JERN Journal of Education and Research in Nursing

Original Article
DOI:10.14744/jern.2021.22321
*J Educ Res Nurs*. 2023;20(3):248-254

# Comparison of Urinary Incontinence, Quality of Life, Fatigue, and Depression Levels of Women with Neurological Diseases

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**Abstract**

**Background:** Neurological diseases are an important public health problem. Individuals are exposed to problems such as urinary incontinence (UI), fatigue, due to neurological diseases such as multiple sclerosis (MS) or cerebrovascular disease (CVD). Health professionals should plan care with a holistic approach in the care of individuals with neurological diseases. Possible complications should be considered.

**Aim:** The aim of this study is to compare the UI, quality of life, fatigue, and depression levels of women with neurological disease.

**Methods:** This was a cross-sectional and correlational study. The sample of the study consisted of 126 women who applied to the neurology clinic between August 1, 2019, and December 1, 2020. Personal information form, Bristol female lower urinary tract symptoms questionnaire (BFLUTS), incontinence quality of life scale, beck depression inventory, and fatigue severity scale were used as data collection tools. Chi-square, independent groups t-test, and logistic regression analysis were used to analyze the data.

**Results:** Women who had previously been diagnosed with MS (42.9%) and CVD (57.1%) participated in the study. There was a statistically significant difference between MS or CVD groups in terms of the BFLUTS total ($P=0.008$), filling symptom ($P=0.001$), incontinence symptom ($P < 0.001$), and quality of life ($P=0.021$) subdimensions scores.

**Conclusion:** As a result, it was determined that lower urinary symptoms of patients with CVD were more affected than patients with MS. In addition, it was shown that voiding symptoms, sexual function, quality of life, depression, and fatigue levels of patients with MS and CVD had similar.

*Keywords: Depression, fatigue, neurological disease, quality of life, urinary incontinence*

## Introduction

In Türkiye and in the world, neurological diseases occupy an important place in healthcare planning because of the total loss of workforce and the cost of treatment. Neurological diseases occur in all age groups. For example, multiple sclerosis (MS) is a disease that occurs in the young to middle-aged group, and cerebrovascular disease (CVD-stroke) is a disease that occurs in men and women 75 years and over.[1,2] Neurological diseases are becoming more and more important for public health, and especially CVD is the second leading cause of death in the world. In Türkiye, CVD ranks second with a frequency of 15% of total deaths.[3] CVD is considered the most important factor for permanent disability in developed countries.[4] MS disease occurs in an average of 108 persons/100,000 population in Europe after the age of 30.[5] MS disease is a health problem that significantly affects the lives of young people.[6]

In neurological diseases such as MS and CVD, as a result of damage to the central nervous system or narrowing of the cerebral vessels, weakness, changes in muscle tone, and sensory disturbances may occur in the bladder muscles as in other muscles.[7] Bladder dysfunction is a common problem in both of these neurological diseases. Urinary incontinence (UI) is the most common bladder dysfunction.[8] Moderate or severe UI occurs in 65% of MS patients.[9,10] Especially in CVD patients, the prevalence of UI varies from 41% to 83% after stroke.[3,11] Various urinary problems such as sudden urge to urinate, UI and infections may occur in MS and CVD patients. These problems worsen especially during attacks but may improve during the recovery period.[12,13]

**Cite this article as:** Erkal Aksoy Y, Gümüş H, Dereli Yılmaz S. Comparison of urinary incontinence, quality of life, fatigue, and depression levels of women with neurological diseases. *J Educ Res Nurs.* 2023;20(3):248-254.

