Review

Patient-Reported Outcome Measures in Older Adults with Type 2 Diabetes: An AI-Assisted Rapid Review of Use and Implementation in Clinical and Organizational Practice

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Review

Patient-Reported Outcome Measures in Older Adults with Type 2 Diabetes: An AI-Assisted Rapid Review of Use and Implementation in Clinical and Organizational Practice

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Abstract

Background/Objectives: The aging global population has led to rising prevalence of type 2 diabetes mellitus (T2DM), in which biomedical outcomes alone fail to capture patients' lived experiences. Patient-Reported Outcome Measures (PROMs) can provide insights into psychological, psychosocial, and quality-of-life (QoL) dimensions, yet their use in older adults remains inconsistent. This AI-assisted rapid review aimed to map the current use of PROMs in older adults with T2DM, focusing on their role in assessing well-being, distress, depression, and treatment satisfaction, as well as their implementation in clinical and organizational practice. **Methods:** A rapid review was conducted using Elicit, an AI tool designed to support systematic evidence synthesis. Studies published between 2015 and 2025 were identified from Semantic Scholar and additional manual searches. Eligibility criteria required inclusion of older adults with T2DM and use of validated PROMs in real-world settings. After screening 504 records, 167 studies were included. Data extraction covered study design, instruments used, populations, outcomes, and implementation details. **Results**: The most frequently assessed outcomes were diabetes distress, depression, QoL, treatment satisfaction, and self-efficacy. Common instruments included PAID, DDS, PHQ-9, WHO-5, EQ-5D, SF-36, DTSQ, and GDS. Evidence showed PROMs effectively identified high-risk patients and informed tailored interventions, but integration into routine care remained limited. Barriers included workflow disruption, lack of provider training, heterogeneity of tools, and insufficient cultural validation. Facilitators included brief instruments, digital administration, and linkage with care planning. **Conclusions**: PROMs are valuable in capturing psychosocial and psychological burdens in older adults with T2DM, but routine implementation is inconsistent. Broader adoption will require digital infrastructure, clinician training, and organizational integration. Methodologically, this study illustrates the feasibility of AI-assisted rapid reviews to generate timely, evidence-informed syntheses.

Keywords: PROMs; type 2 diabetes; psychological aspects; aging; Artificial Intelligence

1. Introduction

The global aging of the population has led to marked increase in non-communicable diseases, with type 2 diabetes mellitus (T2DM) among the most prevalent. This demographic and epidemiological transition poses major challenges for healthcare systems, requiring a move beyond

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narrow biomedical targets toward more holistic, person-centered care. In older adults with T2DM, it is crucial to consider psychological well-being, functional status, and quality of life (QoL)—domains often affected by emotional distress, cognitive decline, and loss of independence but insufficiently captured by standard clinical assessments [1].

Patient-Reported Outcome Measures (PROMs) provide valuable insight into these dimensions by capturing patients' own perspectives on symptoms, mood, and daily functioning, thereby informing personalized strategies and supporting shared decision-making. Yet their use in diabetes care remains inconsistent. Terwee et al. [2] underscored issues of heterogeneity, conceptual overlap, and poor standardization, all of which limit clinical utility. Barnard-Kelly and colleagues [3,4] emphasized the potential of PROMs to guide tailored psychological and behavioral interventions but also highlighted their underuse in routine practice. The same group further explored challenges specific to pediatric diabetes, where age-appropriate content and caregiver reporting complicate assessment [5].

Together, these studies underscore the need for more consistent integration of PROMs across patient groups and care contexts.

The International Consortium for Health Outcomes Measurement (ICHOM) [6] has proposed a core set of outcomes for adults with type 1 and T2DM—including PROMs such as the World Health Organization–Five Well-Being Index (WHO-5) [7,8], the Patient Health Questionnaire-9 (PHQ-9) for depressive symptoms [9], and the Problem Areas in Diabetes (PAID) scale for diabetes-related distress [10]—to be assessed at least annually. This reflects a growing consensus that psychological and QoL metrics should be monitored alongside traditional clinical outcomes. Nonetheless, real-world implementation remains limited by systemic barriers, including inadequate digital infrastructure, insufficient clinician training, and a lack of actionable pathways for PROM use in practice [11].

