hemodialysis patients, no relationship was determined[23,27]. These results can be explained by the positive relationship between the severity of the disability and education level[24]. For instance, in the literature, it is stated that disability affects community participation, and that especially in developing countries, reasons such as stigma and social isolation cause people with intellectual disabilities to obtain low scores from the Social Relationships domain[9,14,28].

The present study, a negative correlation was determined between the variable living in rural areas and the scores obtained from the environment domain of the WHOQOL-BREF. It has been reported that in India, the rate of older adults with mental illnesses is higher in rural areas[7]. It has been reported that people with a disability living in rural areas of South Africa are faced with obstacles in accessing healthcare more than are people without a disability[24]. In two studies conducted in Iran and China, no relationship was found between the QoL scores and the place of residence[13,27]. As is reported in a community-based study, unmet medical needs stem from regional differences, which is affected by social determinants[29]. In our study, it was thought that low QoL of people with disabilities living in rural areas might be related to the fact that their opportunity to access health and social services was less.

In the current study, there was a positive correlation between the variable living alone and the scores obtained from the physical health domain of the WHOQOL-BREF, and from the WHOQOL-DIS disability module and its discrimination-support and independence modules. However, there was no correlation between marital status and OoL scores. In the literature, it has been reported that physical disability affects marriage, and this situation may vary according to the type of the physical and intellectual disability[12,26]. In the literature, consistent with the present study, there are studies showing that there is no relationship between marital status and QoL scores[13,20,23,27]. It has been reported that poverty, discrimination, and limited access to health and social services, and lack of socialization worsen health, which affects the marital status or living alone[9,12]. This situation was explained by the high level of support provided to married people with disabilities by their spouses. That is probably because disabled people living alone may have benefited from home care and social support services provided by the public more.

In the present study, it was determined that moderate and good perceived income in people with disabilities was positively correlated with the scores obtained from the Environment domain of the WHOQOL-BREF and from the discrimination-support module of the WHOQOL-DIS. In studies conducted in Nepal, Iran and China, a correlation was indicated

between the income level and QoL scores, and the environment domain scores were reported to be significantly lower in those not working at a paid employment[13,23,27]. In their study, Eser et al.[19] reported that in Turkey, there was a correlation between the income levels of people with intellectual or physical disabilities and their scores for the environment domain of the WHOQOL-BREF, but that there was no correlation between their income levels and scores for the discrimination-support module of the WHOQOL-DIS in both groups. In the literature, it is shown that unmet health need is related to income level, which affects QoL scores[9,12,22,26]. In the validity study of the QoL scale conducted in Turkey, it was emphasized that discrimination dimension was not distinctive in people with a mental disability, and that it should be interpreted with caution[19]. Therefore, our result may have been affected by this situation.

In our study, there was positive correlation between the variable perceived health and the scores obtained from the physical health, psychological health and environment domains of the WHOQOL-BREF. However, there was no correlation between the WHOQOL-DIS disability module scores and perceived health. The results of a study conducted with people with a disability in Spain were consistent with our results[20]. However, in a study conducted in Brazil, WHOQOL-DIS disability module scores were reported to be related with perceived health in people with physical disabilities[22]. In a study conducted in Turkey, a significant relationship was demonstrated between self-rated health and WHOQOL-DIS disability module scores in people with intellectual disabilities[19]. Lucas-Carrasco et al. reported that the self-reported health level was only related to the score obtained from the psychological health domain of the WHOQOL-BREF in people with physical disabilities[20]. In studies conducted people with disabilities, it has been reported that psychological factors mediate disability and that psychological factors significantly affect WHOQOL-BREF scores[11,12,25,27]. This situation, which has been indicated to be related to psychological factors, may have affected our results.

In the current study, the scores the participants with intellectual disabilities obtained from the Psychological Health and Social Relationships domains of the WHOQOL-BREF and from the WHOQOL-DIS disability module and its independence module were lower than were those obtained by the participants with physical disabilities. In Serbia, WHOQOL-BREF scores of the patients with cerebral palsy were found to be lower than were those of the patients with multiple sclerosis and spinal cord injury, but there was no statistically significant difference between them in terms of their WHOQOL-DIS disability module scores[30]. In their study conducted in Austria, Hofer et al. stated that WHOQOL-BREF scores of the patients with schizophrenia or bipolar disorder were lower than were those of the healthy adults[31]. In India, the older adults with psychological disorders obtained higher scores from the physical health, psychological health and social relationships domains of the WHOQOL-BREF, than did those in the control group[7]. In a study carried out by Kanwal and Mustafa in Pakistan, QoL scores of the workers with disabilities were lower than were those of the healthy workers[11]. In other studies, it has been reported that QoL worsens as the level of disability increases[12,13]. Freedom, control, flexibility and restricted participation in community activities in people with disabilities are related to the quality of health services. It has been reported that the quality of health services affect physical and psychological well-being and QoL, and that poor QoL is associated with the high mortality rate[9,21].

