

Nursing Guides to Manage Urinary Symptoms among Patients with Multiple Sclerosis: Patients Empowering

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Abstract

Background: Bladder problems frequently occur among individuals with multiple sclerosis and can cause significant distress. However, these symptoms could be effectively treated. Nurses play a crucial part in managing bladder dysfunction by advocating for a comprehensive care strategy, which can enhance bladder management and alleviate patient concerns. **Aim of the study:** To examine the urinary symptoms encountered patients with multiple sclerosis and develop nursing guides for managing these symptoms. **Design:** A descriptive research approach was used. **Setting:** The research carried out at Zagazig University Hospital's Neurology Outpatient Clinics. **Subjects:** Study enrolled a total of 100 patients diagnosed with multiple sclerosis. **Tools:** Four instruments were used: 1) Patient assessment form, 2) Quality of life module for lower urinary tract symptoms by the international consultation on incontinence, 3) Short form urinary incontinence questionnaire, and 4) Nursing guides regarding urinary symptoms. **Results:** The findings revealed that 61% of studied clients aged ≥ 30 years old and graduated from secondary school. The biggest proportion of studied sample was females, and 70% of them were unemployed. Findings also demonstrated that a significant correlation between onset of disease regarding Total ICIQ-LUTS.qol score, ICIQ-UI-short form, Overall interference of leaking urine with daily life. **Conclusion:** Study concluded that bladder problems related to multiple sclerosis had a negative effect on about half of studied patients' lives. **Recommendation:** It was suggested that all nurses should be trained on effective intervention for multiple sclerosis patients to enhance their standard of living and also to empower their management of urinary problems.

Keywords: Multiple sclerosis, urinary symptoms, nursing guides.

Introduction:

Multiple sclerosis (MS) stands as the most prevalent non-traumatic disabling condition impacting young adults. Its global incidence is on the rise, alongside the socioeconomic burden it poses. While the exact cause of MS and the reasons for its increasing prevalence remain elusive, it is likely that gene-environment interactions are the major contributors (Dobson & Giovannoni, 2018).

The pathology indicates that inflammation plays a central role in tissue

damage throughout all phases of the disease. Specific inflammatory accumulations in the meninges and around blood vessels seem to release substances that trigger demyelination or neurodegeneration, either directly or indirectly by activating microglia. Ultimately, demyelination and neurodegeneration result from oxidative harm and mitochondrial impairment, culminating in a condition akin to "virtual hypoxia." (Lassmann, 2018).

Patients with MS often endure notable physical challenges, including pain, spasticity, vision problems, incontinence, fatigue, and limited mobility. Furthermore, they may grapple with significant psychological impacts, spanning from distress upon diagnosis, which could influence the development of coping mechanisms, to profound disruptions in their life stories. Cognitive decline is another factor, all of which collectively impact their overall quality of life. (Leary et al., 2015).

Urinary problems affecting the lower urinary tract (LUT) which are prevalent among individuals with multiple sclerosis, and significantly diminishing their quality of life. Symptoms primarily revolve around the storage phase, with detrusor overactivity being the most frequently observed urodynamic irregularity. (Phé et al., 2016).

Multiple sclerosis is typically identified in younger adults, aged between 20 to 40 years, and exhibits a higher incidence among females, outnumbering males by 3 to 4 times. Among MS patients, lower urinary tract symptoms (LUTS) manifest across a continuum of severity, spanning from urgency to urge urinary incontinence, sometimes accompanied by challenges such as incomplete bladder emptying or hesitancy. (Bientines et al., 2020).

The frequency with which urinary symptoms are evaluated and addressed during routine examinations of MS patients remains uncertain. Health-care providers, often prioritizing the management of MS's neurodegenerative symptoms, which may inadvertently overlook urinary tract symptoms, leading to potential gaps in their assessment and management. (Khalaf et al., 2015).