To address these gaps, health systems increasingly require rapid and reliable evidence to guide both clinical and organizational choices. Timely, evidence-informed decision-making has therefore become a core requirement, particularly when action must be taken under significant time constraints and with clear accountability to patients and health systems. Rapid reviews have emerged as fit-for-purpose evidence products that retain core principles of systematic reviews while streamlining steps to deliver actionable syntheses in weeks rather than months [12–14]. In parallel, semi-automation and trustworthy artificial intelligence (AI) can accelerate several tasks, provided their use is coupled with human oversight and auditability. Evaluations have shown meaningful efficiency gains with machine-learning and crowdsourcing approaches, without unacceptable losses in accuracy when appropriately configured [15,16].

The performance of Elicit, an AI–based literature review assistant [17], was assessed by Bernard and colleagues [18], who compared its basic "find paper" functionality with a traditional umbrella review. Elicit retrieved 83% of the relevant papers identified manually; notably, conclusions remained unchanged when analyses were based only on the six studies found by Elicit versus the 17 in the published umbrella review. These results highlight Elicit's potential to support systematic reviews with high precision. Given these developments, rigorously governed AI-assisted rapid review pipelines are becoming increasingly relevant to routine service decision-making.

The present AI-assisted rapid review aims to map the current landscape of PROM use in older adults with T2DM. We focus on instruments assessing psychological, psychosocial, and mental health dimensions in clinical practice between 2015 and 2025, examining which PROMs are used, in what settings, and for what purposes, as well as the factors that facilitate or hinder their implementation. A further objective is to explore how these tools are applied to design patient-centered care pathways and to inform organizational and clinical decision-making.

2. Methods

We conducted a rapid review with the support of Elicit, an AI tool designed to automate tasks such as summarizing papers, extracting data, and synthesizing findings [17]. In February 2025, Elicit

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introduced a "Systematic reviews" workflow that guides researchers through key steps—formulating a research question, identifying relevant literature, suggesting inclusion criteria, extracting data, and producing a synthetic report. To our knowledge, no published paper has yet explicitly used or evaluated this workflow.

Three authors (MPF, RM, ML) formulated the following research question: "What is the current evidence on the use of Patient-Reported Outcome Measures (PROMs), including self-report questionnaires, in older adults with type 2 diabetes? Specifically, how effectively do PROMs capture psychological, psychosocial, and mental health aspects—such as depression, psychological distress, quality of life, and treatment satisfaction—in real-world clinical practice or routine care settings? Furthermore, how are PROMs being utilized to support risk stratification and to guide personalized care pathways within this population?".

The query was entered into Elicit with a preliminary filter to include only studies published between 2015 and 2025. Elicit initially retrieved 499 potentially relevant articles indexed in Semantic Scholar, the database on which the tool currently relies. Semantic Scholar is a free AI-based academic search engine developed by the Allen Institute for AI, covering over 200 million publications across scientific fields but not as comprehensive as broader aggregators such as Google Scholar or OpenAlex, and more inclusive but less curated than PubMed or Scopus. To ensure completeness, five additional recent articles (2024–2025) not yet indexed were manually retrieved and added to the corpus [3,19–22]. These were considered particularly relevant given their novelty in addressing the research question.

Elicit generated a preliminary set of screening criteria by analyzing a random sample of 100 sources. These criteria were reviewed and refined by the research team to ensure alignment with study objectives. The final eligibility criteria were: (1) inclusion of patients with T2DM; (2) use of validated PROMs or validated self-report questionnaires; (3) assessment of PROM implementation in practice, beyond instrument development or validation.

The criteria were then applied to the complete set of 504 sources. For each paper, Elicit provided color-graded recommendations ("green", "yellow", "red") for each criterion, together with a narrative justification and a cumulative score from 1 to 5. We verified the reliability of these scores in a subset of papers and decided to include studies with a cumulative score strictly greater than 3.3.

Based on our analysis of papers with values close to the threshold, we manually overrode Elicit's recommendation in a few cases: three papers with lower scores were included [19,21,23], while one with a higher score was excluded for lack of pertinence to the study aim [24].