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Received: January 26, 2022
Accepted: September 13, 2022
Publication Date: September 1, 2023

Like UI, fatigue and depression are among the most common symptoms in people with neurological diseases.[14-16] The prevalence of post-stroke fatigue is estimated to average about 40%.[17] Fatigue varies between 52% and 88% in MS patients.[18,19] Fatigue has negative effects on activities of daily life, ability to work, family, and social life.[19-21] The level of fatigue of individuals is associated with quality of life and depression.[21] There are studies in the literature that have separately investigated UI and fatigue in these two diseases.[5,9,10,15,17] However, there is no study that evaluates and compares the two diseases together. For this reason, it is considered that the study provides the opportunity to compare the two diseases and determine their similar and different aspects. Care options can be determined by comparing the UI, quality of life, fatigue, and depression levels of women with neurological disease. A care plan can be designed considering the complications that occur in women due to neurological disorders such as MS and CVD. This study was aimed to compare the UI, quality of life, fatigue, and depression levels of women with neurological diseases. According to the results of this study, health professionals can provide individualized care through a holistic approach.

### Study Questions

- Is there a difference in the sociodemographic characteristics of women depending on whether they have MS or CVD?
- Is there a difference between UI, quality of life, fatigue, and depression levels depending on whether women have MS or CVD?
- How many times are UI, quality of life, fatigue, and depression levels of women affected by depending on whether they have MS or CVD?

## Materials and Methods

### Research Design

This is a cross-sectional and correlational study.

### Research Population and Sample

The study population consisted of all women with MS or CVD who presented to the neurology clinic of a university hospital between August 1, 2019, and December 1, 2020, and who agreed to participate in the study. A total of 800 female patients, including an average of 300 MS and 500 CVD patients, were applied the Department of Neurology annually. The sample size was calculated using the G*Power 3.0.10 program. In calculating the study sample size, a calculation was made using the mean scores of the Bristol female lower urinary tract symptoms questionnaire (BFLUTS), incontinence quality of life (I-QoL) Scale, beck depression inventory (BDI), and Fatigue Severity Scale used in the study. Because the sample size was larger, the mean of the Fatigue Severity Scale was preferred. In the study of Armutlu et al., fatigue severity score was determined as $4.8 \pm 1.4$. The sample size was calculated as 107 people with 90% power within 0.4 point deviation at medium effect size.[22] Considering the loss of data during the study, approximately 20% more than the determined number of samples were taken. The data collection process of the study was completed with a total of 126 women, of whom 54 had MS and 72 had CVD.

Inclusion criteria for the study were women who were 18 years of age and older, volunteered to participate in the study, had a neurological disorder (MS or CVD), no psychiatric disorders (schizophrenia, bipolar disorder, etc.), had at least a primary school diploma, were of stable consciousness, and could answer the questions. Data from women who did not answer all questions were excluded from the study.

### Data Collection Tools

The instruments used for data collection were the Personal Information Form, the BFLUTS, the I-QoL Scale, the BDI, and the Fatigue Severity Scale.[22-24]

### Personal Information Form

It was prepared by the researchers based on a literature review.[3,16,25] Women's sociodemographic characteristics were assessed with 13 questions, MS history with 10 questions, CVD history with five questions, and obstetric and gynecologic characteristics with 17 questions.

### Bristol Female Lower Urinary Tract Symptoms Questionnaire (BFLUTS)

The scale was developed by Jackson et al. in 1996.[24] A Turkish validity and reliability study was conducted by Gokkaya et al. in 2012.[23] The scale consists of five subdimensions, which were filling symptoms, voiding symptoms, incontinence symptoms, sexual function, and quality of life, and includes 19 questions. A total of 0 to 71 points can be obtained with this scale. In the scale, questions 4,13,14,17, and 19 have Likert-type scoring between 0 and 3 points and the other questions between 0 and 4 points. A high score on the scale indicates that the severity of filling, voiding, and incontinence increases and sexual function and quality of life are impaired. Jackson et al. calculated a Cronbach's alpha value of 0.78, and Gokkaya et al. calculated a value of 0.93. In our study, a Cronbach's alpha value of 0.89 was obtained.[23,24]

### Incontinence Quality of Life Scale (I-QoL)

The scale was developed in 1996 by Wagner et al. to assess the level of quality of life associated with incontinence. It was later modified in 1999 by Patrick et al[26,27] Özerdoğan and Kızılkaya (2003) conducted a Turkish validity and reliability study.[25] The scale consists of 22 questions and three subdimensions. On the five-point Likert scale, the lowest score is 22 and the highest score is 110. High scores on the scale indicate a good level of quality of life. The scale has subdimensions of avoidance and limiting behavior, psychosocial impacts, and social embarrassment. The Cronbach's alpha value of the total scale was 0.95 in the studies of Wagner et al., 0.96 in the studies of Özerdoğan and Kızılkaya, and 0.95 in our study.[25,26]

