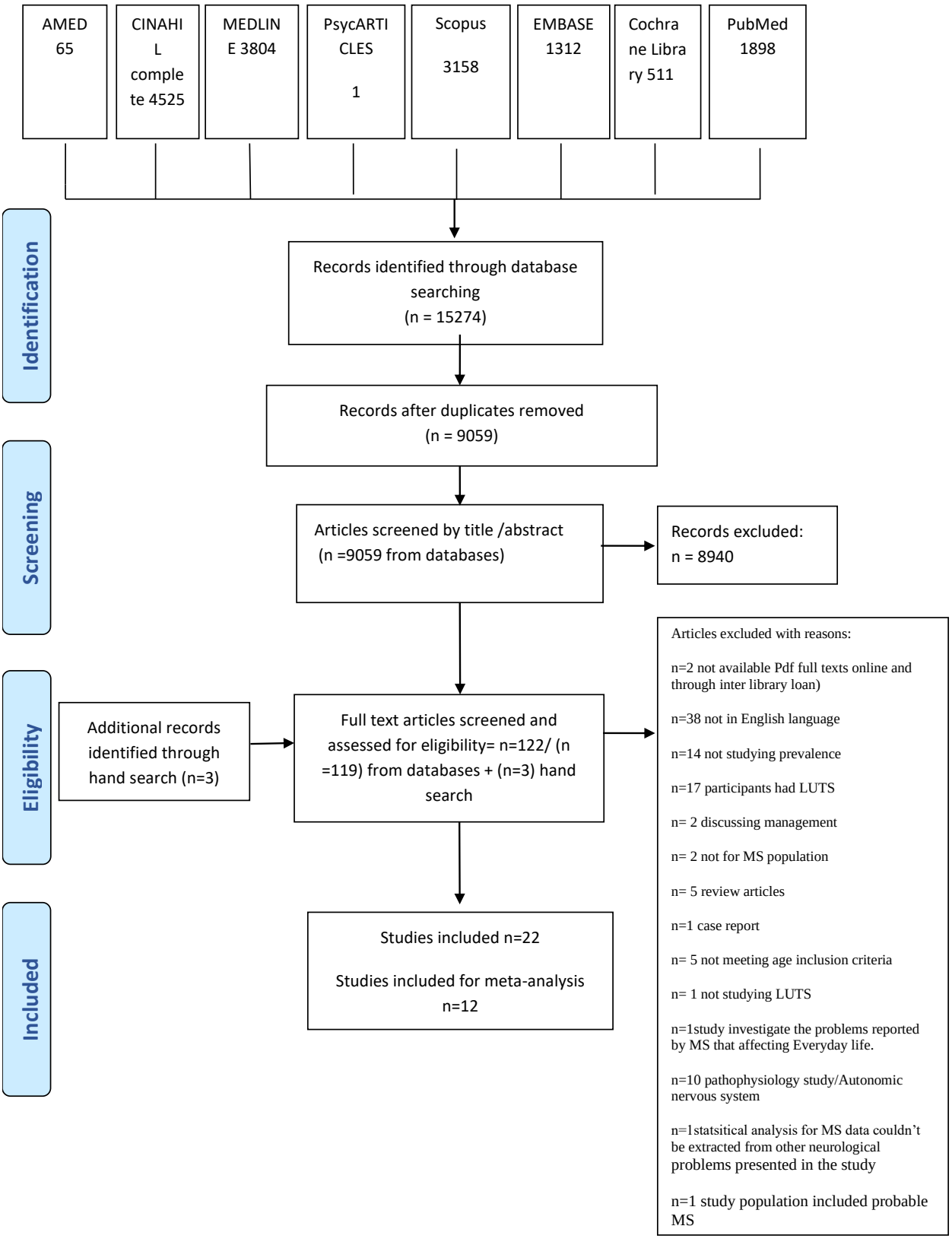

Figure S1. **PRISMA flow diagram**

Figure S2. Pooled prevalence of storage symptoms using self-report measures

IV, inverse-variance approach that applied in RevMan.