Multiple sclerosis (MS) nurses frequently hold significant responsibility for handling relapses, involving tasks such as instructing patients on relapse indicators,

assessing potential relapses through phone consultations or in-person visits, and determining the appropriate course of action for treatment. Additionally, MS nurses had a substantial role in overseeing medication adherence, requiring them to be proficient in evaluating treatment effectiveness and identifying any adverse reactions. (Mohamed et al., 2022).

Bladder dysfunction occurs in approximately 80% of people with MS, and clean intermittent self-catheterization (CISC) is recommended as the gold standard for treatment. However, when teaching CISC, the nurse needs to be aware that the nature of MS is multi-faceted, and patients experience complex issues affecting their ability to perform and master the technique of CISC (Whitehouse, 2023).

Understanding the necessity of nursing and social support, alongside the factors shaping their provision and administration, holds paramount importance for individuals with multiple sclerosis (MS). In conjunction with diagnostic and therapeutic measures, nursing and social care interventions could significantly enhance patient and family satisfaction while elevating overall quality of life. Among the foremost concerns expressed by this patient cohort are challenges associated with bladder function, and to psychological support (Staneva & Dimitrov, 2016).

Significance of The Study:

Multiple sclerosis (MS) is a persistent and fluctuating condition affecting the central nervous system (CNS), characterized by inflammation and autoimmune reactions leading to the loss of myelin, nerve damage, and a diverse range of symptoms. Among these symptoms, with MS patients commonly experience issues like bladder dysfunction, urinary symptoms, and susceptibility to urinary tract infections (UTIs), which rank among

the top three most prevalent non-neurological complications among individuals with MS. (Junior et al., 2020). The present study evaluates urinary symptoms encountered patients with multiple sclerosis and managing urinary symptoms with nursing guides.

Aims of The Study:

The objective of the research was to assess urinary symptoms encountered patients with multiple sclerosis and develop nursing guides with the following goals:

- Evaluate the urinary symptoms encountered individuals diagnosed with multiple sclerosis.
- Develop nursing guides for empowering patients with multiple sclerosis to manage the urinary symptoms.

Research Questions:

- What are the urinary symptoms encountered patients with multiple sclerosis?
- What are nursing guides to manage patients with MS?

Subjects and Methods:

Research Design:

The study utilized a descriptive research design.

Setting:

The research carried out at the Neurology Outpatient Clinics, specifically the Multiple Sclerosis Unit, which located at Zagazig University Hospitals. Neurology Clinic is located in the first floor and consisted of Neurology Clinic and MS Unit and Waiting Area.

Study Subjects:

The study included a purposive sample comprising (100) individuals diagnosed with multiple sclerosis who were attending the Neurology Outpatient Clinics, specifically the Multiple Sclerosis Unit, at Zagazig University Hospitals. The anticipated sample size was a minimum of 100 patients, with a confidence level of 90% and a precision rate set at 0.05, calculated through the Steven equation (2012).

Data Collection Instruments:

To achieve the study's aims, four instruments were employed for data collection:

Tool I: Patient Assessment Form:

The researchers designed this form based on current national and international related literature, containing two distinct sections:

Section 1: Demographic Information

Designed to collect patient demographic information, this section includes seven variables: Age, sex, marital status, job, educational attainment, income level, and residence.

Section 2: Medical History Assessment:

To ascertain date of disease onset, suffering from chronic diseases, as well as using assistive devices.

Tool II: The Adapted International Consultation on Incontinence Questionnaire Lower Urinary Tract Symptoms Quality of Life Module:

The (ICIQ-LUTSqol) is a validated questionnaire completed by patients,

designed to assess the impact of urinary incontinence on their quality of life globally, both in research and clinical settings. Adapted from the King's Health Questionnaire (KHQ) to fit within the ICIQ framework, it evaluates various aspects of daily life affected by urinary incontinence, particularly focusing on social ramifications. The ICIQ-LUTSqol comprises 20 items pertaining to household tasks, work, physical activities, travel, social interactions, relationships, sexual activity, family life, emotional well-being, sleep, fatigue, management strategies like pad use and fluid restriction, clothing concerns, odor, embarrassment, and overall impact on daily functioning.