At the end of this process, 199 papers were included and 305 excluded. To ensure no relevant articles had been missed, the metadata (title, authors, year, journal) of excluded papers were manually skimmed. All selection decisions were made collaboratively by the research team, and discrepancies were resolved through discussion.

From the 199 screened-in papers, Elicit randomly selected 10 as a pilot set for initial review. The tool automatically suggested data extraction columns based on our research question, which were then checked and refined by the research team. The final set of variables extracted included: study design, PROMs used, participant demographics, key psychological and psychosocial findings, measurement properties and validation, mode of PROM administration, key results, setting, and overall study summary.

Data extraction on the pilot set was examined in detail, including the supporting text segments provided. Once satisfied with the performance of the extraction, the process was run on the full set of 199 papers.

From these, the following were excluded: duplicates (n = 13), PhD theses (n = 3), studies not meeting the diabetes inclusion criterion (n = 6), collections of abstracts without data (n = 3), one editorial with no data available (n = 1), and qualitative studies (n = 6).

The final set comprised 167 papers [2,6,23,25–188]. Full texts were obtained for 112 papers (with the support of Elicit browser extensions enabling access to the University of Bologna digital library), while for the remaining papers only titles and abstracts were available.

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Figure 1 shows the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow diagram of this process. The final data extraction table, covering all columns for the 167 included papers—is provided in the supplementary materials (Table S1).

3. Results

The dataset comprised 167 papers published between 2015 and 2025. Most were cross-sectional surveys or systematic reviews, with fewer observational cohorts and randomized controlled trials. Mean sample sizes varied widely, and many studies included adults across the lifespan; approximately one-third explicitly described participants as "older" or "elderly".

Text mining of the extracted fields showed that the psychological and psychosocial outcomes most frequently addressed were diabetes distress, depression, QoL, treatment satisfaction, and anxiety. Commonly used PROMs included the PAID scale [10], Diabetes Distress Scale (DDS) [189], PHQ-9 [9], WHO-5 [7,8], EuroQol-5D (EQ-5D) [190], Short Form-36 (SF-36) [191,192], Diabetes Treatment Satisfaction Questionnaire (DTSQ) [193], Hospital Anxiety and Depression Scale (HADS) [194], and Geriatric Depression Scale (GDS) [195] (Table 1).

Table 1. Patient-Reported Outcome Measures (PROMs) Most Frequently Applied in Older Adults with Type 2 Diabetes Mellitus (T2DM): Findings from an AI-Assisted Rapid Review.

PROM	Psychological domain	Description	References
Problem Areas in Diabetes (**PAID**)	Diabetes-related emotional distress; fear of complications; emotional burden from diabetes self-management	20-item scale (short versions: PAID-5, PAID-1). Widely used; sensitive to change; distinguishes distress from depression.	[2,6,27,29,40,43,47,52,55,69,70,73,78, 79,82,87,88,90,91,94,97,101,117,118,12 9, 133,135,140,146,154,163,171,176,182,1 83]
Diabetes Distress Scale (**DDS**)	Emotional burden; physician-related distress; regimen distress, interpersonal distress	17-item scale; includes four subdomains.	[2,23,26,44,72,73,81,93,94,106,115,116 ,134,142 ,149,150,155,162,163,167,170]
Patient Health Questionnaire-9 (**PHQ-9**)	Depressive symptoms and severity	Brief screening tool validated in older adults; positive screens require diagnostic confirmation.	[6,29,44,47,52,65,72,76,82,91,101,106, 108,115,117,133,138,141,147,150,155, 162,167,170,179,180]
World Health Organization-5 Well-Being Index (**WHO-5**)	Psychological well-being	Short tool for depression screening; validated in T2DM; widely used in QoL research.	[6,27,29,41,52,55,60,61,65,82,88,91, 100,117,146,147,188]
EuroQol-5D (**EQ-5D**)	Generic health status (mobility, self-care, usual activities, pain/discomfort, anxiety/depression)	Generic QoL instrument; allows comparison across populations; not specific to diabetes.	[25,32,60,72,73,75,99,101,111,118,120, 123, 129,132,138,140,147,174,177]
Short Form-36 (**SF-36**) / **SF-12**	Physical and mental health domains (physical functioning, role limitations, pain, general health, vitality, social functioning, emotional well-being, mental health)	Generic QoL instruments; widely used; normative data available.	[2,32,50,61,66,73,101,108,115, 117,123,145,147,149,155,169]