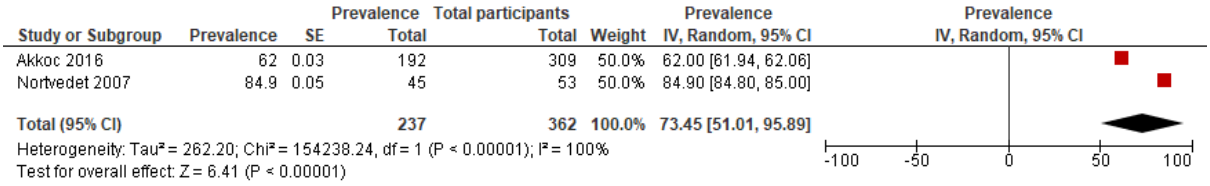

Figure S2a. **Pooled prevalence for frequency**

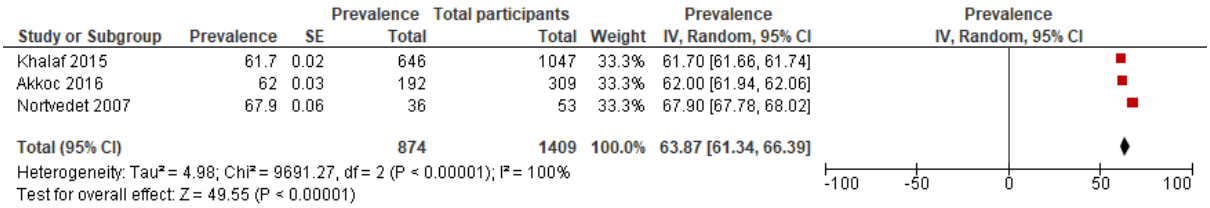

Figure S2b. **Pooled prevalence for urgency**

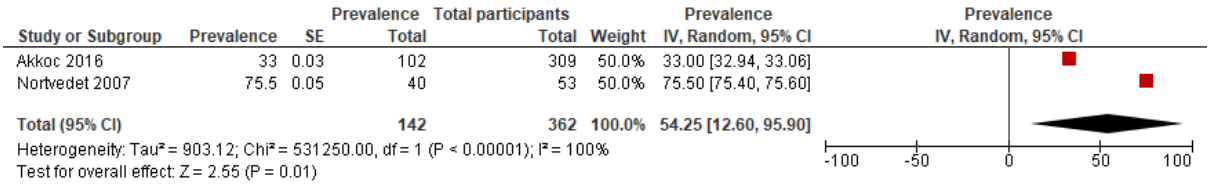

Figure S2c. **Pooled prevalence for nocturia**

Figure S3. **Pooled prevalence of storage symptoms using urodynamic studies**
IV, inverse-variance approach that applied in RevMan.

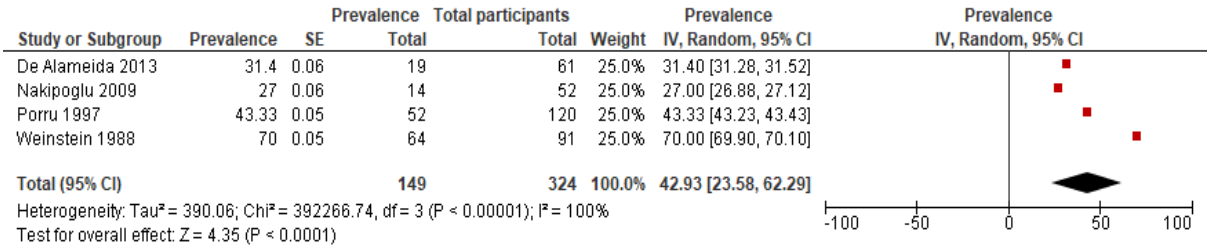

Figure S3a**. Pooled prevalence for detrusor overactivity**

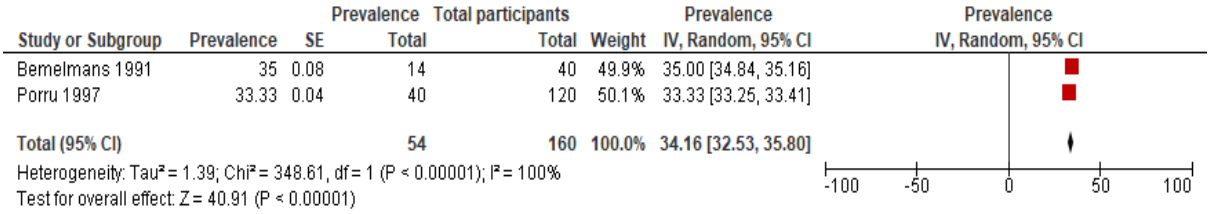

Figure S3b. **Pooled prevalence for reduced bladder sensation**

Figure S4. **Pooled prevalence of voiding symptoms using urodynamic studies**
IV, inverse-variance approach that applied in RevMan.