### Beck Depression Inventory (BDI)

It was developed in 1961 by Beck et al. to assess symptoms of depression, and its validity and reliability were studied by Hisli in 1989.[28,29] The scale consists of 21 items with four options ranging from 0 to 3. A total of 0 to 63 points can be scored on the scale. An increase in the score obtained on the scale indicates an increase in the severity of depression. The scale can also be evaluated using the total score and the cutoff value. In our study, the total score of the scale was used. The Cronbach's alpha value of the total scale was 0.86 in the study by Beck et al., 0.78 in the study by Hisli, and 0.87 in our study.[28,29]

### Fatigue Severity Scale

The scale was developed by Krupp et al. in 1989, and the Turkish validity and reliability study was conducted by Armutlu et al. in 2007. The scale determines the state of fatigue in the last month. The scale consists of nine questions and participants are asked to choose a statement between 1 (strongly disagree) and 7 (strongly agree). The

total item score is divided by 9 to calculate the average total scale score. The cutoff value of the scale is 4 and above. A score of 4 or above on the scale means that pathological fatigue is present. Higher scores indicate fatigue, the lower the total score, the lower the level of fatigue. In our study, the scale was evaluated by the total score. The Cronbach's alpha value of the total scale was 0.81 in the study by Krupp et al., 0.94 in the study by Armutlu et al.[22,30] In our study, the Cronbach's alpha value was 0.95.

### Data Collection Process

After the examination, female patients diagnosed with MS and CVD who applied to the clinic for control were taken to a suitable room in the clinic and informed about the study. The room is quiet and convenient for the patient to have one-on-one conversations with the researcher. In this way, the environment of data collection and the researcher prevented the women's responses from being influenced. Data collection was face-to-face. Data collection process with one patient took approximately 30–35 min.

Considering the average age of the women and the limitations due to their neurological diseases, the questions and statements in the questionnaire were addressed by the researcher to the patient. There are questions in the BFLUTS scale, statements in the I-QoL, the BDI, and the Fatigue Severity Scale. The scales were explained to the patients, and they were asked to select the item that best suited them. If the patients did not understand something, the researcher repeated the questions and statements. With these precautions, bias was brought under control.

### Data Analysis

Data obtained from the study were analyzed on the computer using IBM's Statistical Package for the Social Science v25 (SPSS 25.0) program (SPSS IBM, Türkiye). Normal distribution of the data was examined using Skewness and Kurtosis tests. All data were found to conform to the normal distribution. For descriptive statistics of the data, number, percentage, mean, and standard deviation values are given. Chi-square test was used to compare descriptive, obstetric, and gynecologic variables by MS or CVD disease type. Comparison of women's scale scores according to MS or CVD disease type was performed with a t test in independent groups. Factors affecting women with MS or CVD were examined by building two models using logistic regression analysis. The significance level was accepted as $P < 0.05$. The independent variables of the study were the fact that the women had MS or CVD, and the dependent variable was the women's descriptive characteristics, UI, quality of life, fatigue, and depression level.

### Ethical Considerations

Approval was obtained from the Ethics Committee of the Faculty of Health Sciences of Selçuk University for Non-Interventional Clinical Research (Date: May 29, 2019, Approval Number: 2019/515). Our study was designed in a way to conform to the provisions of the Declaration of Helsinki in 1995. The women participating in the study were informed of the purpose of the study, and their consent to voluntarily participate in the study was explained and their verbal consent was obtained. They were given the option to leave the study whenever they wished. Permission to use the scales was obtained by e-mail from the authors, who conducted the validity and reliability studies of the scales in Turkish.

