Stroke patient's quality of life and compliance with the treatment / İnme geçiren kişilerin yaşam kalitesi ve tedaviye uyum düzeyleri

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STROKE PATIENTS 'QUALITY OF LIFE AND COMPLIANCE WITH THE TREATMENT

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ABSTRACT

Objective*: The aim of this study was to determine adherence with treatment, quality of life and related factors in patients who were hospitalized and diagnosed with stroke at least six months before their hospitalization?*

Material and methods*: The data of this cross-sectional study were collected through face-to-face interviews held with 140 patients who were diagnosed with stroke at least six months ago, hospitalized in Balikesir Atatürk State Hospital Neurology Department between October 2015 and October 2016 and then discharged from the hospital.*

Results*. In the study, the Stroke-Specific Quality of Life Scale (SSQOL) was used, and the participants were asked whether they complied with the treatment regularly. The participants' mean scores were 2.29 ± 0.83 for the SSQOL scale. The mean scores for the SSQOL scale were higher in the married participants in those knowledgeable of stroke, in those who received rehabilitation, in non-smokers, in those who had hemiplegia and in those who were able to carry out physical activities independently($p<0.05$). Of the participants, 67.1% stated that they complied with their treatment. According to the logistic regression model, compliance with the treatment was 2.03 times higher in the participants with secondary and higher education (95.0% CI: 1.10-5.34), 5.27 times higher in the participants residing in a city (95.0% CI: 1.25-12.22), 7.30 times higher in the participants having stroke diagnosis for 6-11 months (95.0% CI: 5.38-10.43).*

Conclusion*: It was concluded that two-thirds of the participants complied with their daily treatments regularly and the mean scores they obtained from the SSQOL were lower than the average score to be obtained from the scale.*

Keywords*: Stroke, quality of life, adherence, rehabilitation.*

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Introduction

Stroke is an important public health issue ranking the second among diseases causing death at global level, and the third in terms of disease burden[1,2]. Stroke is increasing rapidly, especially in developing countries, in parallel with the completion of demographic transformation, sedentary lifestyle and increases in unhealthy behaviors in societies in those countries[3,4]. According to the literature the incidence of stroke ranges from 41 to 316 per 100,000 people[1,4,5]. According to WHO projections, if the trend in stroke incidence continues this way, in 2030, there will be 23 million stroke cases, 7-8 million deaths caused by stroke, and 5 million stroke sequelae[6,7].

The most common sequelae after stroke were hemiplegia, visual problems, sensory complaints, sensory-motor disorders, cognitive impairments, tonus disorders, difficulty in speaking, coordination impairment and difficulty in swallowing which negatively affect the maintenance of daily life and quality of life[8]. Although there are several studies in which various scales are used to determine the quality of life of stroke patients[9,10], there are few studies including the present study in which the Turkish version of the Stroke-Specific Quality of Life scale (SSQOL) including compliance with the treatment is used. One of the factors affecting the quality of life and the prognosis of the disease in patients having suffered stroke is the patients' compliance with the

treatment. When patients cannot learn the treatment process well or when they do not feel well, they may not believe in the benefits of taking medication, may forget to take medication in adequate doses, may not take their medications deliberately, may not have check-ups regularly[11], In the literature, although a large number of studies have been conducted to determine the level of compliance with the treatment in patients with hypertension and diabetes mellitus (DM), the number of studies conducted with patients with stroke is limited[12,13]. The higher the compliance with the treatment is the fewer the number of recurrent strokes is and the better the quality of life is[14]. Post-stroke rehabilitation is of importance in the improvement of the quality of life after these changes[15,16]. Most of the patients who can survive stroke are likely to have physical and cognitive disabilities and behavioral changes that affect their social and family life[17]. It is also important to understand the problems encountered in daily activities and social environment and to determine the level of compliance with the treatment and the quality of life after discharge.

Aim

This present study was aimed at investigating the level of the quality of life and compliance with the treatment after the sixth month of the discharge in patients who had been hospitalized with the diagnosis of stroke.

Methods

Participants

This cross-sectional study was carried out in Balikesir, a province in the west of Turkey. The population of the study consisted of 228 people who were admitted to the Neurology Department of Balikesir Atatürk State Hospital between October 2015 and October 2016 with the diagnosis of stroke and had the stroke for at least 6 months when the study was conducted. Of these 228 patients, 45 lost their lives, 13 were not contacted and 11 refused to participate in the study; therefore, the study was conducted with 140 people who had no cognitive impairment, had no vision or hearing problems, were able to communicate verbally or were communicated through their caregivers. The study was approved by the Ethical Review Board at Balikesir University Faculty of Medicine Clinical Investigation Ethics Committee (Numbered 9.025189-050.04-185 and dated January 07, 2016) and was conducted in accordance with the ethical principles of the Helsinki Declaration. Permission to conduct the study was obtained from the Balikesir Public Hospitals Association. The participants were given oral and written information about the study and signed an informed consent form.