That the participants were determined by using the non-probability sampling method and that its results cannot be generalized is the most important limitation of the present study. Another limitation of the present study is that the data regarding participants were obtained from their surrogates due to the type of disability.

In the present study, it was determined that people with intellectual disabilities obtained lower scores from the psychological health and social relationships domains of the WHOQOL-BREF, and from the WHOQOL-DIS disability module and its independence module scores than did people with physical disabilities, and that low education level, living in a rural area, poor income and poor perceived health were among the changeable risk factors leading to poor QoL.

It should be ensured that individuals with intellectual disabilities receive special training and social support in order to improve their QoL in the spiritual and social sphere through inter-sectoral collaboration. Efforts should be made to increase the education levels of all people with disabilities by taking advantage of both formal and special education

opportunities. Initiatives should be planned to enable people with disabilities, especially those living in rural areas, to access health and social services, and to increase their utilization of health and social services.

Yazar Katkıları: Çalışma konsepti/Tasarımı: YM, KTS, SHA, AAS, EE; Veri toplama: YM, KTS, SHA, AAS, EE; Veri analizi ve yorumlama: YM, KTS, SHA, AAS, EE; Yazı taslağı: YM, KTS, SHA, AAS, EE; İçeriğin eleştirel incelenmesi: YM, KTS, SHA, AAS, EE; Son onay ve sorumluluk: YM, KTS, SHA, AAS, EE; Teknik ve malzeme desteği: -; Süpervizyon: YM, KTS, SHA, AAS, EE; Fon sağlama (mevcut ise): yok.
Etik Onay: Bu çalışma için Kırklareli Üniversitesi Sağlık Bilimleri Enstitüsü Etik Kurulu tarafından onaylandı (Tarih 12 Şubat 2016, Kod: P17R00).
Hakem Değerlendirmesi: Dış bağımsız.
Çıkar Çatışması: Yazarlar çıkar çatışması beyan etmemişlerdir.
Finansal Destek: Bu araştırma, Türkiye Aile ve Sosyal Politikalar Bakanlığı'nın Engelli Destek Programı tarafından finanse edildi (Hibe numarası: 2015-VLK39-001).

Author Contributions: Concept/Design : YM, KTS, SHA, AAS, EE; Data acquisition: YM, KTS, SHA, AAS, EE; Data analysis and interpretation: YM, KTS, SHA, AAS, EE; Drafting manuscript: YM, KTS, SHA, AAS, EE; Critical revision of manuscript: YM, KTS, SHA, AAS, EE; Final approval and accountability: YM, KTS, SHA, AAS, EE; Technical or material support: -; Supervision: YM, KTS, SHA, AAS, EE; Securing funding (if available): n/a.
Ethical Approval: The study was approved by the Ethics Committee of the Institute of Health Sciences Kirklareli University (Date Feb 12, 2016, Code: P17R00).
Peer-review: Externally peer-reviewed.
Conflict of Interest: Authors declared no conflict of interest.
Financial Disclosure: This research was funded by Turkey Ministry of Family and Social Policies' Support Program with Disabilities (Grant number: 2015-VLK39-001).