## Results

The mean age of women was 55.19 ± 18.76 years, the mean age at first menstruation was 13.54 ± 1.82 years, and the mean body mass index was 29.02 ± 7.32. Approximately 70% of women were overweight and obese, and 57.1% had a comorbid chronic disease. In this study, 64.3% of women were menopausal and 26.2% had undergone gynecologic surgery.

Women previously diagnosed with MS (42.9%) and CVD (57.1%) participated in the study. It was found that there was a statistically significant difference between the age groups, education level, and monthly income of women with MS and CVD. CVD patients were found to have more comorbid chronic diseases than MS patients. Compared with MS, CVD patients were more history of have had childbirth, entry into menopause, and gynecologic surgery (Table 1).

In our study, 22.2% of women diagnosed with MS use assistive devices. On the other hand, 58.3% of women diagnosed with CVD had a history of paralysis, and 45.8% had an organ they could not use. There was a statistically significant difference between the BFLUTS total ($P=0.008$), filling symptom ($P=0.001$), incontinence symptom ($P < 0.001$), and quality of life ($P=0.021$) subdimensions depending on whether the women had MS or CVD. Mean scores of BFLUTS total score, filling, incontinence symptoms, and quality of life subdimensions were higher in CVD patients than in MS. Compared to MS, CVD patients, mean scores of the BFLUTS voiding symptoms ($P=0.475$), sexual function subdimensions ($P=0.626$), I-QoL total scale ($P=0.083$), and all subdimensions of I-QoL ($P > 0.05$), BDI ($P=0.136$), and fatigue severity ($P=0.996$) were not significantly different (Table 2).

For further analysis, comparing MS and CVD patients, two models were created and logistic regression was performed. The model in which we examined the effects of descriptive, obstetric, and gynecologic characteristics of women with MS or CVD can explain 60% of the dependent variable. According to the results of the model, it was found that there was a significant association between age groups, monthly income level, comorbid chronic diseases, anal incontinence, and menopausal status in women with MS or CVD. The probability of disease by age group was almost 7 times higher for CVD disease than for MS disease (OR=6.747, 95% CI (2.139–21.280). Women with CVD were found to have a higher history of comorbid chronic disease, anal incontinence, and menopause than women with MS ($P < 0.05$) (Table 3).

The model in which we examined the effects of BFLUTS scale scores of women with MS or CVD can explain 30% of the dependent variable. According to the results of the model, it was found that CVD patients had BFLUTS total score about 1 time higher (OR=0.672, 95% CI (0.535–0.844), filling symptom score about 2 times higher (OR=1.877, 95% CI (1.306–2.697), and incontinence symptom score about two and a half times (OR=2.237, 95% CI (1.472–3.399) higher than MS (Table 3).

## Discussion

According to the results of our study, CVD disease occurred 7 times more frequently in advanced age than MS disease. In other words, we can say that MS patients are found in the younger age group and CVD patients are found in the older age group. In similar studies, MS disease was found to be most common at the average age of