Procedures

The data were collected using face-to-face interviews with patients or relatives at their homes using the Sociodemographic Characteristics Questionnaire and "Stroke-Specific Quality of Life Scale". SSQOL scale developed by Williams et al. consists of 49 items in 12 subscales. It is a five-point Likert scale. The scale was adapted to Turkish by Hakverdioglu Yont[18]. The high score obtained from the scale indicates that the quality of life is high. SPSS 25.0 for windows (SPSS Inc., Chicago, IL) was used for statistical analysis.

To compare the differences between the groups, the t-test, one-way analysis of variance, chi-square test, logistic regression and multivariate regression analysis were used. The dependent variables of the study were the compliance with the treatment and quality of life of the study, whereas the independent variables were age, sex, marital status, profession, duration of stroke, family history, other diseases comorbid with stroke, smoking, receiving rehabilitation and physical competence.

Results

The participants' mean age was 67.80±12.96 years. Of the participants, 50% were female, 73.6% were married, 41.4% were primary school graduates, 62.9% were living in the city center, 15.0% were smokers and 77.1% had at least one chronic disease comorbid with stroke. Of the participants, 85.7% had ischemia, and 39.3% had a stroke within the last 6-11 months. Their mean length of hospital stay was 14.79±11.74 days. According to their statements, 10.7% were able to carry out activities of daily living independently, 62.1% received rehabilitation, 43.6% had a family member with a history of stroke, 41.4% had had a stroke previously, 57.9% had hemiplegia, and 67.1% complied with the treatment (Table 1).

The comparison of the participants in terms of their compliance with the treatment revealed that compliance was significantly higher in those who had high school or higher education than in the other participants (p=0.001), in those who had extended families than in those who had nuclear families

Variables		Total n(%)
Age	28-47 years	12(8.6)
	≥48 years	128(91.4)
Sex	Female	70(50.0)
	Male	70(50.0)
Marital status	Married	103(73.6)
	Unmarried	37(26.4)
Education	Illiterate	32(22.9)
	Primary school	58(41.4)
	High school or higher	50(35.7)
Place of residence	Village	52(37.1)
	City	88(62.9)
Family type	Nuclear	45(32.1)
	Extended	67(47.9)
	Fragmented	28(20.0)
Chronic diseases comorbid with stroke	Yes	108(77.1)
	No	32(22.9)
Hypertension	Yes	84(60.0)
	No	56(40.0)
Diabetes mellitus	Yes	54(38.6)
	No	86(61.4)
Smoker	Yes	21(15.0)
	No	119(85.0)
Type of stroke	Hemorrhage	20(14.3)
	Ischemia	120(85.7
Time of stroke diagnosis	6-11 months ago	55(39.3)
	12-23 months ago	40(28.6)
	24-35 months ago	22(15.7)
	≥36 months ago	23(16.4)
Physical competence	Dependent	125(89.3)
	Independent	15(10.7)
Receiving rehabilitation	Yes	87(62.1)
	No	53(37.9)
Family history of stroke	Yes	61(43.6)
	No	79(56.4)
History of previous stroke	Yes	58(41.4)
	No	82(58.6)
Hemiplegia	Yes	81(57.9)
	No	59(42.1)
Compliance with the treatment	Yes	94(67.1)
	No	46(32.9)
TOTAL		**140(100.0)**

Table 1: Sociodemographic characteristics of the participants by sex. * *Column %*

(p=0.001), in non-smokers than in smokers (p=0.010), in those with DM than in those without DM (p=0.007), in those who had stroke within the last year than in those who had stroke more than a year ago (p=0.001) and in those who received rehabilitation than in those who did not (p=0.001)

According to age, sex, marital status, HT, family history of stroke, history of previous stroke, physical competence, hemiplegia was not significant difference (Table 2). The participants' mean scores were 2.29±0.83 for the SSQOL scale, 2.26±1.12 for the mobility subscale, 2.00±1.25 for the energy subscale, 2.49±1.21 for the upper extremity function subscale, 2.39±1.17 for the work/productivity subscale, 2.05±0.96 for the mood subscale, 2.55±1.15 for the self-care subscale, 1.92±1.01 for the social role subscale, 1.90±1.07 for the family role subscale, 3.09±1.29 for the vision subscale, 2.70±1.24 or the language subscale, 1.97±1.19 for the thinking subscale and 2.20±1.25 for the personality subscale. The mean scores for the SSQOL scale were higher in the married participants (p=0.022), who had not history of previous stroke (p=0.036), in those who were able to carry out physical activities (0.039), in those who received rehabilitation (p=0.010), in those who complied with the treatment. According to age, sex, education, family type was not significant difference (Table 3).