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Diabetes Treatment Satisfaction Questionnaire (**DTSQ**)	Treatment satisfaction; convenience; flexibility; perceived hyper/hypoglycemia	Validated in multiple languages; positive association with adherence; conceptually distinct from QoL.	[61,73,75,101,102,118,123,132,145,169,177,178]
Hospital Anxiety and Depression Scale (**HADS**)	Anxiety and depression (two subscales)	Brief screening tool; detects comorbid anxiety; less used in older adults with T2DM.	[41,44,85,101,138,168,174]
Audit of Diabetes-Dependent Quality of Life (**ADDQoL**)	Diabetes-related QoL across multiple domains	Disease-specific QoL instrument; generates negative impact scores	[61,64,80,90,101,115,116,123,127,132,138,147,177,182]
Geriatric Depression Scale (**GDS**)	Depression in older adults	Specifically designed for older adults; available in 15- and 30-item versions; recommended for routine screening	[51,58,136]

3.1. Psychological and Psychosocial Outcomes Captured by PROMs

3.1.1. Diabetes Distress

Diabetes distress is defined as the emotional burden and stress associated with the demands of living with diabetes. It is highly prevalent among individuals with T2DM and consistently linked to poorer self-management, reduced treatment adherence, and worse glycemic outcomes [80,87]. Older adults may be particularly vulnerable, as they often face compounding challenges such as longer disease duration, declining physical capacity, and increased fear of complications, which amplify emotional strain and hinder effective self-care [77,142]. This underscores the need for targeted interventions to mitigate distress and improve outcomes in this population.

Evidence suggests that interventions specifically designed to address diabetes distress can be effective. A recent meta-analysis found that programs—especially those delivered in group formats, incorporating cognitive-behavioral strategies, and supported by digital tools—significantly reduced distress in adults with T2DM, though long-term effects remain uncertain [163]. Digital health approaches, such as mobile health platforms, have also shown promise in reducing distress and supporting self-management, offering scalable options that may be particularly beneficial for older adults with limited access to in-person services [44].

Validated PROMs are commonly used to assess diabetes distress and evaluate intervention effectiveness. The PAID scale, a 20-item questionnaire [10], and its shorter validated versions PAID-5 and PAID-1 [196], capture the negative emotions related to living with diabetes. The DDS [189], consisting of 17 items, measures emotional burden, physician- and regimen-related distress, and interpersonal distress. Both instruments demonstrate strong psychometric properties and sensitivity to change, making them valuable in both research and clinical contexts. In most studies, PAID or DDS scores have been employed to quantify baseline distress and monitor intervention outcomes [197], although their routine use in clinical practice remains limited. Importantly, large-scale evidence such as the Swedish National Diabetes Register [114] has shown the utility of incorporating distress measures alongside clinical risk factors (e.g., glycated hemoglobin [HbA1c], blood pressure, low-density lipoprotein [LDL] cholesterol). This enables the identification of patient subgroups in need of more tailored support, based on both psychosocial and biomedical profiles.

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3.1.2. Depression

Depression is a prevalent comorbidity in T2DM, significantly impacting treatment adherence [198] as well as the risk of complications and mortality [199,200]. Epidemiological studies indicate that the incidence of major depressive disorder among individuals with T2DM is substantial, with higher depressive symptom scores linked to increased diabetes distress and psychosocial stress [82]. The use of PROMs in clinical practice, although still underutilized, has demonstrated potential to improve both depressive symptoms and metabolic outcomes [65]. Digital health innovations, such as personalized care plans delivered via mobile applications, have further enhanced the feasibility and accessibility of monitoring mental health and self-management in diabetes [72].