The Scoring System:

The scoring system ranges from 19 to 76, with higher scores indicating a more pronounced impact on quality of life. Both scales, while not included in the overall score, reflect the specific impact of individual symptoms on the patient.

Tool III: The Incontinence Questionnaire-Urinary Incontinence Short Form:

(ICIQ-UI Short Form) is a concise questionnaire designed to assess the frequency, severity, and impact of urinary incontinence on quality of life (QoL) among men and women. It consists of four items focusing on the frequency of urinary incontinence episodes, the amount of leakage, the overall impact of urinary incontinence on the individual's life, and a self-diagnostic item.

The Scoring System:

It ranges from 0 to 21, representing the overall score. The ICIQ-UI Short Form offers a concise and sturdy tool for

evaluating how symptoms of incontinence affect overall outcomes.

Tool IV:

Nursing guides regarding urinary symptoms management encountered among patients with multiple sclerosis. The nursing guides cover a spectrum, including definitions, symptoms, causes, diagnostic techniques, complications, and therapies for multiple sclerosis. Moreover, they delve into the impact of multiple sclerosis on urinary issues among patients, offer guidance on Kegel exercises, detail treatments for bladder dysfunction, and provide dietary recommendations.

Fieldwork:

This study was executed as follows:

Administrative Arrangement:

Official authorization to conduct the research was secured from the relevant authorities at Neurology Outpatient Clinics (MS unit) at Zagazig University Hospitals. To ensure the credibility and consistency of the tools, they underwent necessary revisions by nursing experts.

Validity Assessment:

Three distinguished professors specializing in nursing and medicine evaluated the tools to assess its clarity, relevance, comprehensiveness, understandability, applicability, and user-friendliness. Minor modifications were needed based on their feedback, resulting in the final version.

Content Reliability:

The reliability of the tools was evaluated through test-retest reliability and internal consistency measurement. Test-

retest reliability was determined by having the researcher administer the same tools to the same subjects under similar conditions on multiple occasions. Internal consistency was assessed using Cronbach's Alpha test statistics, which yielded values of 0.85, 0.90, and 0.78 for tools (I), (II), and (III) respectively.

Pilot Study:

A pilot study was carried out in April 2023 to assess the feasibility and practicality of the study tools. Ten percent of the sample (10 patients) participated, providing insight into the tools' usability and estimating the time required completing the study tools.

Data Collection Process:

Data collection commenced after obtaining all necessary formal approvals. Researcher introduced herself to patients to facilitate rapport and explained the study's purpose and objectives. Data collection were done from May 2023 to December 2023, spanned eight months; accommodating patients during morning shift until 1:30 p.m. Participants completed the three instruments during individual interviews.

Administrative and Ethical Considerations:

The research proposal gained approval from the ethical committee of the Faculty of Nursing. Patients were verbally informed about the study's aims and voluntarily gave oral consent to take part. They were guaranteed privacy, the freedom to withdraw from the study whenever they wished, and assurance of confidentiality throughout data collection. Additionally, participants faced no risks throughout the study duration.

Statistical Analysis:

All data were gathered, organized, and subjected to statistical analysis using SPSS 26 for Windows (SPSS Inc., Chicago, IL, USA). The Shapiro-Wilk test was employed to assess normal distribution of the data. Qualitative data were presented as frequencies and relative percentages, while quantitative data were expressed as mean \pm SD (Standard Deviation) and range. For parametric and non-parametric variables, independent T-test and Mann-Whitney test were utilized, respectively, to determine differences between two groups. Similarly, one-way ANOVA test and Kruskal-Wallis test were applied for parametric and non-parametric variables, respectively, to assess differences among three groups. All statistical comparisons were two-tailed, with significance levels set at P-value \leq 0.05 indicating significance, $p < 0.001$ indicating highly significant difference, and $P > 0.05$ indicating nonsignificant difference.