According to the logistic regression model developed with the backward elimination method, compliance with the treatment was 1.17 times higher in the primary school graduate participants (95.0% CI: 1.08-9.45), 2.03 times higher in the participants with secondary and higher education (95.0% CI: 1.10-5.34), 5.27 times higher in the participants residing in a city (95.0%, CI: 1.25-12.22), 1.20 times higher in the participants having extended families (95.0% CI: 1.13-14.01), 5.10 times higher in the participants diagnosed with stroke 2 years ago (95.0% CI: 2.68-22.30), 5.10 times higher in the participants having stroke diagnosis for 12-23 months than in the participants having stroke diagnosis for 36 or more months (95.0% CI: 2.68-12.30), 7.30 times higher in the participants having stroke diagnosis for 6-11 months (95.0% CI: 5.38-10.43) and 2.57 times higher in the participants having received rehabilitation (95.0% CI: 1.15-5.73) (Table 4).

According to the multivariate regression model developed with the backward elimination method, the quality of life was significantly higher in the participants who had the history of previous stroke (95.0% CI: -0.17 -0.66), who complied with the

treatment (95.0% CI: -0.19-0.48), who did not suffer a stroke (95.0% CI: 0.17-0.66), who considered themselves physically self-sufficient (95.0% CI: 0.18-0.81), and who received rehabilitation (95.0% CI: 0.23-0.71) (Table 5).

Variables		Compliance with the treatment		X^2	p
		Yes n(%)	No n(%)		
Education	Illiterate	6(18.8)	26(81.3)	47.096	**0.001**
	Primary school	43(74.1)	15(25.9)		
	High school or higher	45(90.0)	5(10.0)		
Place of residence	Village	22(42.3)	30(57.7)	23.129	**0.001**
	City	72(81.8)	16(18.2)		
Family type	Nuclear	21(46.7)	24(53.3)	22.349	**0.001**
	Extended	58(86.6)	9(13.4)		
	Fragmented	15(53.6)	13(46.4)		
Physical activity	Yes	32(84.2)	6(15.8)	6.887	**0.009**
	No	62(60.8)	40(39.2)		
Smoking	Yes	9(42.9)	12(57.1)	6.605	**0.01**
	No	85(71.4)	34(28.6)		
Diabetes mellitus	Yes	29(53.7)	25(46.3)	7.197	**0.007**
	No	65(75.6)	21(24.4)		
Duration of stroke	6-11 months ago	52(94.5)	3(5.5)	42.218	**0.001**
	12-23 months ago	27(67.5)	13(32.5)		
	24-35 months ago	8(36.4)	14(63.6)		
	≥36 months ago	7(30.4)	16(69.6)		
Receiving rehabilitation	Yes	84(96.6)	3(3.4)	90.095	**0.001**
	No	10(18.9)	43(81.1)		
TOTAL		**94(67.1)**	**46(32.9)**		

Table 2: Compliance with the treatment in terms of some variables.

Variables		n	Mean±SD	Test value	p
Marital status*	Married	103	2.37±0.89	2.322	**0.022**
	Unmarried	37	2.07±0.59		
History of previous stroke*	Yes	58	2.26±0.59	2.126	**0.032**
	No	82	2.05±0.19		
Physical competence*	Dependent	125	2.13±0.19	2.06	**0.039**
	Independent	15	2.29±0.79		
Receiving rehabilitation*	Yes	87	2.48±0.66	3.124	**0.01**
	No	53	2.04±0.59		
Compliance with the treatment*	Yes	94	2.33±0.15	2.13	**0.02**
	No	46	2.01±0.42		

Table 3: Distribution of mean scores obtained from the Stroke-Specific Quality of Life Scale in terms of some variables. **t test, *ANOVA, Tukey's HSD (honest significant difference) test*