**Table 1.** Comparison of Descriptive, Obstetric, and Gynecological Characteristics of Women with MS or CVD

| | MS (n=54) | | CVD (n=72) | | Total (n=126) | | | |
|---|---|---|---|---|---|---|---|---|
| Variables | Number (n) | % | Number (n) | % | Number (n) | % | $X^2$ | *P*-value |
| Age groups | | | | | | | | |
| 20–40 years | 24 | 19.0 | 9 | 7.2 | 33 | 26.2 | 48.368 | **<0.001** |
| 41–60 years | 27 | 21.4 | 15 | 11.9 | 42 | 33.3 | | |
| 61 years and older | 3 | 2.4 | 48 | 38.1 | 51 | 40.5 | | |
| Education level | | | | | | | | |
| Primary education | 36 | 28.6 | 69 | 54.7 | 105 | 83.3 | 21.233 | **<0.001** |
| Secondary education | 12 | 9.5 | - | - | 12 | 9.5 | | |
| High education | 6 | 4.8 | 3 | 2.4 | 9 | 7.2 | | |
| Marital status | | | | | | | | |
| Single | 15 | 11.9 | 21 | 16.7 | 36 | 28.6 | 0.029 | 0.864 |
| Married | 39 | 31.0 | 51 | 40.4 | 90 | 71.4 | | |
| Family's monthly income level | | | | | | | | |
| Income less than expenses | 3 | 2.4 | 15 | 11.9 | 18 | 14.3 | 11.667 | **0.003** |
| Income equals expense | 51 | 40.5 | 51 | 40.5 | 102 | 81.0 | | |
| Income more than expenses | - | - | 6 | 4.8 | 6 | 4.8 | | |
| Comorbid chronic disease (diabetes, hypertension, etc.) | | | | | | | | |
| Yes | 21 | 16.7 | 51 | 40.4 | 72 | 57.1 | 12.858 | **<0.001** |
| No | 33 | 26.2 | 21 | 16.7 | 54 | 42.9 | | |
| Frequent vaginal infection | | | | | | | | |
| Yes | 9 | 7.1 | 18 | 14.3 | 27 | 21.4 | 0.826 | 0.363 |
| No | 45 | 35.7 | 54 | 42.9 | 99 | 78.6 | | |
| Chronic constipation (for at least 3 consecutive months in the past year) | | | | | | | | |
| Yes | 27 | 21.4 | 45 | 35.8 | 72 | 57.2 | 1.491 | 0.222 |
| No | 27 | 21.4 | 27 | 21.4 | 54 | 42.8 | | |
| Anal incontinence | | | | | | | | |
| Yes | 3 | 2.4 | 15 | 11.9 | 18 | 14.3 | 5.882 | **0.015** |
| No | 51 | 40.5 | 57 | 45.2 | 108 | 85.7 | | |
| Having a urinary tract infection | | | | | | | | |
| Yes | 18 | 14.3 | 30 | 23.8 | 48 | 38.1 | 0.909 | 0.340 |
| No | 36 | 28.6 | 42 | 33.3 | 78 | 61.9 | | |
| Childbirth status | | | | | | | | |
| Yes | 36 | 28.6 | 63 | 50.0 | 99 | 78.6 | 7.955 | **0.005** |
| No | 18 | 14.3 | 9 | 7.1 | 27 | 21.4 | | |
| Type of most recent birth (n=99) | | | | | | | | |
| Vaginal birth | 27 | 27.3 | 54 | 54.5 | 81 | 81.8 | 1.768 | 0.184 |
| Caesarean section | 9 | 9.1 | 9 | 9.1 | 18 | 18.2 | | |
| Menopause status | | | | | | | | |
| Yes | 18 | 14.3 | 63 | 50.0 | 81 | 64.3 | 39.433 | **<0.001** |
| No | 36 | 28.6 | 9 | 7.1 | 45 | 35.7 | | |
| Gynecological surgery status | | | | | | | | |
| Yes | 9 | 7.2 | 24 | 19.0 | 33 | 26.2 | 4.434 | **0.035** |
| No | 45 | 35.7 | 48 | 38.1 | 93 | 73.8 | | |

MS: Multiple sclerosis, CVD: Cerebrovascular disease, $X^2$: Chi-square test, values with a significance level of $P<0.05$ are marked in bold.

**Table 2.** Comparison of Scale Scores of Women with MS or CVD

| | Disease type | | Test value | |
|---|---|---|---|---|
| | MS (n=54) | CVD (n=72) | | |
| Scales | Mean±SD | Mean±SD | t | *P*-value |
| **BFLUTS total** | 15.27±13.87 | 21.50±10.91 | −2.724 | **0.008** |
| Filling symptoms | 3.88±3.13 | 5.62±2.49 | −3.453 | **0.001** |
| Voiding symptoms | 2.61±2.79 | 2.29±1.96 | 0.717 | 0.475 |
| Incontinence symptoms | 3.44±4.36 | 6.29±4.20 | −3.700 | **<0.001** |
| Sexual function | 0.83±1.22 | 0.95±1.55 | −0.489 | 0.626 |
| Quality of life | 4.50±4.35 | 6.33±4.34 | −2.342 | **0.021** |
| **I-QoL total** | 85.00±20.94 | 78.83±18.52 | 1.748 | 0.083 |
| Avoidance and limiting behavior | 29.61±8.24 | 26.91±7.26 | 1.909 | 0.059 |
| Psychosocial impacts | 36.16±7.92 | 34.16±7.67 | 1.428 | 0.156 |
| Social embarrassment | 19.22±5.53 | 17.75±4.88 | 1.581 | 0.116 |
| **BDI total** | 14.66±11.15 | 17.41±9.36 | −1.502 | 0.136 |
| **Fatigue severity scale** | 4.61±1.98 | 4.61±1.85 | 0.004 | 0.996 |