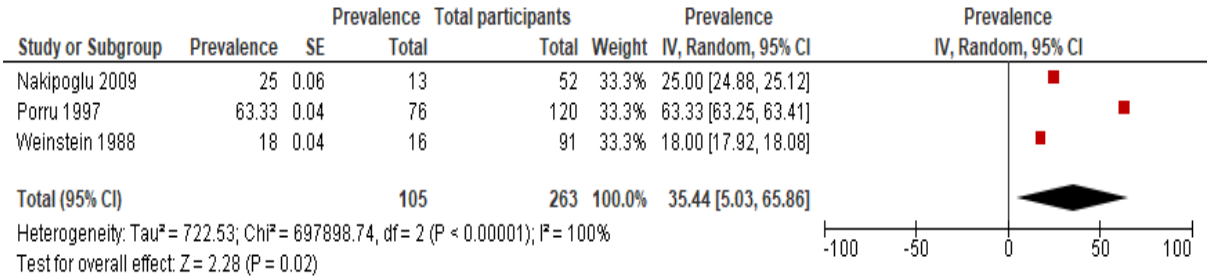

Figure S4a. **Pooled prevalence for detrusor-sphincter dyssynergia**

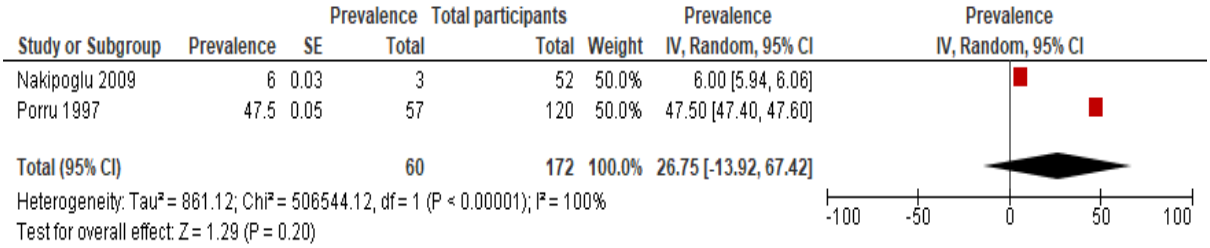

Figure S4b. **Pooled prevalence for detrusor underactivity**

Figure S5. Pooled prevalence of postmicturition symptoms: incomplete bladder emptying using self-report measures

IV, inverse-variance approach that applied in RevMan.

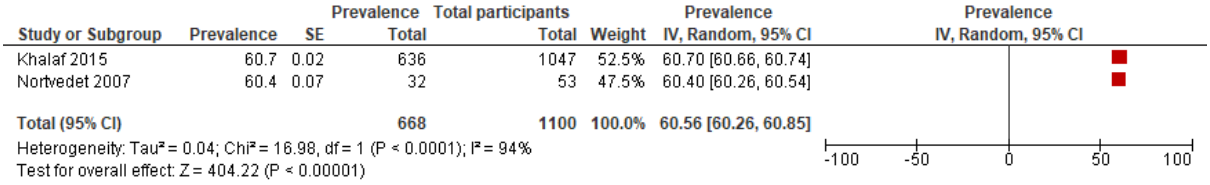

Table S1. Descriptive characteristics of included studies

Author	**Age** **Sample size** **Time since diagnosis**	**Types of multiple sclerosis (MS)/disability (severity) status**	**Outcome measure used**	**Key findings**
Akkoç et al., 2016 Overactive bladder symptoms in patients with multiple sclerosis: Frequency, severity, diagnosis and treatment Study design: Survey study cross sectional Setting: Outpatient tertiary clinics (5 centers) of physical medicine and rehabilitation and neurology (Turkey)	Age Range 19-69 years Mean ± SD age 39.3 ± 10.6 years Sample size 309 200 women, 109 men Time since diagnosis mean ± SD illness duration 6.9 ± 5.9 (1-30 years)	MS- related physical disability was evaluated by using the Patient-Determined Disease Steps (PDDS) scale	Overactive Bladder Symptom Score (OABSS)	Lower urinary tract symptoms (LUTS) were detected by using OABSS as follow: Urgency 62%, frequency 50.4%, urge incontinence 44.7%, nocturia 33%. Urgency more common in men $P < .05$. Residual urine measurement by ultrasound was reported in 13.3% of patients; by catheter was reported in 16.2%
de Almeida et al., 2013 Urinary dysfunction in women with multiple sclerosis: Analysis of 61 patients from Rio de Janeiro, Brazil Study design: Cross sectional Setting: MS neurologic clinic at Hospital da Lagoa in Rio de Janerio, Brazil	Age Mean ± SD age 41.4 ± 10.9 years Sample size 61 females who met the McDonald criteria (2001) for MS. Time since diagnosis Mean MS disease duration 8 years (6 months to 27 years)	Severity Patients classified according to Expanded Disability Status Scale (EDSS) Types Primary-progressive MS (PPMS) in 9 patients (14.8%) Relapsing-remitting MS (RRMS) in 52 patients (85.2%)	Interview + Kurtzke Functional System Scale for Bladder Urodynamic	Urologic symptoms were reported by Kurtzke Functional System Scale for Bladder in: 42/61 (68.9%) among total participants Urinary abnormality among total study population: Urinary urgency or mild urinary retention in 18/61 (29.5%) Frequent urinary incontinence (UI) in 9/61 (14.8%) Intermittent urethral self-catheterization with manual compression for bladder unload 11/61 (18%) Loss of bladder function in 4/61 (6.6%) Normal 19/61 (31.1%) Urinary symptoms recorded by urodynamics as follow: Normal in 17/51 (33.3%) and abnormal findings 34/51 (66.7%) P value = .001. Of those with abnormal findings the following symptoms were reported: Overactive neurogenic bladder(hyperactivity) 16/51 (31.4%) -Overactive neurogenic bladder with sphincter asynchrony or postvoiding residue 12/51 (23.5%) Limp bladder, Hipo or No-reflex bladder 4/51 (7.8%) Urethral hypermotility or bladder sphincter incompetence 2/51 (3.9%)

