

Search strategy

A comprehensive search strategy will be conducted across multiple electronic databases to identify relevant evidence (for example: MEDLINE [Ovid], Embase [Ovid], CINAHL [EBSCO], Web of Science, and, as appropriate, Scopus and/or Global Health). Searches will be conducted primarily in English, with French equivalents used when necessary, combining controlled vocabulary (e.g., MeSH) and keywords related to (1) diabetes and diabetes care, (2) environmental sustainability/eco-responsibility, and (3) implementation and outcomes (costs, waste, carbon footprint, logistics, safety, etc.).

The search equations will combine:

1. Diabetes (e.g., *Diabetes Mellitus* / type 1 diabetes / type 2 diabetes, T1DM/T2DM, and text word equivalents).
2. Sustainability/eco-responsibility and medical waste management (e.g., controlled descriptors such as *Sustainable Development*, *Environmental Sustainability*, *Medical Waste/Disposal*), complemented by free-text keywords adapted to each interface with truncation and proximity operators: sustainab*; “green healthcare”; “eco-friendly”; “circular economy”; “waste management”; “biomedical/medical waste”; “sharps disposal”; “medical device reuse”, etc.

Databases searched and indicative results (prior to cross-deduplication)

Ovid MEDLINE ALL (1946 - September 9, 2025): S1 (controlled diabetes) 409,152; S2 (free-text diabetes) 465,069; S3 (controlled sustainability/waste) 18,774; S4 (free-text sustainability/waste) 263,974; combination (S1 OR S2) AND (S3 OR S4) = 1,715; FR/EN limit = 1,679.

Embase (Ovid) (<1974 - September 18, 2025): E1 1,272,837; E2 718,127; E3 85,479; E4 278,247; (E1 OR E2) AND (E3 OR E4) = 4,571; FR/EN limit = 4,487; after removing preprints/conference records = 2,327.

CINAHL Complete (EBSCO): S1 (diabetes headings) 169,750; S2 (free-text diabetes) 126,769; S3 (sustainability/waste headings) 15,931; S4 (free-text sustainability/waste) 39,059; (S1 OR S2) AND (S3 OR S4) = 771 (FR/EN limits and “equivalent subjects/proximity” as per the interface).

Web of Science Core Collection: 1,663 results (equivalent query on diabetes AND sustainability/waste management).

The search equations will integrate database-specific controlled vocabulary (MeSH, Emtree, CINAHL Headings) and free-text terms in titles/abstracts, using truncation and proximity operators (adj#, N#, W#) depending on the interface. Human/adult filters will be applied only at the screening stage, in accordance with the protocol (PCC). For information purposes, pilot searches yielded 8,600 records (including duplicates, preprints, and conference records); after removing preprints/conference records at the source, 6,440 records remained (including duplicates) before cross-deduplication. Reporting will follow PRISMA-ScR and the JBI Manual

for Evidence Synthesis for a complete description of the search strategy (Tricco et al., 2018; Peters et al., 2020).

In parallel, grey literature will be searched in a structured manner using a three-component approach: (1) targeted searches of relevant organizations’ and agencies’ websites (e.g., health technology assessment agencies, public health organizations, professional associations, healthcare institutions, stewardship programs, sharps waste management documents, take-back/collection initiatives), (2) searches in web search engines (Google) using standardized equations and advanced operators, limited to relevant formats (PDF, reports), and (3) reference and related-document checking (snowballing). Results will be imported into the reference management tool and screened using the same selection steps (titles/abstracts, then full text) as the published literature, with documentation of consulted sources, search dates, and the equations used.

The initial strategy will be developed in MEDLINE and then adapted for the other databases. It will be reviewed by a specialist librarian, based on research strategy validation principles (e.g., the PRESS approach), to strengthen its accuracy and comprehensiveness.

Table 1. Inclusion and exclusion criteria

Dimension	Inclusion criteria	Exclusion criteria
Publication type	Peer-reviewed empirical studies (quantitative, qualitative, and mixed methods), including trials or quasi-experimental studies, cohort studies, cross-sectional studies, and case studies or case series. Systematic reviews and scoping reviews (used for secondary mapping). Relevant institutional grey literature (e.g., WHO, ministries of health, NHS) containing data, indicators, or operational recommendations in care settings.	Editorials, letters, commentaries, and expert opinions without empirical data. Protocols with no results. Marketing or industry documents without a scientific basis. Strictly technical device assessments with no environmental relevance.
Population	Adults living with diabetes (type 1 and/or type 2).	Pediatric studies (children or adolescents). Animal studies. Populations unrelated to diabetes.

Intervention/ context	Practices, policies, or strategies with an explicit environmental component applied to diabetes care, including waste management or waste reduction (needles, pens, pumps, sensors, test strips, etc.), reuse or reprocessing, reusable alternatives versus disposable options, recycling, eco-design, sustainable procurement and purchasing, green logistics, telehealth aimed at reducing travel, and self-management initiatives that incorporate environmental objectives.	Studies focusing only on the clinical effectiveness of a drug or device with no environmental dimension. Technical or engineering innovations with no explicit link to eco-responsibility. General environmental exposure (air, climate) unrelated to the organization or management of diabetes care. “Sustainable” lifestyle behaviors with no care-related component.
Outcomes	Adoption and implementation of eco-responsible practices. Environmental impacts (GHG emissions or carbon footprint, waste, water or energy consumption, life cycle assessment). Care and occupational safety (e.g., infection prevention). Costs and economic outcomes (including cost-benefit analyses and economic evaluations). Supply chain resilience (supply chain). Patient experience and self-management when explicitly linked to eco-responsibility.	Strictly biomedical or technical outcomes (device performance, biomarkers) with no link to sustainability. Clinical outcomes not connected to environmental or eco-responsible impacts.
Setting	Diabetes care or self-management contexts, including home, clinic, hospital, pharmacy, and community programs.	Laboratory-only studies. Device or product design without clinical validation or without relevance to patient or professional experience. Non-healthcare settings (industry, factory) unrelated to care delivery.
Language	French or English.	Other languages with no available translation.

Table 2. Concept map (search concepts)

Concepts	Concept 1 Type 1/2 diabetes	Concept 2 Sustainability/ eco-responsibility
Keywords	Type 2 diabetes; T2D; “type 2 diabetes mellitus”; T2DM; type 1 diabetes (if mixed); T1DM; insulin-dependent; non-insulin-dependent; adult-onset diabetes.	Sustainable healthcare; “green” healthcare; eco-responsibility; circular economy; reduction, reuse, recycling (3R/5R); biomedical or medical waste management; sharps waste; reuse of medical devices; telehealth to reduce travel; sustainable procurement and logistics; “sustainable healthcare / green healthcare / eco-friendly”; environmental sustainability; “medical/biomedical waste”; “sharps disposal”; “medical device reuse”.
MEDLINE MeSH descriptors	MeSH: <i>Diabetes Mellitus, Type 2; Diabetes Mellitus, Type 1</i>	<i>Sustainable Development; Environmental Sustainability; Medical Waste Disposal; Recycling; Environmental Waste; Medical Waste.</i>