MS: Multiple sclerosis, CVD: Cerebrovascular disease, SD: Standard deviation, values with a significance level of $P<0.05$ are marked in bold.

45–64 years,[6,31] and CVD disease at the average age of 60 years and above.[32,33] This can be interpreted to mean that CVD patients are older than MS patients and MS occurs in younger age groups.

UI symptoms due to neurological diseases frequently occur.[8-10,12] In our study, it was found that lower urinary tract symptoms were more frequent in CVD patients than in MS patients. In studies,

**Table 3.** Factors Affecting Women with MS or CVD by Logistic Regression Models

| | | | | | | 95% Confidence Interval | |
|---|---|---|---|---|---|---|---|
| Variables | B | SE | β | Exp(B)/OR | *P*-value | Lower | Higher |
| **Model 1:** The effect of descriptive, obstetric and gynaecological characteristics of women on MS or CVD disease | | | | | | | |
| Age groups | 1.909 | 0.586 | 10.610 | 6.747 | **0.001** | 2.139 | 21.280 |
| Education level | 0.316 | 0.569 | 0.308 | 1.372 | 0.579 | 0.449 | 4.186 |
| Family's monthly income level | 3.643 | 0.914 | 15.882 | 38.218 | **<0.001** | 6.369 | 229.320 |
| Comorbid chronic disease | −1.938 | 0.637 | 9.255 | 0.144 | **0.002** | 0.041 | 0.502 |
| Anal incontinence | −2.750 | 1.165 | 5.569 | 0.064 | **0.018** | 0.007 | 0.628 |
| Childbirth status | −0.148 | 0.919 | 0.026 | 0.862 | 0.872 | 0.142 | 5.224 |
| Menopause status | −1.817 | 0.718 | 6.399 | 0.163 | **0.011** | 0.040 | 0.664 |
| Gyecological surgery status | −0.113 | 0.604 | 0.035 | 0.893 | 0.852 | 0.273 | 2.919 |
| Nagelkerke R Square=0.601, $X^2$=18.552, **Model (p)=0.017** | | | | | | | |
| **Model 2:** The effect of BFLUTS scale scores of women with MS or CVD | | | | | | | |
| **BFLUTS total** | −0.397 | 0.116 | 11.701 | 0.672 | **0.001** | 0.535 | 0.844 |
| Filling symptoms | 0.630 | 0.185 | 11.595 | 1.877 | **0.001** | 1.306 | 2.697 |
| Incontinence symptoms | 0.805 | 0.213 | 14.226 | 2.237 | **<0.001** | 1.472 | 3.399 |
| Quality of life | 0.226 | 0.122 | 3.435 | 1.254 | 0.064 | 0.987 | 1.593 |
| Nagelkerke R square=0.304, $X^2$=43.271, **Model (*P*)≤0.001** | | | | | | | |

MS: Multiple sclerosis, CVD: Cerebrovascular disease, OR: Odds ratio, Reference MS disease was taken. Values with a significance level of $P<0.05$ are marked in bold.

some permanent or transient complications such as UI and fatigue are found to occur after CVD or MS attacks.[8,11,34,35]

In addition, due to the complications of neurological diseases such as MS or CVD, some medical problems and symptoms may occur that significantly affect women's lives.[9,36] In particular, there are comorbid diseases accompanying MS or CVD diseases.[11,34,37] In our study, 57% of women had comorbid chronic disease, and when comparing the two groups, CVD patients were found to have more comorbid chronic diseases than MS. Therefore, it can be thought that CVD disease causes more long-term complications than MS disease.