Results:

Table (1): Reveals that 61% of studied clients aged ≥ 30 years old and graduated from secondary school. The biggest proportion of studied sample was female (72%), and 70% percent of them were unemployed. A significant majority of the participants in the study (80%) were married, with 65% residing in rural areas. Additionally, 67% studied sample reported insufficient financial resources.

Table (2): Reveals that 76% of the patients involved in the study did not suffer from chronic diseases, and about 94% of patients didn't use assistive device.

Table (3): Illustrates that 42% of the study patients reported that the bladder problem affects their household tasks and affect their abilities to travel. 40% of the studied subjects reported that the bladder problems affect their physical activities,

reduce their abilities to see friends and visit them, and affected on their relationship with their spouses. 44% of them told that the bladder problem affected on their jobs or the regular daily activities outside the home. 48% of the studied subjects told that the bladder problems make them feel fatigue and tiredness, as well more than half of patients said that the bladder problems affected on their sleep.

Table (4): Displays that 37% of the study patients reported that never leak urine.

Table (5): Reveals that more than half of patients (61%) had average current health status, and 48% of them reported that bladder problems affected on their lives.

Table (6): Illustrates that 65% of studied clients reported that they had moderate urinary incontinence during going to bathroom, 40 % of them had little urinary incontinence during waking up at night to urinate, 46% of them told that urinary leakage occurred with physical activity, for example, coughing and running, 78% of the study patients reported that little bed wetting at night, urine leakage during sexual intercourse, finally, majority of patients (81%) said that they suffered from urinary tract infections.

Table (7): According to this study, significant statistical relation was observed between sex regarding Total ICIQ-LUTS.qol score, ICIQ-UI-short form, and Overall interference of leaking urine with daily life activities.

Table (8): This study found statistically meaningful connections between age regarding Total ICIQ-LUTS.qol score, ICIQ-UI-short form, and

Overall interference of leaking urine with daily life activities.

Table (9): This study revealed statistically meaningful correlations between occupation regarding Total ICIQ-LUTS.qol score, ICIQ-UI-short form, and Overall interference of leaking urine with daily life activities.

Table (10): According to this study, significant statistical relation was observed between marital status regarding Total ICIQ-LUTS.qol score, ICIQ-UI-short form, and Overall interference of leaking urine with daily life activities.

Table (11): This study revealed statistically significant correlations between cases with different education level regarding Total ICIQ-LUTS.qol score, ICIQ-UI-short form and Overall interference of leaking urine with daily life activities.

Table (12): According to this study, significant statistical associations were found between residence regarding Total ICIQ-LUTS.qol score, ICIQ-UI-short form and Overall interference of leaking urine with daily life activities.

Table (13): There were statistically significant correlations between income level regarding Total ICIQ-LUTS.qol score, ICIQ-UI-short form, and Overall interference of leaking urine with daily life activities.

Table (14): Shows that this study indicated a significant correlation between onset of disease regarding Total ICIQ-LUTS.qol score, ICIQ-UI-short form, Overall interference of leaking urine with daily life activities.

Table (1): Presents the frequency distribution of demographic characteristics for the study sample (N=100).

Demographic Profile		Frequency	Percentage (%)
Sex	Male	28	28%
	Female	72	72%
Age	< 30 years	39	39%
	≥30 years	61	61%
Job	Employed	30	30%
	Unemployed	70	70%
Marital State	Single	20	20%
	Married	80	80%
Educational Qualification	Illiterate	9	9%
	Secondary	61	61%
	University	30	30%
Residence	Urban	35	35%
	Rural	65	65%
Income	Enough	33	33%
	Not enough	67	67%

Table (2): Distribution of the studied sample according to medical background.

