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REVIEW

Systematic Review of Continuous Glucose Monitoring and Its Effect on Quality of Life in Type 2 Diabetes Mellitus

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Abstract: Continuous Glucose Monitoring (CGM) has transformed diabetes management by providing real-time glucose data, improving glycemic control, and potentially influencing patient well-being. However, the extent to which CGM affects health-related quality of life (HR-QoL) in individuals with type 2 diabetes mellitus (T2DM) remains unclear. This systematic review aimed to evaluate the effects of CGM on QoL and glycemic outcomes in adults with T2DM by comparing CGM use with conventional self-monitoring of blood glucose (SMBG). A systematic literature search was conducted in March 2025 across Scopus, MEDLINE, and EBSCO databases. Eligible studies included adult T2DM patients using CGM (flash or real-time), reported QoL and HbA1c outcomes, and provided a control group. Out of 1525 identified records, five studies met the inclusion criteria. CGM was consistently associated with greater HbA1c reduction than SMBG, with two studies reporting statistically significant improvements. However, most studies showed no significant difference in QoL between CGM and control groups, except for one study reporting psychological benefit. Methodological quality was moderate, with JADAD scores ranging from 2 to 3. In conclusion, CGM use in T2DM patients is associated with improved glycemic control and may provide psychological benefits, although its overall impact on QoL remains inconclusive. Further long-term studies using diabetes-specific QoL tools are needed to better understand the broader implications of CGM on patient-centered outcomes.

Keywords: continuous glucose monitoring, type 2 diabetes mellitus, quality of life, HbA1c, self-monitoring

Introduction

Type 2 diabetes mellitus (T2DM) is a chronic metabolic disorder marked by insulin resistance and relative insulin deficiency, leading to persistent hyperglycemia.[1] Its global prevalence continues to rise sharply, driven by sedentary lifestyles, unhealthy dietary patterns, and population aging.[2] According to the International Diabetes Federation (IDF), an estimated 537 million adults were living with diabetes globally in 2021, and this number is expected to reach 643 million by 2030 and 783 million by 2045.[3] This increasing burden imposes significant challenges not only clinically, but also economically and psychosocially, as it often results in complications, reduced productivity, and lowered quality of life for patients and their families.[4,5]

Managing T2DM requires rigorous glycemic control to prevent both microvascular and macrovascular complications.[6] Achieving these goals, however, is not straightforward. Patients must engage in daily self-monitoring of blood glucose, adhere to pharmacotherapy, maintain dietary restrictions, and incorporate regular physical activity.[7,8] These ongoing self-care activities can be physically and emotionally exhausting, potentially leading to treatment fatigue, reduced adherence, and deterioration in psychosocial well-being.[9] As a result, there is growing interest in innovations that not only optimize glycemic control but also minimize treatment burden and support quality of life.

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One such innovation is continuous glucose monitoring (CGM), a technology that provides real-time data on interstitial glucose levels through a subcutaneous sensor. Unlike traditional self-monitoring of blood glucose (SMBG), which requires finger-prick testing, CGM enables dynamic monitoring with trend analysis and hypoglycemia/hyperglycemia alerts.[10] Initially utilized for patients with type 1 diabetes, CGM is now being adopted by individuals with T2DM, particularly those using intensive insulin therapy or those with problematic glucose fluctuations.[11] Its increased availability and affordability have made CGM a valuable tool in modern diabetes management.

The potential impact of CGM extends beyond clinical outcomes. Health-related quality of life (HR-QoL) is a multidimensional construct that includes physical, psychological, and social domains of health. Patients with T2DM often report lower HR-QoL due to the daily burden of disease management, fear of complications, and emotional distress associated with glycemic instability.[12] Studies suggest that the use of CGM can reduce glycemic variability and hypoglycemic episodes, potentially easing the psychological burden and improving patient confidence in managing their condition.[10] Additionally, CGM may provide greater flexibility and convenience, thus enhancing treatment satisfaction and reducing the perceived intrusiveness of diabetes care.[13,14]

Given the potential benefits of CGM not only on glycemic metrics but also on patient-reported outcomes, it is essential to understand its effect on HR-QoL in individuals with T2DM. While several studies have explored this topic, their results vary, and a comprehensive synthesis of the evidence is needed. Therefore, this systematic review aims to evaluate the impact of CGM on HR-QoL among patients with T2DM by comparing outcomes with conventional glucose monitoring strategies, providing insight into the broader implications of CGM in diabetes care.