Systematic evaluation of depression is particularly important because untreated depressive symptoms are associated with higher mortality, reduced adherence, poorer disease management, and lower QoL [167]. Guidelines recommend the use of standardized screening tools for depression in people aged more than 65 years [141]. Several instruments have been validated for use in older adults, including the GDS, Center for Epidemiologic Studies Depression Scale (CES-D) [201], Beck Depression Inventory (BDI) [202], WHO-5, and PHQ-9. Despite their established validity, the integration of these screening tools into routine clinical practice remains limited, and few studies have employed repeated measures to monitor changes in depressive symptoms following interventions [65].

3.1.3. Anxiety

Only a few studies assessed anxiety in T2DM, despite its strong impact on self-care behaviors and overall disease management. Among the available tools, the HADS [194] is the most widely used, as it allows a quick and reliable screening of both anxiety and depression. In fact, in South Africa Ramkisson et al. reported 32% of patients with mild-to-severe anxiety on HADS [41], while in Romania Pah et al. [168] found a much higher prevalence of 62.2%, with anxiety being more frequent in patients with macrovascular complications. These findings highlight not only the relevance of anxiety in T2DM but also the need for greater routine attention to its evaluation.

3.1.4. Quality of Life (QoL) and Well-Being

In older adults with T2DM, quality of life can be reduced due to the burden of disease, complications, treatments, and age-related vulnerabilities such as frailty and cognitive decline. Assessing both general and diabetes-specific QoL can guide patient-centered care and shared decision-making, but system-level changes are needed to integrate QoL measurement into routine practice [161]. Generic instruments such as the EQ-5D [190] and SF-36 [191,192] are widely used and allow comparisons across populations. Diabetes-specific measures include the Audit of Diabetes-Dependent Quality of Life (ADDQoL) [203], Diabetes Quality of Life (DQoL) [204] questionnaires, as well as the WHO-5 (Table 1). A recent systematic review [147], including 40 studies, identified the SF-12 and the SF-36 as the commonly used questionnaires to evaluate QoL in people with T2DM. In our dataset, EQ-5D, SF-36 and WHO-5 were the most frequently used generic QoL measures.

According to another systematic review [115], in research, PROMs evaluating QoL are widely used in clinical trials allowing investigators to evaluate how treatments affect not only biomedical markers but also daily functioning and overall psychological well-being. In clinical practice, they provide a structured way to understand a patient's baseline status, track changes over time, and support more personalized, shared decision-making in diabetes care.

3.1.5. Treatment Satisfaction

Treatment satisfaction is a distinct patient-reported outcome that evaluates individuals' perceptions of their diabetes therapy [205]. Evaluating treatment satisfaction provides insights beyond HbA1c, reflecting patients' experiences with therapy. Higher satisfaction is associated with

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better adherence, greater self-efficacy, and lower risk of dropout [178]. The DTSQ was the most commonly used instrument in the included studies (Table 1).

In the PANORAMA study [132], the DTSQ was administered alongside the ADDQoL. Findings showed that depression, weight gain, and complex hypoglycemic regimens were associated with lower satisfaction scores. Interestingly, patients rated their satisfaction higher than their physicians did, suggesting that clinicians may underestimate treatment burden. These results highlight the value of PROMs in identifying mismatches between patient and physician perspectives.

3.1.6. Self-Efficacy and Self-Management

Self-efficacy, a psychological construct derived from Social Cognitive Theory, refers to a person's belief in their ability to carry out actions needed to manage specific situations [206]. Unlike broader ideas such as self-esteem or self-confidence, it is task- and context-specific. In diabetes care, the American Diabetes Association highlights the importance of considering patients' treatment burden and their confidence in managing daily self-care [141]. High levels of self-efficacy are strongly linked to better self-management of chronic conditions, making it a key target for healthcare providers [207]. In our dataset, some of the included studies assessed both self-efficacy and self-management activities [45,48,50,51,60,64,66,75,76,86,88,90,101,108,139,140,154,162,174,185,188]. Diabetes-specific questionnaires to evaluate self-efficacy were: the Diabetes Management Self-Efficacy Scale (DMSES) [208], the Diabetes Self-Efficacy Scale (DSES) [209]. To measure levels of self-management activities, the most used scale was the Summary of Diabetes Self-Care Activities (SDSCA) [210]. Higher self-efficacy scores were consistently associated with better glycemic control and treatment adherence, consistent with evidence that self-efficacy mediates the relationship between psychological aspects, self-care behaviors and HbA1c levels.