Neurological disease can cause a woman to suffer from urinary symptoms, increase fatigue and depression, and decrease quality of life. In studies conducted with MS patients, quality of life was found to be negatively affected as the severity of incontinence increased.[34,38] In a review, it was stated that the fatigue level of MS patients should be determined and a multidisciplinary approach is needed that takes into account various factors that may cause fatigue.[39] In a study conducted with CVD patients, it was found that the patients' fatigue level was high and affected their physical activities.[40] Studies conducted separately in CVD or MS patients found that incontinence symptoms, depression, and fatigue increased and quality of life decreased.[11,38-41] In our study, MS and CVD diseases were compared, and it was found that CVD patients had higher BFLUTS total scores, filling symptoms, incontinence symptoms, and quality of life subdimensions than MS patients. Therefore, it can be said that lower urinary symptoms are more affected in CVD patients than in MS. However, it was concluded that BFLUTS scores for voiding symptoms and sexual function subdimensions, depression, fatigue severity, and quality of life were similarly affected in women.

Since neurological diseases cause nerve damage in the brain, other organs are also affected and damaged.[31,33] Considering this whole process, the increase of UI, fatigue and depression, as well as the decrease of the patients' quality of life, resembles a domino. According to the results of our study, health-care professionals should create a roadmap and provide care that recognizes some similar and different aspects of MS and CVD diseases. Individualized, holistic care for patients can help improve the quality of healthcare and strengthen individuals' coping mechanisms.

### Limitations of the Study

Because the study was conducted in the neurology clinic of a university hospital, it cannot be generalized to all of Türkiye. The data of the study were collected face-to-face because the women were limited due to their age and neurological disease. There were problems with some of the scales, which had to be answered based on self-report. In addition, the fact that the women included in the study are physiologically more prone to UI, fatigue, and depression because they are in the middle age group is a limitation of the study.

## Conclusion

In our study, CVD disease was found to be 7 times more likely to occur at older ages compared to MS disease. CVD disease was found that CVD disease has more comorbid chronic disease, anal incontinence, and menopause than MS disease.

It was found that the mean scores of BFLUTS total score, filling, incontinence symptoms, and quality of life subdimensions were higher in CVD patients than in MS. It was found that there was no significant difference between the mean scores of BFLUTS symptoms, subdimensions of sexual function, total and all subdimensions of quality of life, depression, and fatigue scale of women according to MS and CVD disease. This result shows that micturition symptoms, sexual function, quality of life, depression, and fatigue are similar in MS and CVD patients.

UI, quality of life, depression, and fatigue of women are affected by the problems arising from neurological diseases. In addition, care should be planned considering the differences between MS and CVD disorders. This can help improve the quality of care. Psychological support systems can be created and training on coping strategies can be provided to improve the quality of life of people with neurological disorders and reduce UI, depression, and fatigue.

**Ethics Committee Approval:** Ethics Committee approval was obtained from the Ethics Committee of the Faculty of Health Sciences of Selçuk University for Non-Interventional Clinical Research (Approval Number: 2019/515, Date: 29.05.2019).

**Informed Consent:** Written informed consent was obtained from the patients who agreed to take part in the study.

**Peer-review:** Externally peer-reviewed.

**Author Contributions:** Concept – Y.E.A., H.G., S.D.Y.; Design – Y.E.A., H.G., S.D.Y.; Supervision – H.G., S.D.Y.; Fundings – Y.E.A.; Materials – Y.E.A; Data Collections and/or Processing – Y.E.A.; Analysis and/or Interpretation – Y.E.A.; Literature Review – Y.E.A., H.G., S.D.Y.; Writing – Y.E.A., H.G., S.D.Y.; Critical Review – H.G., S.D.Y.

**Acknowledgements:** We thank the women with MS or SVO who participated in our study.

**Declaration of Interests:** The authors have no conflict of interest to declare.

**Funding:** The authors declared that this study has received no financial support.

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