Method

This systematic review was carried out following the methodological framework outlined in the Cochrane Handbook for Systematic Reviews of Interventions,[15] along with additional guidance from the Centre for Reviews and Dissemination (CRD) at the University of York.[16] The reporting process complied with the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) standards to ensure transparency and reproducibility.

Search Strategy

A comprehensive literature search was performed in March 2025, targeting studies relevant to the review topic through the Scopus, MEDLINE, and EBSCO databases. Articles were selected based on predefined eligibility criteria. To optimize the retrieval process, Boolean operators like "AND" and "OR" were used to either narrow or broaden search results as appropriate. In addition, Medical Subject Headings (MeSH) were applied to enhance the precision of the search.[15,17] The complete list of keywords and search terms used is provided in Table 1.

Table 1 Search Strategy in Literature Database Exploration

Database	Search Terms
MEDLINE	("Type 2 Diabetes Mellitus"[MeSH Terms] OR "T2DM"[Title/Abstract] OR "type 2 diabetes"[Title/Abstract]) AND ("Continuous Glucose Monitoring"[MeSH Terms] OR "CGM"[Title/Abstract] OR "Flash Glucose Monitoring"[Title/Abstract] OR "FGM"[Title/Abstract] OR "real-time CGM"[Title/Abstract]) AND ("Quality of Life"[MeSH Terms] OR "QoL"[Title/Abstract] OR "life quality"[Title/Abstract]) AND ("randomized controlled trial"[Publication Type] OR "observational study"[Title/Abstract])
Scopus	("type 2 diabetes mellitus" OR "T2DM") AND ("continuous glucose monitoring" OR CGM OR "flash glucose monitoring" OR FGM OR "real-time CGM") AND ("quality of life" OR QoL OR "life quality") AND ("randomized controlled trial" OR RCT OR "observational study")
EBSCO	(MH "Diabetes Mellitus, Type 2" OR "type 2 diabetes" OR T2DM) AND (MH "Glucose Monitoring, Continuous" OR "continuous glucose monitoring" OR CGM OR "flash glucose monitoring" OR FGM OR "real-time CGM") AND (MH "Quality of Life" OR QoL OR "life quality") AND (PT "Randomized Controlled Trial" OR "observational study")

Study Selection

All references identified through the database search were imported into Zotero version 6.0.13 (Corporation for Digital Scholarship, Vienna, USA) for management, and duplicate entries were removed. The screening process was conducted in two sequential phases: an initial assessment based on titles and abstracts, followed by a full-text review. Two independent reviewers (AD and IRL) performed both phases of screening. Studies were eligible for inclusion if they were published from 2015 onward, involved adult patients aged 18 years or older with a diagnosis of type 2 diabetes mellitus, and examined the use of Continuous Glucose Monitoring (CGM) systems—including flash glucose monitoring (FGM) and real-time CGM. Only studies that evaluated both quality of life (QoL) and HbA1c outcomes and included a comparator group using SMBG were included. Eligible study designs encompassed randomized controlled trials (RCTs) and observational studies with appropriate comparator groups or baseline measures.

Studies were excluded if they involved pregnant participants, critically ill individuals, patients in postoperative or post-transplant care, or those admitted to the intensive care unit (ICU). Additional exclusion criteria included studies lacking a control group for QoL measurement, studies reporting only QoL or only HbA1c outcomes, and those not specifically targeting type 2 diabetes mellitus (T2DM) populations. Non-original research such as review articles, study protocols, conference abstracts, and publications in languages other than English were also excluded. Any disagreements during the selection process were resolved through discussion and consensus between the reviewers.

Data Extraction

Two independent reviewers (AD and IRL) extracted data manually into a structured template using Microsoft® Excel® 2019 MSO version 2210 (Microsoft Corporation, Redmond, WA, USA). The extracted variables included information such as author name, country of origin, study design, population characteristics, study setting, duration of follow-up, type of quality of life (QoL) assessment used, QoL scores, and changes in HbA1C levels before and after the intervention.

Risk of Bias

The quality of the included studies was evaluated independently by two reviewers (AD and IRL) using the JADAD scoring system. This tool assesses methodological quality based on three critical components: randomization procedures, blinding methods, and descriptions of participant withdrawals or dropouts. Scores range from 1 (poor quality) to 5 (high quality), providing a straightforward yet comprehensive evaluation of study rigor.[18] Any disagreements between the reviewers were resolved through discussion with other team members.