Given the strong influence of psychological factors on self-care behaviors, more research is needed to evaluate self-efficacy and empowerment interventions in older adults with T2DM.

3.2. Using PROMs for Risk Stratification and Personalized Care

PROM administration was predominantly through self-report paper questionnaires, with only a minority of studies adopting digital formats [25,34,35,37,75,83,84,100,102,119,131,138,142,179] or repeated measures [62,72,76,119,179]. Settings were mainly outpatient clinics or community-dwelling older adults, while primary care and general practice were underrepresented. Several studies report that PROMs can stratify patients by distress, depression, or quality of life, identifying those at higher risk for poor outcomes [40,52,97]. PROMs are associated with demographic and clinical risk factors and this can be used to identify fragile people. PROMs can be used to trigger tailored interventions, referrals, or care planning [65,72]. Moreover, studies show that PROM-guided interventions can improve mental health outcomes, self-management, and quality of life [50,116,121,181]. Nonetheless, real-world integration into care pathways is still inconsistent, PROMs in the dataset were used primarily for research or one-off surveys rather than as routine clinical tools.

3.3. Implementation Challenges and Solutions

Integration of PROMs into routine care is inconsistent, with barriers including time, workflow disruption, lack of provider training, and cultural inappropriateness of some PROMs [43,65]. Facilitators for the implementation of PROMs in clinical practice include digital administration, brief and validated tools (e.g. PAID-5, WHO-5) and integration with care planning software [72,84,126]. However, digital literacy and access represent additional barriers in older populations. Community and patient engagement in tool development could enhance acceptability [43]. Implementation requires investment in digital infrastructure, training for the healthcare professionals, and workflow redesign. Addressing barriers and leveraging facilitators is essential for successful PROM implementation. Tailoring tools and processes to local healthcare organizations, patient population, and resource availability is critical.

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4. Discussion

This review illustrates the feasibility of applying an AI-assisted rapid review methodology to address a focused clinical and organizational question in older adults with T2DM. Beyond the novelty of the approach [211,212], our analysis highlights consistent patterns in the use of PROMs and provides insights into both their value and their current limitations in practice.

The principal findings confirm that PROMs are effective in capturing psychosocial and psychological burdens that often remain invisible in routine clinical encounters. Disease-specific instruments such as PAID, DDS, ADDQoL, and DTSQ showed greater sensitivity to diabetes-related concerns than generic tools (e.g., EQ-5D, SF-36, WHO-5). Depression and distress measures consistently revealed high levels of psychological burden, while QoL and treatment satisfaction instruments captured the tangible impact of diabetes on everyday functioning. However, implementation in routine care is still limited, hindered by heterogeneity of instruments, insufficient validation in older populations, lack of cultural adaptation, and uncertainty on how to translate scores into actionable care.

An important limitation is the lack of PROMs specifically designed to assess the impact of diabetes technologies [124]. As diabetes management increasingly relies on digital tools—such as continuous glucose monitoring [32], insulin pumps, and app-based decision aids—it becomes crucial to understand how patients experience and adapt to these technologies. PROMs that capture technology acceptance, satisfaction, perceived burden, and usability are still in early stages of development, with limited application in research and almost no routine use in clinical care [187]. This gap is particularly relevant given the rapid pace of innovation in diabetes care, which is reshaping not only clinical pathways but also how individuals live with and relate to their condition, indicating that existing PROMs may need to be adapted or expanded to capture these changing dynamics.

From a methodological standpoint, this study demonstrates the potential of semi-automated, AI-supported pipelines to generate timely, evidence-informed syntheses. Using Elicit allowed us to screen a large body of literature efficiently and transparently, while still requiring human oversight for refinement, judgment, and contextualization. This dual track—automation for efficiency, expert review for quality—offers a model for how rapid evidence products could be produced at scale, especially when clinical or organizational decisions need to be made under time constraints. Although the synthesis was primarily descriptive, and thus shares some features with a narrative review, it followed the structure of a rapid review with explicit eligibility criteria and a PRISMA flow diagram, strengthened by AI-assisted screening and extraction. At the same time, reliance on a single bibliographic source (Semantic Scholar) and the lack of independent validation highlight limitations that call for cautious interpretation and further external testing. Another limitation was that data extraction for a subset of papers relied only on abstracts, potentially reducing detail and depth.