Kale et al., 2009 Assessment of autonomic nervous system dysfunction in multiple sclerosis and association with clinical disability Study design: Cross sectional Setting: carried out in the MS Clinic of the Department of Neurology, Okmeydani Training and Research Hospital (Turkey)	Age Mean ± SD age 36 ± 9 years Sample size 100 with MS based on Poser criteria. 68 women and 32 men Time since diagnosis Mean 7.7 ± 5.5. Range 1-18 years	Types RRMS in 77 cases (77%) Secondary progressive MS (SPMS) in 23 cases (23%) Severity EDSS was used	Researcher questionnaire of self-report measures—translated to Turkish—of symptoms relating to autonomic dysfunction (ANSD) including bladder.	Bladder problems were presented in 64% of cases.
Khalaf et al., 2015 Lower urinary tract symptom prevalence and management among patients with multiple sclerosis. Study design: On-line survey Cross sectional Setting: Web-based patient advocacy organization: MS world, the National Multiple Sclerosis Society, and the Multiple Sclerosis Foundation (USA)	Age range 18-89 years mean ± SD age 47.8 ± 10.6 years Sample size 1047 Women, 81% of respondents Time since diagnosis Mean ± SD disease duration of MS was 8.5 ± 7.7 years	Types: RRMS reported in 836/1047 (80%) PPMS reported in 72/1047 (6.9%) SPMS reported in 55/1047 (5.2%) Progressive relapsing in 20/1047 (1.9%) Severity The PDDS	For prevalence of bladder problems, the LUTS Tool, a comprehensive, self-administered questionnaire.	LUTSs were reported in 966/1047 (92%); women 93%, and men 91%. Terminal dribble reported in 64.9%. Urgency in 61.7% Feeling of incomplete emptying in 60.7%, urge incontinence in 29% UI reported in 826/1047 (79%) classified as follow: Mixed UI (MUI) 28.3% Urgency UI (UUI) 24.3% Stress UI (SUI) 16.9% Other UI 9.4%
Khan et al., 2009 Multiple sclerosis: Prevalence and factors impacting bladder and bowel function in an Australian community cohort Study design: Cross sectional Setting: Royal Melbourne Hospital, a tertiary referral center in Victoria Australia (medical record) includes patients from MS society, and public and private neurology clinics.	Age range 29-65 years. Mean ± SD 50 ± 9 years. Sample size 73 were included for final analysis Male (20) 27.4%, female (53) 72.6% Time since diagnosis mean ± SD disease duration 10.7 ± 7.5 years Range 0-43 years	Types: Information provided among participants with bladder problems not all participants RRMS 24 cases (32.9%) SPMS 41 cases (56.2%) Primary Progressive PPMS 8 cases (11%) Severity: Provided for patients with bladder symptoms	Assessment of bladder was reported by: Postal invitation and face-to-face structured interview (questions not provided in the study)	n = 73/81 who reported bladder problems (91.1%)
Kisic Tepavcevic et al., 2017 Bladder dysfunction in multiple sclerosis: a 6-year follow-up study	Age Range–60 years.	Types: The MS classification among 109 patients as	For bladder dysfunction: - Face-to-face structured interview	The prevalence of bladder dysfunction reported as follow: At baseline: 43/93 (46.23%) At the end of 3-year follow-up (f/u): 47/93 (50.5%)