Data Synthesis

Descriptive statistics were used to summarize and characterize the features of the included studies. Due to heterogeneity in study methodologies and outcome measures, a narrative synthesis approach was adopted. The synthesis process involved collaborative discussion among reviewers to validate findings and followed guidance from the Centre for Reviews and Dissemination (CRD) at the University of York for conducting high-quality systematic reviews.[16]

Results

A total of 1016 records were identified from Scopus, 396 from MEDLINE, and 113 from EBSCO databases. After removing 476 duplicate entries, 1049 unique articles remained for title and abstract screening. Of these, 574 articles were excluded due to not being in English or not constituting original research. The remaining studies were assessed for eligibility, resulting in 63 articles that met the preliminary criteria. Upon further evaluation, 58 studies were excluded for reasons including reporting only QoL or HbA1C outcomes, lack of a control group for these measurements, or not being specifically focused on type 2 diabetes mellitus (T2DM). Ultimately, five studies met the full inclusion criteria and were included in this systematic review. A visual summary of the study selection process is presented in the flow diagram (Figure 1), while detailed study characteristics are summarized in Table 2.

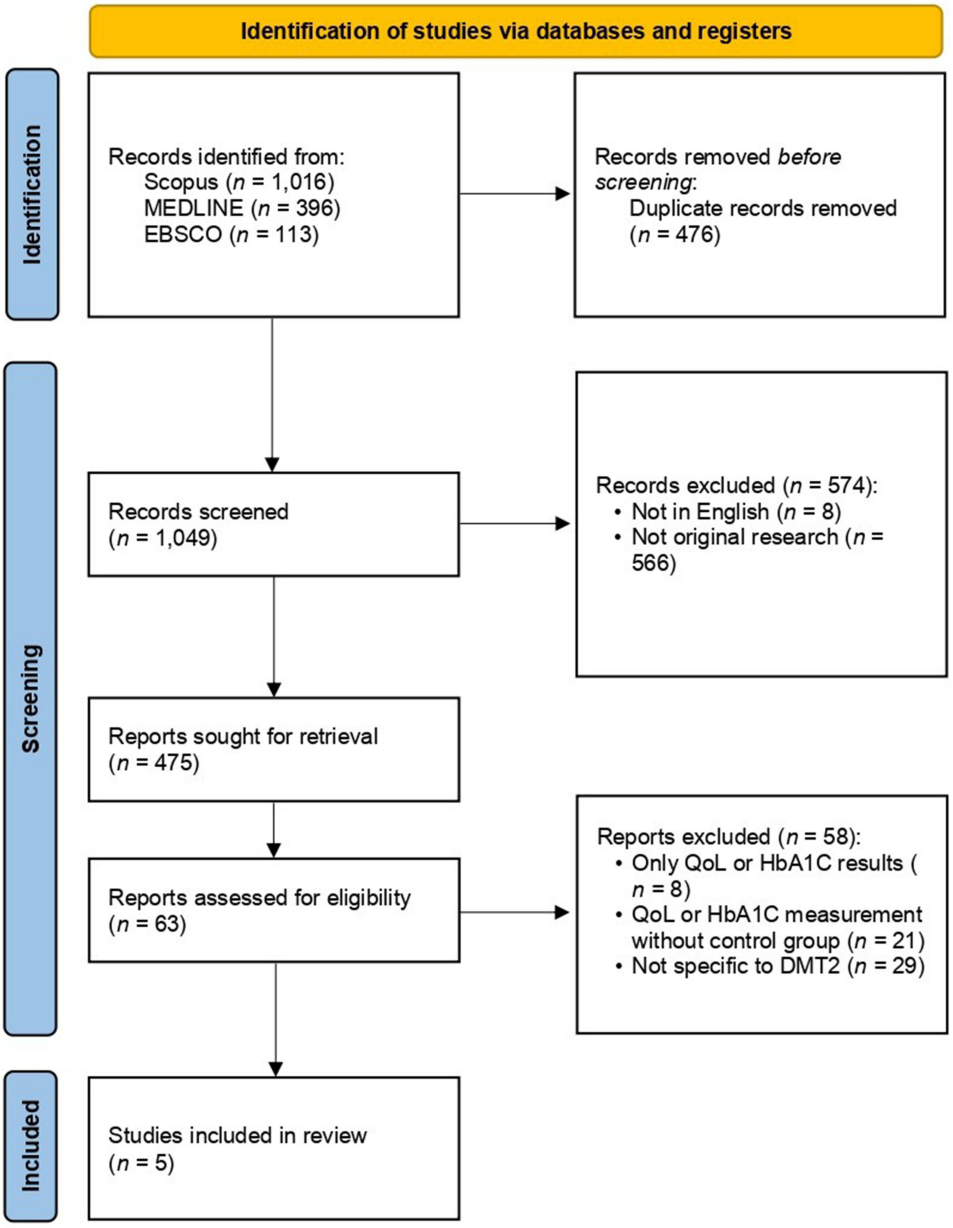

Figure 1 The PRISMA flowchart of study selection process. PRISMA figure adapted from Page MJ, McKenzie JE, Bossuyt PM et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ. 2021;372:n71. Creative Commons.

Appraisal of the Included Studies' Quality

Evaluating the methodological quality of studies is essential, particularly when assessing the effectiveness of medical interventions that inform clinical decisions. In this review, all five included studies were assessed using the JADAD scoring system.[18] None of the studies achieved the maximum score of 5. Three studies—Beck et al (2017), Cox et al (2020), and Ajjan et al (2023)—scored 3 points, reflecting adequate reporting of randomization methods and participant withdrawal, although all lacked double-blinding and its description.[19,22,23] The remaining two studies, Lameijer et al (2021) and Speight et al (2021), scored 2 points due to the absence of both blinding and detailed randomization procedures.[20,21] These results highlight the need for improved methodological rigor in future research, particularly with respect to blinding, which is a key component in minimizing performance and detection bias. A summary of the risk of bias based on the JADAD Score for each included study is presented in Table 3.