Clinical data (N=100)		Frequency	Percentage (%)
Onset of disease	Under 5 years	20	20%
	Between 5 and 10 years	28	28%
	Over 10 years	52	52%
Suffering from chronic disease	Yes	24	24%
	No	76	76%
Types of chronic disease (n=24)	Migraine	12	12%
	Hypertension	5	5%
	Heart disease	3	3%
	Hyperthyroidism	1	1%
	Diabetes	3	3%
Do you use assistive device because the disease?	Yes	6	6%
	No	94	94%

How would you characterize your present state of health?	very good	2	2%
	good	23	23%
	average	61	61%
	poor	7	7%
	very poor	7	7%

Table (3): ICIQ-LUTS qol questionnaire among studied cases.

ICIQ-LUTS qol		Frequency	Percentage (%)
(Q3)- Is your bladder issue impacting your ability to complete household tasks?	not at all	15	15%
	slightly	30	30%
	moderately	42	42%
	a lot	13	13%
(Q4)- Is your bladder issue affecting your job or regular daily activities outside the home?	not at all	21	21%
	slightly	20	20%
	moderately	44	44%
	a lot	15	15%
(Q5)- Are your physical activities affected by your bladder problem?	not at all	15	15%
	slightly	25	25%
	moderately	40	40%
	a lot	20	20%
(Q6)- Does your bladder problem interfere with your ability to travel?	not at all	16	16%
	slightly	22	22%
	moderately	42	42%
	a lot	20	20%
(Q7)- Are you experiencing a reduction in your social life due to your bladder problem?	not at all	19	19%
	slightly	34	34%
	moderately	37	37%
	a lot	10	10%
(Q8)- Is your bladder problem affecting your ability to socialize with friends and visit them?	not at all	10	10%
	slightly	35	35%
	moderately	40	40%
	a lot	15	15%
(Q9)- Does your bladder problem impact your relationship with your spouse? (n=80)	not at all	2	2.5%
	slightly	18	22.5%
	moderately	32	40%
	a lot	28	35%
(Q10)- Is your bladder problem impacting your sexual relationship? (n=80)	not at all	20	25%
	slightly	18	22.5%
	moderately	23	28.7%
	a lot	19	23.8%

(Q11)- Does your bladder problem affect your family life?	not at all	49	49%
	slightly	18	18%
	moderately	24	24%
	a lot	9	9%
(Q12)- Does your bladder problem contribute to feelings of depression?	not at all	29	29%
	slightly	10	10%
	moderately	26	26%
	a lot	35	35%
(Q13)- Does your bladder problem lead to feel anxious or stressed?	not at all	26	26%
	slightly	17	17%
	moderately	20	20%
	a lot	37	37%
(Q14)- Does your bladder problem cause negative self-perception?	not at all	26	26%
	slightly	29	29%
	moderately	30	30%
	a lot	15	15%
(Q15)- Is your sleep affected by your bladder problem?	not at all	7	7%
	slightly	58	58%
	moderately	31	31%
	a lot	4	4%
(Q16)- Does your bladder problem result in fatigue and tiredness?	not at all	21	21%
	slightly	48	48%
	moderately	26	26%
	a lot	5	5%
(Q17)-Wearing sanitary pads to maintain dryness?	Never	28	28 %
	sometimes	31	31 %
	often	6	6 %
	all the time	35	35 %
(Q18)-Do you exercise caution when consuming fluids?	Never	35	35%
	sometimes	14	14%
	often	32	32%
	all the time	19	19%
(Q19)-Changing your underwear because it's wet?	Never	37	37%
	sometimes	27	27%
	often	18	18%
	all the time	18	18%
(Q20)-Do you worry when you smell urine odor?	Never	24	24%
	sometimes	25	25%
	often	13	13%
	all the time	38	38%
(Q21)- Do you feel embarrassed due to your urinary issue?	Never	24	24 %
	sometimes	31	31 %
	often	30	30 %
	all the time	15	15 %

Total score (#)	Mean ±SD	46.2±4.3
	Range	39:54

(#) total score equal sum of questions from q3 to q21 and ranged from 19 to 76.

- (note)-q1 and q2 in ICIQ-LUTS-qol included gender and date of birth.

Table (4): ICIQ-UI short form questionnaire among studied cases.