Study design: Longitudinal study Setting: Institute of Neurology, Clinical Center of (Serbia), Belgrade	Mean ± SD 41.5 ± 8.5 years Sample size 93 MS patients were examined at each of the three time points (at baseline and at 3 and 6 years during follow-up) Female 66, and male 27 Time since diagnosis Disease duration: 9.2 ± 6.5	follow: (no data were provided specifically for the study population of 93 cases) Relapsing remitting 73 (67.0%) Secondary progressive 29 (26.6%) Primary progressive 7 (6.4%) Severity: EDSS <8 (mean ± SD baseline score 4.2 ± 1.6	Consisting questionnaire including questions related to bladder dysfunction symptoms (not clear in the study).	At the end of 6-year f/u: 63/93 (67.74%). The prevalence of types of bladder dysfunction among MS participants reported: Urgency: At baseline: 39/93 (41.93%) At the end of 3-year f/u: 42/93 (45.16%) At the end of 6-year f/u: 55/93 (59.14%) Hesitancy: At baseline: 28/93 (30.1%) At the end of 3-year f/u: 33/93 (35.48%) At the end of 6-year f/u: 45/93 (48.39%) Urgency incontinence: At baseline: 29/93 (31.18%) At the end of 3-year f/u: 30/93 (32.25%) At the end of 6-year f/u: 36/93 (38.7%) Nocturia: At baseline: 23/93 (24.73%) At the end of 3-year f/u: 26/93 (27.96%) At the end of 6-year f/u: 36/93 (38.7%) Incomplete bladder emptying: At baseline:31/93 (33.3%) At the end of3-year f/u: 35/93 (37.63%) At the end of6-year f/u: 45/93 (48.39%)
Murphy et al., 2012 Prevalence of stress urinary incontinence in women with multiple sclerosis Study design: Cross sectional Setting: Large dedicated MS center (outpatient) (USA)	Age Range, 20 to 72 years. Mean age 45.8 years Sample size 143 MS patients Women Time since diagnosis Mean disease duration was 12.4 years, range 1-43 years	Types: No information provided Severity: No information provided	LUTSs were assessed by: -Urogenital Distress Inventory (UDI-6)	Prevalence of SUI 80/143 (55.9 %) Prevalence of UUI 101/143 (70.6%) Prevalence of MUI 64/143 (44.8%)
Nakipoglu et al., 2009 Urinary dysfunction in multiple sclerosis Study design: Cross sectional Setting: Hospital (Turkey)	Age Range 20-61 years Mean ± SD age 37.1 ± 11.7 years Sample size 52 MS patients based on McDonald criteria Women 22, 42%	Types: PPMS in 22/52 RRMS in 18/52 SPMS in 12/52 Severity: Disability status of MS: Kurtzke EDSS	LUTSs were reported by: Questions (not clear in study) related to urology symptoms included in history taking Urodynamics	Based on history taking Frequency of urinary symptoms reported in 42 of study population 80% Urgency 65% Frequency 44% Urgency incontinence 42% Stress incontinence 17% Dysuria 13% Mixed incontinence 8%

	Men 30, 58% Time since diagnosis Mean ± SD disease duration 7.3 ± 6.2			LUTSs according to urodynamic study: urodynamic abnormality was detected in 30/52 (58%) MS patients, as follow: Detrusor hyperreflexia in 14/52 (27%) Detrusor-sphincter dyssynergia in 13/52 (25%) Detrusor hyporeflexia in 3/52 (6%)
Nortvedt et al., 2007 Prevalence of bladder, bowel and sexual problems among multiple sclerosis patients two to five years after diagnosis Study design: Cross sectional Setting: Hordaland county, Norway.	Age Range: 17-53 years (included sample 2-5 years after onset of disease) Sample size 53 for final analysis (39 female and 14 male) Time since diagnosis Mean duration from onset to diagnosis of disease was 6.1 years	Types: RRMS in 44/54 (81.5%) SPMS in 5/54 (9.3%) PPMS in 5/54 (9.3%) Severity: Disability status scale (EDSS). EDSS scores were <6.5 with mean ± SD scores 3.4 ± 1.6	LUTSs were assessed by the Norwegian translation of the International Prostate Symptom Score (I-PSS)	The prevalence was calculated as follow: Not emptying the bladder reported in 32/53 (60.4%), urinating again in <2 hours in 45/53 (84.9%), weak stream in 36/53 (67.9%), stopped and started during urination in 28/53 (52.8%), difficulty in postponing urination in 36/53 (67.9%), need to push or strain to start urination in 32/53 (60.4%), times urination during the night (one or more times) in 40/53 (75.5%)
Patti et al., 1997 Micturition disorders in multiple sclerosis patients: Neurological, neurourodynamic and magnetic resonance findings Study design: Cross sectional Setting: In patients at the center of MS and demyelinating diseases (Italy)	Age Mean ± SD age 35.5 ± 9.6 years, range 19-61 years Sample size 101 MS patients who met Poser criteria 43 males and 58 females. Time since diagnosis Mean ± SD disease duration was 9.7 ± 0.7, range from 0-30	Types: Chronic progressive MS (CPMS) in 49/101 RRMS in 52/101 Severity: Disability status was assessed by Kurtzke Disability Status Scale (DSS) and EDSS	LUTSs assessed by: questions related to LUTSs (no details provided in the study)	75/101 had micturition disorders (31 males and 44 females). Classified as follow: Urgency in 41/101(40.6%) Hesitancy in12/101 (11.9%) Frequency in 8/101 (7.9%) Incontinence in 7/101 (6.9%)
Porru et al., 1997 Urinary tract dysfunction in multiple sclerosis: Is there a relation with disease-related parameters? Study design: Cross sectional Setting: OPD (Italy)	Age Mean age was 42 years (range 22-69 years) Sample size 120 MS patients Time since diagnosis	Types: CPMS in 55 patients Exacerbating-remitting in 65 patients Severity:	LUTSs were assessed by Not clearly stated in the study Urodynamics	LUTSs were present in all the patients. To get the prevalence we could sum the results of signs under each category of disease duration: Irritative reported in 43/120 Obstructive reported in 83/120 Incontinence reported in 59/120 To get the prevalence for urodynamics we could sum the results:

	Disease duration was 1-48 months in 18 patients, 49-108 months in 14 patients, 109 or more months in 88 patients.	The disability status was established according to the Kurtzke EDSS		Dyssynergia reported in 76/120 Hypersensibility reported in 21/120 Hyposensibility reported in 40/120 Hyperactivity reported in 52/120 Hypoactivity reported in 57/120 Hyperactivity + hypoactivity reported in 29/120
Torelli et al., 2015 Lower urinary tract symptoms associated with neurological conditions: Observations on a clinical sample of outpatients' neurorehabilitation service Study design: Cross sectional Setting: Neuro-rehabilitation service, San Gerardo Hospital Monza-(Italy). -retrospective	Age No data provided for MS participants. Among all participants, range age 26-81 years, mean age 68 years Sample size 18/132 had diagnosed MS (13.6%). Among all participants, women 86, men 46 Time since diagnosis No information provided	Types: No information provided Severity: No information provided	No sufficient details were provided	Among MS cases: 6/18 patients (33.3%) presented storage urinary symptoms, of which 3/18 (16.6% of the total) with incontinence, 2/18 (11.1%) with only urgency and increased daytime urinary frequency, and 1/18 (5.5%) with both storage and voiding urinary symptoms.
Ukkonen et al., 2004 Urodynamic findings in primary progressive multiple sclerosis are associated with increased volumes of plaques and atrophy in the central nervous system Study design: Cross sectional Setting: (Finland) OPD -prospective-	Age Mean ± SD age 51 ± 2 years Sample size 24 patients Women 12, men 12 Time since diagnosis Mean ± SD MS disease duration was 12 ± 2 years	Types: 16 patients had definite PPMS Severity: Disability status by EDSS with mean ± SD EDSS 5.1 ± 0.4	Urology investigation: micturition history (questions not provided)	All patients had at least one LUTS from history taking 24/24 (100%) with bladder problems Urinary symptoms Urgency 20 (83%) Frequency 13 (54%) Nocturia 9 (38%) Dysuria 0 Urgency incontinence 18 (75%) Stress incontinence 8 (33%) Hesitancy 14 (58%)
Ventimiglia et al., 1998 Disorders of micturition in neurological patients. A clinical study of 786 patients Study design: Cross sectional Setting: Admitted in MS center, the neurological rehabilitation services,	Age Range19-61 years Sample size MS 236/786. Time since diagnosis No information provided	Types: No information provided Severity: No information provided	Urologic symptoms reported by: a standard questionnaire	144/236 (61%) reported neuro-urologic abnormalities.

or the department of neurology of Catania University (Italy)				
Vieira et al., 2015 Prevalence of autonomic dysfunction in patients with multiple sclerosis Study design: case-control study Setting: MS outpatient clinic of the centro hospitalar de S. Joao (Protugal)	Age MS group case group Age range 20-61 years Median age 41 years Sample size 103 RRMS patients who met McDonald criteria 32 males, 71 females. Time since diagnosis range 0-30 years	Types: RRMS 103 Severity: Disability status was recorded by EDSS. Score range from 0-7	ANSD reported by using nonvalidated Portuguese translated version of Composite Autonomic Symptom Score (COMPASS) with bladder dysfunction (3 items).	Bladder problems in 50/103 (48.5%)
Wollin et al., 2005 Continence: Multiple sclerosis and continence issues: an exploratory study Study design: Cross sectional Setting: (Australia) Postal survey within a general community	Age Phase 1: Age range 28-83 years (mean age 49 years) Sample size 62 Time since diagnosis No information provided	Types: No information provided Severity: No information provided	Two-phase anonymous mail survey. The structured questionnaire (survey) consists of information about MS status and urologic symptoms (not clear in the study)	The percentage of participants who reported continence issues 56/62 (90.3%).
Zecca et al., 2016 Urinary incontinence in multiple sclerosis: prevalence, severity and impact on patients' quality of life Study design: Chart audit Setting: Two tertiary neurological referral centers (Neurocenter of Southern Switzerland, Lugano, and University La Sapienza, Rome, Italy)	Age Mean ± SD 44.3 ± 11.6 years Sample size 403 patients with stable MS who met McDonald criteria. 289 (72%) women and 114 (28%) men. Time since diagnosis Mean 11.8 years (8.6)	Types: RRMS in 332/403 (82.4%) Progressive MS in 71/403 (17.6%) Severity: Disability status scale (EDSS)	Urinary symptoms: International Consultation on Incontinence Questionnaire (ICIQ)	Among study population more than one-third of MS patients reported UI According to ICIQ, Q1 143/403 (35%) patients of both sexes reported urine incontinence.
Van Poppel et al., 1983 Neuro-muscular dysfunction of the lower urinary tract in multiple sclerosis Study design: Cross sectional Setting: National MS center of Melsbroek	Age No information provided Sample size 500 patients Time since diagnosis: No information provided	Types: No information provided Severity: No information provided	Urinary symptoms reported by: unclear methodology	- Urological complaints in 290/500 (58%)