Table 2 Summary of Included Study

No	Study	Country	Design	Population Characteristic	Setting	Follow Up	Measure-Ment	Quality of Life (Mean (SD or CI))		P-value	Perubahan HbA1C		P-Value
								Intervention Group	Control Group		Intervention Group	Control Group	
1	Beck et al, (2017)[19]	North America	RCT	158 patients with type 2 DM	• Intervention Group: received CGM device (n=77) • Control Group: Managed without CGM device (n=73)	24 weeks	EQ-5D-5L overall index	0.82 (0.14)	0.82 (0.16)	> 0.05	−0.8% (−1.0 to −0.7)	−0.5% (−0.7 to −0.3)	0.022
2	Speight et al, (2021)[20]	Australia	RCT	299 patients with type 2 DM	• Intervention Group: Professional-mode flash glucose monitoring group (n=126) • Control Group: Usual care group (n=130)	48 weeks	DIDP	4.4 (4.3–4.6)	4.5 (4.3–4.7	0.58	−0.7% (12 month)	−0.4% (12 month)	0.059
3	Lameijer, A. et al, (2021)[21]	Nether-lands	Prospec-tive observa-tional	45 patients with type 2 DM	• Intervention Group: participants who continued FSL-FGM use for 2 years (n=30) • Control Group: participants who stopped FSL-FGM use before the 2-year mark (n=15)	2 years	EQ-5D-3L VAS	66.5 (58.9 to 75.2)	72.2 (59.9 to 84.5)	> 0.05	−2.5 mmol/mol (−12.1, 7.1)	−9.6 mmol/mol (−23.2, 4.0)	> 0.05
							EQ-5D Dutch Tariff	0.77 (0.69 to 0.89)	0.69 (0.54 to 0.83)	> 0.05			
							SF-12 PCS	43.5 (39.2 to 47.8)	41.2 (38.2 to 44.3)	> 0.05			
							SF-12 MCS	48.8 (45.1 to 52.5)	46.8 (41.6 to 52.0)	> 0.05			
4	Cox et al, (2020)[22]	USA	RCT	30 adult patients with T2DM	• Intervention Group: GEM using CGM (continuous glucose monitoring) (n=20) • Control Group: Routine Care (n=10)	20 weeks	WHO-QOL (Physiological)	0.1 ± 1.4	0.1 ± 1.7	0.26	−1.30% ± 0.89	−0.19% ± 1.81	**0.03**
							WHO-QOL (Psychological)	0.4 ± 1.6	−0.8 ± 1.0	**0.01**			
5	Ajjan, RA. et al, (2023)[23]	UK	RCT	141 patients with T2DM	• Intervention Group: intermittently scanned Continuous Glucose Monitoring (isCGM) (n=57) • Control Group: SMBG (n=72)	91 days	EQ-5D-5L Utility Score	0.82 ± 0.16	0.80 ± 0.18	> 0.05	–7 mmol/mol	–7 mmol/mol	>0.05