ICIQ-UI short form		Frequency	Percentage (%)
(Q1)- How frequently do you experience urine leakage?	Never	37	37%
	about once week or less often	15	15%
	2 or 3 times a week	18	18%
	about once a day	9	9%
	several times a day	11	11%
	all the time	10	10%
(Q2)- How much urine do you typically leak (regardless of whether you use protection)?	None	37	37%
	small amount	20	20%
	moderate amount	25	25%
	large amount	18	18%
(Q3)- In general, to what extent does urine leakage disrupt your daily life?			
	Mean ± SD	2.8±3.1	
	Range	0:9	
When does urine leakage occur?	-Never - urine does not leak	37	37%
	-Leaks before you can reach the toilet	33	33%
	-Leaks when you cough or sneeze	15	15%
	-Leaks while you are asleep	6	6%
	-Leaks during physical activity/exercise	4	4%
	-Leaks after you have finished urinating and are dressed	3	3%
	-Leaks all the time	2	2%
Total score (#)	Mean ± SD	7±8.5	
	Range	0:15	

(#) total score of ICIQ-UI short form equal the sum of Q1+Q2+Q3 and ranged from 0:21 with max score mean bad affection.

Table (5): Effect of Bladder Problems on general life.

Effect of Bladder Problems on general life		Frequency	Percentage (%)
How would you characterize your present health condition?	very good	2	2%
	good	23	23%
	average	61	61%
	poor	7	7%
	very poor	7	7%
To what extent do you think your bladder issue impacts your daily life?	not at all	6	6%
	slightly	25	25%
	moderately	48	48%
	a lot	21	21%

Table (6): Impact of Urinary Incontinence Symptoms on Daily Life.

Effect of Urinary Incontinence Symptoms on Daily Life		Frequency	Percentage (%)
Going to the bathroom	Little	6	6%
	moderately	65	65%
	very much	29	29%
Waking up at night to urinate	Little	40	40%
	moderately	36	36%
	very much	24	24%
Do you find it difficult to control urination?	Little	37	37%
	moderately	36	36%
	very much	27	27%
Urinary leakage during a strong urge to urinate	Little	37	37%
	moderately	32	32%
	very much	31	31%
Incontinence during physical activity, for example, coughing and running	Little	46	46%
	moderately	35	35%
	very much	19	19%
Bed wetting at night	Little	78	78%
	moderately	8	8%
	very much	14	14%
Urine leakage during sexual intercourse (N=80)	Little	63	78.8%
	moderately	6	7.5%
	very much	11	13.8%
Do you suffer from bladder pain?	Little	77	77%
	moderately	21	21%
	very much	2	2%

Do you suffer from urinary tract infections?	Little	81	81%
	moderately	9	9%
	very much	10	10%

Table (7): Comparison between sex regarding Total ICIQ-LUTS.qol score, ICIQ-UI-short form, Overall interference of leaking urine with daily life.

	Sex		t/u	P value
	Male (N=28)	Female (N=72)		
Total ICIQ-LUTS.qol score Mean \pm SD Range	45 \pm 2.1 39:47	46.7 \pm 4.8 39:54	-2.4	0.01*
ICIQ-UI-short form Mean \pm SD Range	12.4 \pm 2 9:15	4.9 \pm 5.7 0:14	-5.4	<0.001*
Overall interference of leaking urine with daily life Mean \pm SD Range	3.7 \pm 1.5 1:5	2.5 \pm 3.5 0:9	-3.1	0.002*

- * significant at p value <0.05.

Table (8): Comparison of age groups in terms of Total ICIQ-LUTS.qol score, ICIQ-UI-short form, and overall interference of leaking urine with daily life.