Variables (n=140)		ß	SE	p	OR (%95 CI)
Education	Illiterate	1.773	0.803	**0.027**	1
	Primary school	4.212	1.115	**0.001**	1.17 (1.08-9.45)
	High school or higher				2.03 (1.10-5.34)
Place of residence	Village	1.662	0.734	**0.024**	1
	City				5.27 (1.25-12.22)
Family type	Nuclear	2.718	0.822	**0.001**	1
	Extended	0.356	1.023	0.728	1.20 (1.13-14.01)
	Fragmented				1.42 (1.19-10.60)
Physical competence	Dependent	-1.167	1.095	0.286	1
	Independent				0.31 (0.03-2.66)
Smoking	No	1.942	1.144	0.09	1
	Yes				6.97 (0.74-25.59)
Diabetes mellitus	No	0.338	0.71	0.634	1
	Yes				1.40 (0.34-5.64)
Duration of stroke	≥36 months	1.197	0.932	0.199	1
	24-35 months	2.578	1.049	**0.014**	3.31 (0.53-5.58)
	12-23 months	3.412	1.119	**0.002**	5.10 (2.68-12.30)
	6-11 months				7.30 (5.38-10.43)
Receiving rehabilitation	No	-4.921	1.139	**0.001**	1
	Yes				2.57 (1.15-5.73)

Table 4: Relationship between compliance with the treatment and some variables in the logistic regression model.
ß: Regression coefficient, SE: Standard Error, OR: Odds Ratio, CI: %95.0 Confidence Interval. Hosmer and Lemeshow test: 119.331 (p=0.001), Nagelkerke R square: 0.766

Constant: 0.088	ß	SE	Exp (ß)	Sig.	95% CI
Marital status	-0.097	0.07	-0.095	0.172	-0.23, 0.17
History of previous stroke	-0.418	0.123	0.247	**0.001**	-0.06, -0.18
Smoking	0.211	0.139	0.107	0.132	0.19, 0.18
Hemiplegia	0.232	0.213	0.075	0.277	0.23, 0.04
Compliance with the treatment	-0.342	0.121	0.023	**0.034**	0.66, 0.48
Physical competence	-0.499	0.159	0.225	**0.002**	0.65, 0.48
Receiving rehabilitation	-0.477	0.121	0.286	**0.001**	0.81, 0.71

Table 5: Relationship between the quality of life and some variables in the multivariate regression model.
ß: Regression coefficient, SE: Standard Error, CI: %95.0 Confidence Interval. Durbin Watson: 1.63 (p=0.001) Nagelkerke R square: 0.453

Discussion

Although considerable research has been devoted to compliance with the treatment in patients of

many chronic diseases, rather less attention has been paid to compliance with the treatment in stroke patients. The present study is one of the first studies in terms of determining the situation and related factors. In Turkey, Stroke-Specific Quality of Life was assessed with the Short Form 36 and the number of studies in which the SSQOL scale is used is very few. The present study, which focused on these two rarely studied issues, is one of the first studies conducted in Turkey to determine the quality of life of patients and their level of compliance with treatment after stroke.

In this present study, which investigated compliance with the treatment, quality of life, and affecting factors in stroke patients, two thirds of the participants complied with the treatment regularly every day. In a limited number of studies in the literature on the issue, the level of compliance with the treatment varies between 15% and 84%[4,14,19-21]. The higher level of compliance with the treatment in the present study compared to that in other studies can be attributed to the fact that the duration of having stroke diagnosis in the participants was shorter than one year. The two-thirds of the participants complied with the treatment and similar to other studies, compliance with the treatment decreased as the duration of stroke diagnosis increased[19].

In the present study, the rate of compliance with the treatment was higher in those living in a city or having a higher level of education than those living in a village or having a lower level of education respectively. This may be due to the fact that the participants living in the village were older and lonelier than the participants living in the city and were not able to take their medication regularly due to complexity of the treatment regimens. In a study conducted in Pakistan, patients who lived in the rural areas had low levels of compliance with the treatment due to poor transportation opportunities[22].

In a study conducted in India, it was reported that complex treatment regimens and the multidrug therapy made treatment more difficult[14].

Similarly, the low level of compliance with the treatment in those with diabetes mellitus who are usually in advanced age and have to take multiple drugs suggests that compliance with the treatment in multiple drug users is low due to complex, difficult treatment modalities and their advanced age (22). As a matter of fact, people who have a healthy lifestyle, not living alone, receiving rehabilitation have a high level of compliance with the treatment. One of the striking findings of the present study is that the patients with recent stroke diagnosis had a higher level of compliance with the treatment and that the participants' level of compliance with the treatment decreased as the duration of having stroke diagnosis increased, which is consistent with the results of other studies[22,23]. The relationship between compliance with the treatment and variables such as the level of education, place of residence, living alone, duration of stroke diagnosis, and rehabilitation which was significant in univariate analysis and consistent with the literature was also significant in the logistic regression model. Similar to the present study, in a study conducted in Pakistan, it was reported that the rate of compliance with the treatment was low in illiterate participants, and that in case there was an accompanying disease, compliance with the treatment was even lower[14].