Abbreviations: RCT, Randomized Controlled Trial; CGM, Continuous Glucose Monitoring; EQ-5D-5L, EuroQol 5-Dimension 5-Level; FSL-FGM, FreeStyle Libre Flash Glucose Monitoring; DIDP, Dawn impact of Diabetes Profile; EQ-5D-3L VAS, EuroQol 5-Dimension 3-Level Visual Analogue Scale; SF-12 PCS, Short Form-12 Physical Component Summary; SF-12 MCS, Short Form-12 Mental Component Summary; WHO-QOL, World Health Organization Quality of Life; GEM, Glycemic Excursion Minimization; SMBG, Self-Monitoring of Blood Glucose.

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Table 3 Quality Assessment by JADAD Score

Author	Randomization	Description of Randomization	Double-Blind Method	Description of the Blinding Method	Description of Withdrawal/ Drop-Out	Total Score
Beck et al, (2017)[19]	1	1	0	0	1	3
Speight et al, (2021)[20]	1	0	0	0	1	2
Lameijer, A. et al, (2021)[21]	1	0	0	0	1	2
Cox et al, (2020)[22]	1	1	0	0	1	3
Ajjan, RA. et al, (2023)[23]	1	1	0	0	1	3

Discussion

This systematic review aimed to evaluate the impact of continuous glucose monitoring (CGM) on quality of life (QoL) and glycemic control among patients with type 2 diabetes mellitus (T2DM). After a comprehensive search across Scopus, MEDLINE, and EBSCO databases, five studies met the inclusion criteria. These studies varied in design, setting, duration, and QoL assessment tools, but collectively provided valuable insights into the potential benefits and limitations of CGM in the T2DM population.

All five studies reported changes in HbA1c levels, with four demonstrating reductions in the CGM groups compared to control groups, though only two achieved statistically significant differences.[19,22] Beck et al reported a 0.8% reduction in HbA1c in the CGM group versus 0.5% in the control group ($p = 0.022$),[19] while Cox et al observed a more pronounced difference of −1.3% versus −0.19% ($p = 0.03$),[22] suggesting that CGM may enhance glycemic control when combined with intensive self-management programs like Glycemic Excursion Minimization (GEM).[24]

Interestingly, the study by Speight et al (2021) showed a borderline significant result ($p = 0.059$),[20] and others such as Lameijer et al (2021) and Ajjan et al (2023) found no significant HbA1c difference.[21,23] These mixed outcomes could reflect differences in follow-up duration, CGM usage adherence, intervention intensity, and participant characteristics.[25–27] For instance, longer durations of CGM use—as seen in Lameijer's two-year study—might lead to adaptation, while initial enthusiasm may wane, affecting efficacy.[21]

Meanwhile, in terms of quality of life (QoL) outcomes, most studies did not demonstrate statistically significant differences between the CGM and control groups. Nevertheless, the psychological dimension appears to warrant closer attention. Cox et al (2020) reported a significant improvement in the psychological domain of the WHO-QOL scale ($p = 0.01$), indicating that CGM may alleviate anxiety and increase confidence related to glycemic variability and hypoglycemia fear.[22] This aligns with prior findings suggesting that the reduction in hypoglycemic episodes—common with CGM—has a strong positive effect on perceived wellbeing.[28]

However, the remaining studies—using tools like EQ-5D, SF-12, and DIDP—failed to capture substantial changes in QoL, with *p*-values consistently above 0.05. It is possible that these instruments were insufficiently sensitive to detect subtle changes related to glucose monitoring. Furthermore, some studies, like Ajjan et al (2023), only observed patients for a short duration (91 days), potentially limiting the time required to translate improved control into perceived QoL benefits.[23]

This review also highlights an occasional discordance between clinical improvements in glycemic outcomes and changes in psychosocial or quality of life (QoL) indicators. For instance, while studies by Beck et al (2017) and Cox et al (2020) demonstrated significant reductions in HbA1c levels,[19,22] only Cox et al reported improvements in psychological QoL, specifically in the WHO-QOL psychological domain.[22] In contrast, Lameijer et al (2021) reported no significant changes in either HbA1c or QoL, yet noted slightly higher VAS scores in the control group.[21] These inconsistencies underscore that better glycemic control does not always translate into perceived improvements in daily living, likely due to factors such as patient expectations, the perceived burden of using CGM technology, and how seamlessly CGM can be integrated into everyday routines.