	Age group		t/u	P value
	<30 years (N=39)	>30 years (N=61)		
Total ICIQ-LUTS.qol score Mean \pm SD Range	45.4 \pm 2.7 39:49	46.8 \pm 5 39:54	-1.8	0.05*
ICIQ-UI-short form Mean \pm SD Range	11.8 \pm 2.5 8:15	4 \pm 5.7 0:14	-5.7	<0.001*
Overall interference of leaking				

urine with daily life Mean ± SD Range	4.3±1.8	1.9±3.5	- 4.8	<0.001*
	1:8	0:9		

- * Significance level set at $p < 0.05$.

Table (9): Comparison between occupation regarding Total ICIQ-LUTS.qol score, ICIQ-UI-short form, Overall interference of leaking urine with daily life.

	Job		t/u	P value
	employed (N=30)	unemployed (N=70)		
Total ICIQ-LUTS.qol score Mean ± SD Range	45.2±2.2 39:49	46.7±4.9 39:54	-1.8	0.05*
ICIQ-UI-short form Mean ± SD Range	12.2±2.1 9:15	4.8±5.8 0:14	-5.7	<0.001*
Overall interference of leaking urine with daily life Mean ± SD Range	3.8±1.5 1:5	2.4±3.6 0:9	- 4.8	<0.001*

- * significant at p value <0.05.

Table (10): Comparison between marital status regarding Total ICIQ-LUTS.qol score, ICIQ-UI-short form, Overall interference of leaking urine with daily life.

	Marital state		t/U	P value
	Single (N=20)	Married (N=80)		
Total ICIQ-LUTS.qol score Mean ± SD Range	44.7±2.4 39:47	46.6±4.6 39:54	-1.8	0.05*
ICIQ-UI-short form Mean ± SD	13.4±1.5	5.4±5.6	-5.7	<0.001*

Range	11:15	0:14		
Overall interference of leaking urine with daily life				
Mean ± SD	3.3±1.6	2.7±3.4	-4.8	<0.001*
Range	1:5	0:9		

- * significant at p value <0.05.

Table (11): Comparison between cases with different education level regarding Total ICIQ-LUTS.qol score, ICIQ-UI-short form and Overall interference of leaking urine with daily life.

	Education level			F/Kw	P value
	Illiterate (N=9)	Secondary (N=61)	University (N=30)		
Total ICIQ-LUTS.qol score					
Mean ± SD	44.3±1.3 ^(a)	46.8±5	44.3±3.6 ^(a)	6.7	0.03*
Range	42:45	39:54	37:49		
ICIQ-UI-short form					
Mean ± SD	13.5±0.8 ^(a)	4±5.7	11.2±2.2 ^(a)	34.6	<0.001*
Range	12:14	0:14	8:15		
Overall interference of leaking urine with daily life					
Mean ± SD	2.5±0.8	1.9±3.5	4.8±1.6 ^(a)	26	<0.001*
Range	1:3	0:9	1:8		

(a) Significant difference observed at p-value <0.05 with secondary education.

- * significant at p value <0.05.

Table (12): Comparison between residence regarding Total ICIQ-LUTS.qol score, ICIQ-UI-short form and Overall interference of leaking urine with daily life.

	Residence		t/U	P value
	Urban	Rural		

	(N=35)	(N=65)		
Total ICIQ-LUTS.qol score				
Mean ± SD	44.6±3.1	46.5±5	-1.9	0.05*
Range	37:49	39:54		
ICIQ-UI-short form				
Mean ± SD	11.7±2.3	5±5.8	-5.3	<0.001*
Range	8:15	0:14		
Overall interference of leaking urine with daily life				
Mean ± SD	4±1.5	2.2±3.6	-3.9	<0.001*
Range	1:7	0:9		

- * significant at p value <0.05.

Table (13): Comparison between income level regarding Total ICIQ-LUTS.qol score, ICIQ-UI-short form, Overall interference of leaking urine with daily life.

	Income		t/U	P value
	Enough (N=33)	Not enough (N=67)		
Total ICIQ-LUTS.qol score				
Mean ± SD	44.3±3	46.5±5	-2.3	0.02*
Range	37:49	39:54		
ICIQ-UI-short form				
Mean ± SD	11.8±2.4	4.6±5.8	-5.1	<0.001*
Range	8:15	0:14		
Overall interference of leaking urine with daily life				
Mean ± SD	3.7±1.4	2.4±3.6	-3.4	0.001*
Range	1:5	0:9		

- * significant at a p-value of less than 0.05.