REFERENCES

1. World Health Organization. International Classification of Functioning, Disability and Health: ICF. Switzerland: Geneva, WHO; 2001.
2. Murray CJ, Vos T, Lozano R, Naghavi M, Flaxman AD, Michaud C et al. Disability-adjusted life years (DALYs) for 291 diseases and injuries in 21 regions, 1990-2010: a systematic analysis for the Global Burden of Disease Study 2010. Lancet. 2012;380:2197-223.
3. World Health Organization. WHO Global Disability Action Plan 2014-2021. Switzerland: Geneva, 2015.
4. World Health Organization. World Report on Disability. Geneva,Switzerland, WHO, 2011.
5. The World Health Organization. The World Health Organization Quality of Life assessment (WHOQOL): position paper from the World Health Organization. Soc Sci Med. 1995;41:1403-9.
6. Almeida-Brasil CC, Silveira MR, Silva KR, Lima MG, Faria CDCM, Cardoso CL et al. Quality of life and associated characteristics: of WHOQOL-BREEF in the context of Primary Health Care. Cien Saude Colet. 2017;22:1705-16.
7. Ramaprasad D, Rao NS, Kalyanasundaram S. Disability and quality of life among elderly persons with mental illness. Asian J Psychiatr. 2015;18:31-6.
8. Lucas-Carrasco R, Laidlaw K, Power MJ. Suitability of the WHOQOL-BREF and WHOQOL-OLD for Spanish older adults. Aging Ment Health. 2011;15:595-604.
9. Bickenbach JE, Cieza A, Sabariego C. Disability and public health. Int J Environ Res Public Health. 2016;13:123.
10. Anderson LL, Humphries K, McDermott S, Marks B, Sisirak J, Larson S. The state of the science of health and wellness for adults with intellectual and developmental disabilities. Intellect Dev Disabil. 2013;51:385-98.
11. Kanwal H, Mustafa N. Psychological well-being and quality of life among physically disabled and normal employees. PAFMJ. 2016;66:710-4.
12. Kuvalekar K, Kamath R, Ashok L, Shetty B, Mayya S, Chandrasekaran V. Quality of life among persons with physical disability in Udupi Taluk: A cross sectional study. J Family Med Prim Care. 2015;4:69-73.
13. Rajati F, Ashtarian H, Salari N, Ghanbari M, Naghibifar Z, Hosseini SY. Quality of life predictors in physically disabled people. J Educ Health Promot. 2018;7:61.
14. Akyurek G, Bumin G, Crowe TK. The factors associated with community participation: Employment and education of people with disabilities in Turkey. Scand J Occup Ther. 2020;27:28-38.
15. Turkey Statistical Institute. Address Based Population Registration System, 2015. https://biruni.tuik.gov.tr/medas/ (accessed July 2020).
16. Turkish Prime Ministry Presidency of Administration on Disable People. Turkish Disability Survey 2002. Ankara, State Institute of Statistics, Printing Division, 2004.
17. Power MJ, Green AM; WHOQOL-Dis Group. Development of the WHOQOL disabilities module. Qual Life Res. 2010;19:571-84.
18. Schmidt S, Power M, Green A, Lucas-Carrasco R, Eser E, Dragomirecka E et al. Self and proxy rating of quality of life in adults with intellectual disabilities: Results from the DISQOL study. Res Dev Disabil. 2010;31:1015-26.
19. Eser E, Aydemir Ö, Cengiz Özyurt B, Akar A, Deveci S, Eser S et al. Psychometric properties of the Turkish Version of the World Health Organization Quality of Life Instrument for People with Intellectual and Physical Disabilities (WHOQOL-DIS-TR). Turk Psikiyatri Derg. 2018;29:36-46.
20. Lucas-Carrasco R, Pascual-Sedano B, Galán I, Kulisevsky J, Sastre-Garriga J, Gómez-Benito J. Using the WHOQOL-DIS to measure quality of life in persons with physical disabilities caused by neurodegenerative disorders. Neurodegener Dis. 2011;8:178-86.
21. Gomez-Olive FX, Schröders J, Aboderin I, Byass P, Chatterji S, Davies JI et al. Variations in disability and quality of life with age and sex between eight lower

income and middle-income countries: data from the INDEPTH WHO-SAGE collaboration. BMJ Glob Health. 2017;2(4):e000508.
22. Bredemeier J, Wagner GP, Agranonik M, Perez TS, Fleck MP. The World Health Organization Quality of Life instrument for people with intellectual and physical disabilities (WHOQOL-Dis): evidence of validity of the Brazilian version. BMC Public Health. 2014;14:538.
23. Joshi U, Subedi R, Poudel P, Ghimire PR, Panta S, Sigdel MR. Assessment of quality of life in patients undergoing hemodialysis using WHOQOL-BREF questionnaire: a multicenter study. Int J Nephrol Renovasc Dis. 2017;10:195-203.
24. Vergunst R, Swartz L, Hem KG, Eide AH, Mannan H, MacLachlan M et al. (2017). Access to health care for persons with disabilities in rural South Africa. BMC Health Serv Res. 2017;17:741.
25. Chang YC, Yao G, Hu SC, Wang JD. Depression affects the scores of all facets of the WHOQOL-BREF and may mediate the effects of physical disability among community-dwelling older adults. PLoS One. 2015;10(5):e0128356.
26. Palijan TŽ, Kovačević D, Vlastelica M, Dadić-Hero E, Sarilar M. Quality of life of persons suffering from schizophrenia, psoriasis and physical disabilities. Psychiatr Danub. 2017;29:60-5.
27. Tang L, Fritzsche K, Leonhart R, Pang Y, Li J, Song L et al. Emotional distress and dysfunctional illness perception are associated with low mental and physical quality of life in Chinese breast cancer patients. Health Qual Life Outcomes. 2017;15:231.
28. Zheng QL, Tian Q, Hao C, Gu J, Lucas-Carrasco R, Tao JT et al. The role of quality of care and attitude towards disability in the relationship between severity of disability and quality of life: findings from a cross-sectional survey among people with physical disability in China. Health Qual Life Outcomes. 2014;12:25.
29. Lim JH. Regional disparity and factors influencing unmet medical needs: a study based on the Sixth Korea National Health and Nutrition Examination Survey (2015). Osong Public Health Res Perspect. 2017;8:295-301.
30. Jovanović M, Lakićević M, Stevanović D, Milić-Rasić V, Slavnić S. Community-based study of health-related quality of life in spinal cord injury, muscular dystrophy, multiple sclerosis, and cerebral palsy. Disabil Rehabil. 2012;34(15):1284-90.
31. Hofer A, Mizuno Y, Wartelsteiner F, Wolfgang Fleischhacker W, Frajo-Apor B, Kemmler G et al. Quality of life in schizophrenia and bipolar disorder: The impact of symptomatic remission and resilience. Eur Psychiatry. 2017;46:42-7.