Hall et al., 2012 Characteristics of persons with overactive bladder of presumed neurologic origin: results from the Boston Area Community Health (BACH) survey Study design: Cross sectional Setting: Boston, Massachusetts, USA.	Age No information provided Sample size 21 MS patients Time since diagnosis MS with overactive neurogenic bladder 4.6 years	Types: No information provided Severity: No information provided	BACH survey	BACH survey reported 10/21 MS cases with overactive neurogenic bladder (47.6%) 2 men, 8 women.
Hassouna et al., 1984 Neurourologic correlation in multiple sclerosis Study design: retrospective study Settings: Inpatient neurology department	Age: 20-71 years Mean age: 51 years Sample size: 70 MS patients 15 men, 55 women Time since diagnosis: 1-30 years; mean: 9.6 years	Types: No information provided Severity: No information provided	No clear methodology for urinary symptoms.	Irritative symptoms: 16/70 (22.8%) Obstructive symptoms: 10/70 (14.2%) Both irritative and obstructive: 17/70 (24.2%)
Weinstein et al., 1988 Carbon dioxide cystometry and postural changes in patients with multiple sclerosis Study design: cross-sectional Settings:	Age: 25-76-years Mean age:48 Sample size: 91 MS 72 women, 19 men Time since diagnosis: 1-42 years; mean 15 years	Types: No information provided Severity: No information provided	Urodynamic	Detrusor overactivity: 64/91 (70%) Detrusor-sphincter dyssynergia: 16/91 (18%)
Bemelmans et al., 1991 Evidence for early lower urinary tract dysfunction in clinically silent multiple sclerosis Study design: cross-sectional Settings: inpatient	Age: 21-59 years; mean 35 years Sample size: 40 MS, 25 women, 15 men Patients with no urinary complaints = 27 MS 19 women, 8 men Time since diagnosis: 0.17-15 years women, 0.17-10 years men.	Types: Among all participants: RRMS: 27/40 CPMS: 5/40 Combination: 8/40 Severity: EDSS range for women all participants 1-6, mean 2.22; range for men all participants 1-7, mean 3.47	Subjectively, details not provided Urodynamics	Micturition abnormalities found in 13/40 (33%): Irritative 10/13; obstructive 7/13, and UI 1/13 Urodynamic study (UDS) abnormalities = 27/40 (67.5%) as follows: Bladder hyposensitivity 14/40 (35%) Bladder hypersensitivity 6/40 (15%)

Table S2. Prevalence of lower urinary tract symptoms based on International Continence Society classification