Table (14): Comparison between onset of disease regarding Total ICIQ-LUTS.qol score, ICIQ-UI-short form, Overall interference of leaking urine with daily life.

	Onset of disease			F/kw	P value
	<5 years (N=9)	5-10 years (N=61)	>10 years (N=30)		
Total ICIQ-LUTS.qol score					
Mean ± SD	42.6±2.4 ^(a)	44.2±3.8 ^(a)	48±4.5	24.4	0.03*
Range	37:45	39:49	39:54		
ICIQ-UI-short form					
Mean ± SD	13.4±1.5 ^(a)	11.3±2.2 ^(a)	2.3±4.2	63.7	<0.001*
Range	11:15	8:14	0:14		
Overall interference of leaking urine with daily life					
Mean ± SD	3.3±1.6 ^{(a)(b)}	6.2±1.6 ^(a)	0.8±2.6 ^(a)	59.6	<0.001*
Range	1:5	4:8	0:9		

(a) significant at a p-value of less than 0.05 with cases who had onset of disease > 10 years.

(b) significant at a p-value of less than 0.05 with cases who had onset of disease 5-10 years.

- * significant at a p-value of less than 0.05.

Discussion:

Multiple sclerosis (MS) is a persistent neuroinflammatory condition of the central nervous system, frequently diagnosed in young individuals. It primarily affects various neurological systems, including motor, sensory, cerebellar, brainstem, optic nerve, and spinal cord. Despite not being traditionally classified as affected neurological systems, one of the most significant challenges impacting the daily lives of patients with MS is the decline in lower urinary tract (LUT) function. (Altunan et al., 2021).

According to the current study, approximately two-thirds of the study was aged ≥ 30 years old. Furthermore, about three quarters of the responses were females. These findings were similar to the finding obtained in a study done by (Sadek

et al., 2016), who said that females accounted for 72% of the subjects, with a female-to-male ratio of 2.57 to 1. The average age at which the disease manifested was 26.1 ± 7.6 years.

More over half of their respondents suffered from the disease more than 10 years, according to the researchers. This finding contradicted with the finding of study done by (Khedr et al., 2023) who found that in the studied patients, the duration of illness ranged from 3 months to 20 years, with an average duration of 5.55 ± 4.08 years and a median of 5 years.

In the current study, more than two-thirds of studied clients reported that they had moderate urinary incontinence during going to bathroom, two-fifths of them had little urinary incontinence during waking up

at night to urinate, about half of them told that urinary leakage occurred with physical activity, for example, coughing and running, majority of the study patients reported that little bed wetting at night, urine leakage during sexual intercourse, finally, majority of patients (81%) said that they suffered from urinary tract infections. These findings align with the finding of the study done by **El Moudane et al (2023)**, who reported that urgency as the most prevalent lower urinary tract symptom (57%), followed by urinary frequency (29%) and urge incontinence (14%). The recurrent-remittent form of the disease was the most common (62%), followed by the primary progressive form (24%) and the secondary progressive recurrent form (14%). Regarding symptom severity, 33% of patients exhibited mild symptoms, 48% had moderate symptoms, and 19% experienced severe symptoms.

Conclusion:

Based on the current study's results, approximately half of the patients' lives were negatively affected by multiple sclerosis. Furthermore, there were statistically significant links between patients with multiple sclerosis demographic features and total ICIQ-LUTS.qol score, ICIQ-UI-short form, and overall interference of leaking urine with daily life activities.

Recommendations:

1. To enhance the generalizability of the findings, it is recommended to replicate the study on a larger sample of patients from various Egyptian hospitals.
2. Nursing staff continuously should give patients with health education programs at outpatient neurology clinics to improve their urinary symptoms.

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