On the other hand, lack of a significant difference in compliance with the treatment in terms of variables such as age and sex might be due to the characteristics of the participants[19,24]. Unlike the present study, in a study conducted in Pakistan, women's compliance with the treatment was lower, which may be due to the obstacles that women faced in accessing health care services in Pakistan, which in turn adversely affected the psychology of women. In a study conducted in USA it was emphasized that easy access to healthcare services improved compliance with the treatment[25].

The mean scores the participants obtained from the SSQOL scale were lower than the average score to be obtained from the scale and lower than the mean scores obtained in other studies in the literature[18,26], which might be due to the fact that the vast majority of the participants were physically dependent on others, that they were advanced age people, and that they lived alone. The mean scores obtained from the SSQOL scale in studies in the literature were above the average[18,27,28]. The comparison of the results of these studies with those of the present study demonstrated no big difference. The mean score obtained from the vison subscale was higher than those obtained from the other subscales, which was consistent with the literature[18,29]. The high vision score indicates that the participants had no vision problems.

Therefore, that the scores obtained from the family and social role subscales were low suggests that the low score obtained from the SSQOL scale was not due to physical subscale scores but due to social psychological subscale scores. In a study carried out in China, the mean score for the scale was

above the average and the mean score obtained from the vision subscale was above the average and was the highest one among the scores obtained from the subscales as in the present study[29].

When compared to the present study, the mean scores obtained from the SSQOL scale and its social role and thinking subscales were low was probably due to the fact that only two-fifths of the participants were not dependent on others. When studies in the literature are compared, post-stroke quality of life of the patients varies from one country to another due to the differences in the provision of healthcare and rehabilitation, and the quality of life scores of those who have a healthy lifestyle are higher[30,31].

In some studies, it is emphasized that the lack of well-planned health services negatively affects patients' life after stroke. In a study conducted in China, the same thing was emphasized, and reported that patients were admitted to the hospital several times after stroke[32].

In the present study, the low score obtained from the scale might be due to the fact that the participants lived alone, that the participants living in rural areas were not able to perform their self-care, which suggests that precautions should be taken to enable them to easily access health care services. Of the participants, those who were married, were knowledgeable about stroke, did not have a history of previous stroke, were not smokers, complied with the treatment and were physically independent achieved higher mean scores for the SSQOL scale.

According to the multivariate logistic regression model, those who did not have a history of previous stroke, received rehabilitation and were physically independent had significantly better quality of life. Similarly, in a study conducted in Turkey, there was a significant difference between the participants diagnosed with stroke recently and the participants diagnosed with stroke three or more years ago[18].

As in the present study, in the aforementioned study, there was no significant difference between the groups in terms of their ages. However, quality of life was affected by variables such as the affected side and the presence of an accompanying disease. This may be due to the fact that the vast majority of the participants in the present study had another disease co-morbid with stroke. In a study conducted in Finland, age and sex did not affect the scale score[33]. In studies conducted by Moon et al. and Jaracz et al., there was no significant relationship between age and quality of life[34,35]. The differences in these studies may be due to the different sociocultural characteristics of the communities in which the studies were conducted.

Limitations of the study

Because some of the people in the study population lost their lives, refused to participate in the study or were not contacted, the study was conducted with 61.40% of the study population. The results obtained from this study are applicable only to the patients who were admitted to Balikesir Atatürk State Hospital.

Conclusion

In the study, two-thirds of the participants complied with the treatment regularly. Of the participants, those who had high school or higher education, lived in urban areas, had extended families, were non-smokers, did not have diabetes mellitus, had stroke within the past year and received rehabilitation complied with the treatment more. In the logistic regression model, there was a significant relationship between compliance with the treatment and variables such as education, place of residence, type of family, time when stroke was diagnosed and rehabilitation. While the mean score for the SSQOL scale was lower than the average score to be obtained from the scale the highest subscale score was obtained from the vision subscale. Of the participants, those who were married, were knowledgeable about stroke, were not smokers, were physically independent, did not have a history of previous stroke, did not have hemiplegia, received rehabilitation, and complied with the treatment achieved higher mean scores for the SSQOL scale. In the multivariate regression model, the relationship between the quality of life and variables such as the history of previous stroke, being physically independent, complied with the treatment and receiving rehabilitation was also statistically significant.

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