Supplementary

Appendix 1 Detailed Literature Search Strategy and Selection Process

1. Database and Indices

Database: Web of Science Core Collection (WoSCC)

Indices: Science Citation Index Expanded (SCI-EXPANDED), Social Sciences Citation Index (SSCI), and Emerging Sources Citation Index (ESCI)

Timespan: January 1, 2000 to August 8, 2024

Date of Search: August 10, 2024

2. Search Query

The following advanced search query was constructed using the "Topic" (TS) field, which searches within the title, abstract, author keywords, and Keywords Plus:

TS = (diabetic bladder) OR TS = (diabetic bladder dysfunction) OR TS = (diabetic cystopathy) OR TS = (diabetes AND bladder dysfunction) OR TS = (diabetes AND lower urinary tract symptoms) OR TS = (diabetes AND bladder disorder)

Initial retrieval yielded 2,278 records.

3. Step-by-Step Refinement Strategy

Filter 1 (Language): Refined by English language.

(Records remaining: 2,207)

Filter 2 (Document Type): Refined by "Article" only. Excluded document types such as Meeting Abstracts, Letters, Early Access, Retractions, Retracted Publications, and Reviews to ensure the inclusion of only original research contributions.

(Records remaining: 1,581)

4. Manual Full-Text Screening

Filter 3 (Relevance): A rigorous two-stage manual screening process was conducted by independent researchers. Articles unrelated to the specific pathology, diagnosis, or treatment of diabetic bladder dysfunction (e.g., studies focused solely on bladder cancer in diabetic patients or simple urinary tract infections) were excluded.

Final Included Articles: 264 high-quality core original articles.

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Table S1 Quantitative summary of CiteSpace-generated keyword co-occurrence clusters corresponding to *Figure 5*

Cluster ID	Cluster metrics	Primary LLR label	LLR label terms with exact metrics (count; centrality)	Matched/screened	Sum count	Sum centrality	LLR label terms without exact metric match
0	Size=41; silhouette=0.75; mean year=2004	lower urinary tract symptoms	lower urinary tract symptoms (count=5; centrality=0.01); urinary bladder (count=95; centrality=0.12)	2/5	100	0.13	type 2 diabetes mellitus; predictive value; prediction model
1	Size=50; silhouette=0.78; mean year=2006	hypoxia	hypoxia (count=2; centrality=0.00); degradation (count=2; centrality=0.02); calcium (count=7; centrality=0.04); acetylcholine release (count=1; centrality=0.00)	4/5	12	0.06	non-insulin-dependent diabetic rats
2	Size=47; silhouette=0.90; mean year=2007	urinary bladder	urinary bladder (count=95; centrality=0.12); diabetes mellitus (count=71; centrality=0.28); nerve growth factor (count=7; centrality=0.04); bladder dysfunction (count=41; centrality=0.19); contractility (count=11; centrality=0.05)	5/5	225	0.68	
3	Size=49; silhouette=0.82; mean year=2009	diabetic bladder	diabetic bladder (count=5; centrality=0.02); capsaicin (count=2; centrality=0.00); inflammation (count=5; centrality=0.01)	3/5	12	0.03	trpv1; tropomyosin
4	Size=33; silhouette=0.68; mean year=2011	bladder dysfunction	bladder dysfunction (count=41; centrality=0.19); collagen (count=4; centrality=0.01); detrusor smooth muscle (count=4; centrality=0.01)	3/5	49	0.21	bfgf; tgf beta 1
5	Size=27; silhouette=0.82; mean year=2011	external urethral sphincter	diabetic rat (count=2; centrality=0.00); micturition (count=3; centrality=0.01)	2/5	5	0.01	external urethral sphincter; urodynamics; atherosclerosis
6	Size=22; silhouette=0.84; mean year=2016	activation	activation (count=17; centrality=0.12); detrusor underactivity (count=5; centrality=0.01); bladder overactivity (count=2; centrality=0.00)	3/6	24	0.13	silodosin; underactive bladder; alpha(1a)-ar antagonist
7	Size=26; silhouette=0.84; mean year=2008	rabbits	acupuncture (count=2; centrality=0.00)	1/5	2	0.00	rabbits; proteins; voiding frequency; glycolysis
8	Size=4; silhouette=1.00; mean year=2019	diabetic bladder dysfunction (dbd)	diabetic bladder dysfunction (dbd) (count=1; centrality=0.00); myosin va (count=2; centrality=0.03)	2/5	3	0.03	temporal changes; decompensated state; compensated state
9	Size=26; silhouette=0.85; mean year=2008	endothelin 1		0/5	0	0.00	endothelin 1; glycation; plasma; mir-29b; signaling pathway
10	Size=20; silhouette=0.85; mean year=2020	defocused low-energy shock wave	defocused low-energy shock wave (count=2; centrality=0.00); interstitial cells (count=2; centrality=0.00); guinea pig bladder (count=2; centrality=0.00)	3/6	6	0.00	imatinib; hyperglycemia; vascular smooth muscle
11	Size=26; silhouette=0.78; mean year=2009	long-chain fatty alcohol	long-chain fatty alcohol (count=2; centrality=0.00); diabetic peripheral neuropathy (count=1; centrality=0.00); high-frequency repetitive stimulation (count=1; centrality=0.00)	3/5	4	0.00	post-voiding urine volume; diabetes & endocrinology
12	Size=21; silhouette=0.89; mean year=2010	urinary bladder detrusor	detrusor overactivity (count=7; centrality=0.05); guinea pig (count=2; centrality=0.00); bladder interstitial cells (count=1; centrality=0.00); cajal (count=4; centrality=0.01)	4/5	14	0.06	urinary bladder detrusor

Note: LLR (Log-Likelihood Ratio) cluster labels and their constituent terms were generated automatically by CiteSpace. Each term was cross-referenced against the exported keyword co-occurrence frequency-centrality table to retrieve exact metrics (count; centrality). Frequency is the exact keyword count from the co-occurrence export; centrality is reported exactly as exported. "Matched/screened" indicates how many of the LLR label terms were successfully matched out of the total number listed in the cluster label. Terms listed under "LLR label terms without exact metric match" appeared in the CiteSpace-generated cluster label but could not be retrieved from the exported frequency-centrality table for one of three reasons: (a) the term fell below the minimum co-occurrence frequency threshold ($n \geq 2$) set for network construction and was therefore absent from the export; (b) the term appears in a compound or variant form in the cluster label that differs from the normalised keyword string in the export; or (c) CiteSpace used the term for cluster labelling from the full corpus but excluded it from the co-occurrence network. Cluster #9 (endothelin 1) shows 0/5 matched terms and an empty metrics cell because all five LLR label terms were absent from the keyword co-occurrence export, indicating all fell below the network construction threshold. An empty cell in the "LLR label terms without exact metric match" column (Cluster #2) indicates a complete match (5/5 terms retrieved successfully).

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