	Types of LUTS based on ICS classification	Study	Individual study estimates of prevalence	Meta-analysis (random-effect model) [95% confidence interval]
Storage symptoms Subjective outcome measures	Frequency	Akkoc *et al.* 2016[36]	50.4%	67.65 [33.84, 101.46]
		Nortvedt *et al.* 2007[41]	84.9%	
	Urgency	Khalaf *et al.* 2015[38]	61.7%	63.87 [61.34, 66.39]
		Akkoc *et al.* 2016[36]	62%	
		Nortvedt *et al.* 2007[41]	67.9%	
	Nocturia	Akkoc *et al.* 2016 [36]	33%	54.25 [12.60, 95.90]
		Nortvedt *et al.* 2007[41]	75.50%	
	Urge incontinence	Khalaf *et al.* 2015[38]	24.3%	46.53 [20.93, 72.14]
		Akkoc *et al.* 2016[36]	44.7%	
		Murphy *et al.* 2012[39]	70.6%	
	Urinary incontinence	de Almeida *et al.* 2013[34]	14.80%	42.93 [5.60, 80.26]
		Zecca *et al.* 2016[43]	35%	
		Khalaf *et al.* 2015[38]	79%	
	Mixed incontinence	Khalaf *et al.* 2015[38]	28.30%	36.55 [20.38, 52.72]
		Murphy *et al.* 2012[39]	44.8%	
	Stress incontinence	Khalaf *et al.* 2015[38]	16.90%	36.40 [-1.82, 74.62]
		Murphy *et al.* 2012[39]	55.90%	
	Other incontinence	Khalaf *et al.* 2015[38]	9.40%	N/A
	NOAB (neurogenic overactive bladder)	Hall *et al.* 2012[33]	47.61%	N/A
Voiding symptoms subjective outcome measures	Intermittency	Nortvedt *et al.* 2007[41]	52.80%	N/A
	Straining	Nortvedt *et al.* 2007[41]	60.40%	N/A
	Terminal dripple	Khalaf *et al.* 2015[38]	64.90%	N/A
	Slow stream	Nortvedt *et al.* 2007[41]	67.92%	N/A
Postmicturition Symptoms Subjective outcome measures	Incomplete bladder emptying	Khalaf *et al.* 2015[38]	60.70%	60.56 [60.26, 60.85]
		Nortvedt *et al.* 2007[41]	60.4%	
Postmicturition Symptom Objective outcome measures	Incomplete bladder emptying (residual urine measurement)	Akkoc *et al.* 2016[36]	13.3%(ultrasound)	N/A
			16.20%(catheter)	

Voiding symptoms Urodynamic studies	**Detrusor-sphincter dyssynergia**	**Nakipoglu *et al*. 2009[40]**	25%	35.44 [5.03, 65.86]
		Porru *et al.* 1997[35]	63.33%	
		Weinstein *et al*. 1988[44]	18%	
	Detrusor underactivity	**Nakipoglu *et al*. 2009[40]**	6%	26.75 [-13.92, 67.42]
		Porru *et al.*1997[35]	47.50%	
Storage symptoms Urodynamic studies	**Neurogenic Detrusor overactivity**	**Nakipoglu *et al*. 2009[40]**	27%	42.93 [23.58, 62.29]
		de Almeida *et al*. 2013[34]	31.4%	
		Weinstein *et al*. 1988[44]	70%	
		Porru *et al.* 1997[35]	43.33%	
	Increased bladder sensation	**Porru *et al.* 1997[35]**	17.50%	16.25 [13.80, 18.70]
		Bemelmans *et al*. 1991[45]	15%	
	Reduced bladder sensation	**Porru *et al.* 1997[35]**	33.33%	34.16 [32.53, 35.80]
		Bemelmans *et al*. 1991[45]	35%	

Table S3. Quality assessment, Newcastle-Ottawa Scale adapted for cross-sectional studies summary sheet

Study	**Selection** (maximum 5 stars)				**Comparability** (maximum 2 stars)	**Assessment of the outcome** (maximum 3 stars)		
	Representativeness of sample	**Sample size**	**Nonrespondents**	**Ascertainment of exposure (risk factor):**	**Subjects in different outcome groups are comparable, based on study design or analysis. Confounding factors are controlled**	**Assessment of outcome**	**Statistical test**	**Stars gained**
Akkoc *et al*. 2016[36]		*		**	**	*	*	7
de Almeida *et al*. 2013[34]		*		**	*		*	5
Kale *et al.* 2009[37]	*	*		*	*	*	*	6
Khalaf *et al*. 2015[38]		*		**	**	*	*	7
Khan *et al.* 2009[24]		*	*		**	*	*	6
Kisic *et al.* 2017[25]		*	*		*	*	*	5
Murphy *et al.* 2012[39]		*		**	*	*	*	6
Nakipoglu *et al.* 2009[40]		*			*		*	3
Nortvedt *et al.* 2007[41]	*	*		**	*	*	*	7
Patti *et al.* 1997[26]		*			*		*	3
Porru *et al.* 1997[35]		*			*		*	3
Torelli *et al.* 2015[27]				*			*	2
Ukkonen *et al.* 2004[28]					**		*	3
Van poppel *et al.* 1983[31]		*						1
Ventimiglia *et al.* 1998[29]		*				*		2
Vieira *et al.* 2015[42]	*	*		**	*	*	*	7

Wollin *et al.* 2005[30]		*				*	*	3
Zecca *et al.* 2016[43]	*	*		**	**	*	*	8
Hall *et al.* 2012[33]				**	*	*	*	5
Hassouna *et al.* 1984[32]	*	*				*	*	4
Bemelmans *et al*. 1991[45]	*				*		*	3
Weinstein *et al*. 1988[44]		*					*	2