Clinically, the evidence points to multiple potential roles for PROMs: identifying high-risk patients, tailoring interventions, monitoring outcomes, and supporting shared decision-making. Integration of patient-reported data with clinical risk factors, as illustrated in the Swedish National Diabetes Register [114], suggests a pathway toward more comprehensive risk stratification models. Such integration could improve the targeting of interventions, particularly in older adults with multimorbidity and frailty, where biomedical indicators alone are insufficient.

For health systems, wider use of PROMs could contribute to improving adherence to organizational and clinical guidelines by making patient perspectives visible in routine practice. Equally important, their use requires adequate training of healthcare professionals to interpret scores, address sensitive psychological issues, and act upon findings in a timely manner. Without such capacity building, PROMs risk remaining research tools rather than instruments embedded in everyday care.

Digitizing PROMs can streamline their collection and integration into routine diabetes care, enhancing patient monitoring and engagement. This approach supports more personalized treatment decisions and may contribute to improved outcomes [34].

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Looking forward, digital and hybrid approaches—ranging from mobile applications to integration into electronic health records—hold promise for expanding the reach and sustainability of PROM collection. Future work should also prioritize validation of PROMs in older adults, exploration of longitudinal trajectories, and development of predictive models that combine biomedical and patient-reported data. These steps are essential to move from descriptive use of PROMs toward their systematic integration in personalized care pathways for people with T2DM, ultimately bridging the gap between research and routine practice.

5. Conclusions

This AI-assisted rapid review mapped the use of PROMs in older adults with T2DM between 2015 and 2025. Evidence confirms that PROMs capture psychosocial and psychological dimensions often missed in routine encounters, with disease-specific instruments showing greater sensitivity than generic tools.

Despite this potential, implementation in everyday care remains limited. Barriers include heterogeneity of instruments, lack of validation in older populations, and insufficient capacity to interpret and act on scores. Broader adoption will require integration into care workflows and adequate training of health professionals.

From a methodological perspective, this review illustrates how semi-automated pipelines such as Elicit can deliver timely, evidence-informed syntheses when coupled with expert oversight. Future research should prioritize validation, longitudinal use, and integration of PROMs with biomedical data to enable personalized care pathways, bridging the gap between research evidence and clinical practice.

Supplementary Materials: The following supporting information can be downloaded at the website of this paper posted on Preprints.org, Supplementary Table S1. Elicit's automated Data Extraction for the 167 Included Studies: Study Design, Patient-Reported Outcome Measures (PROMs), Populations, Key Findings, and Implementation Details.

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Abbreviations

The following abbreviations are used in this manuscript:

T2DM	Type 2 diabetes mellitus
QoL	Quality of life
PROMs	Patient-Reported Outcome Measures
ICHOM	International Consortium for Health Outcomes Measurement
WHO-5	World Health Organization–Five Well-Being Index
PHQ-9	Patient Health Questionnaire-9
PAID	Problem Areas in Diabetes
AI	Artificial intelligence
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
DDS	Diabetes Distress Scale
EQ-5D	EuroQol-5D
SF-36	Short Form-36
DTSQ	Diabetes Treatment Satisfaction Questionnaire
HADS	Hospital Anxiety and Depression Scale
GDS	Geriatric Depression Scale
HbA1c	Glycated hemoglobin
LDL	Low-density lipoprotein
CES-D	Center for Epidemiologic Studies Depression Scale
BDI	Beck Depression Inventory
ADDQoL	Audit of Diabetes-Dependent Quality of Life
DQoL	Diabetes Quality of Life
DMSES	Diabetes Management Self-Efficacy Scale
DSES	Diabetes Self-Efficacy Scale
SDSCA	Summary of Diabetes Self-Care Activities

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