A key factor contributing to the inconclusive QoL findings is the reliance on generic instruments, which may not adequately capture diabetes-specific experiences such as anxiety, fear of hypoglycemia, or treatment burden. This limitation likely explains the observed discrepancies between clinical improvements and QoL outcomes. These findings underscore the importance of employing diabetes-specific QoL measures, such as Audit of Diabetes-Dependent Quality of Life (ADDQoL) or Diabetes Quality of Life (DQoL), not only for future research but also for critically evaluating the existing evidence, as their absence may partly account for the currently inconclusive results.[29]

In addition to glycemic and psychosocial outcomes, recent evidence has highlighted the potential role of CGM in facilitating a personalized HbA1c (pHbA1c) approach for individuals with T2DM. Personalized HbA1c integrates continuous glucose data to provide individualized targets that better reflect each patient's unique glycemic variability and risk profile. This concept is particularly relevant for T2DM patients, where treatment goals often vary depending on age, comorbidities, and therapeutic regimens. As demonstrated by Seidu et al (2024), both real-time and intermittently scanned CGM significantly improved glycemic outcomes while maintaining safety, suggesting that CGM-derived data can guide more tailored therapeutic decisions.[30] Similarly, Heald et al (2025) reported the consistency and clinical value of the pHbA1c methodology among CGM users, emphasizing its potential to move beyond population-based targets toward individualized diabetes management.[31] Integrating this concept into clinical practice may enhance patient engagement, optimize treatment adjustments, and further align CGM use with precision medicine in diabetes care.

Population characteristics and study design also play a pivotal role in determining the impact of CGM.[11,32,33] Most included studies focused on insulin-treated T2DM patients or individuals with suboptimal glycemic control—groups who are more likely to derive noticeable benefits from CGM use.[34] However, in more stable or non-insulin-dependent populations, the advantages of CGM may be less pronounced. Furthermore, adherence and engagement levels, which strongly influence the effectiveness of CGM and user satisfaction, were not consistently reported across studies.[35] As highlighted by Peyrot et al (2012), behavioral factors such as duration of CGM usage per day, customization of alert settings, and patient training significantly shape outcomes and should be considered in future research.[36]

The current evidence base presents several important limitations that must be acknowledged to enhance our understanding of CGM's broader impact. The small number of high-quality randomized controlled trials (RCTs), variability in QoL measurement tools, heterogeneity in study design, sample size, and follow-up durations make it difficult to generalize findings. Only one study—Lameijer et al (2021)—assessed outcomes beyond a one-year period, leaving the long-term impact of CGM on QoL largely unknown.[21] Furthermore, none of the included studies explored cost-effectiveness or equity of access, despite CGM's relatively high cost and the growing concerns about health disparities, particularly in low- and middle-income settings. Collectively, these factors mean that data synthesis remains descriptive and narrative, with no meta-analysis or pooled effect estimates for either glycemic or QoL outcomes. With only five studies included, the review primarily provides a narrative summary rather than a robust synthesis of evidence, limiting the strength and generalizability of the conclusions.

Another limitation is the lack of consideration for cost-effectiveness and accessibility of CGM for diverse populations. While CGM has demonstrated clinical and psychosocial benefits, its relatively high cost may limit availability, particularly in low- and middle-income settings, potentially exacerbating health disparities.[37] None of the included studies systematically evaluated economic outcomes or equity of access, leaving a gap in understanding the broader implications of CGM implementation. Future research should incorporate health economic analyses and assess access across diverse patient groups to inform policy decisions and ensure equitable benefit distribution.

To strengthen the evidence base, future research should employ diabetes-specific QoL instruments such as the Audit of Diabetes-Dependent Quality of Life (ADDQoL) or the Diabetes Quality of Life (DQoL) scale, which may be more sensitive to subtle changes.[38,39] Investigations should also include diverse subgroups such as the newly diagnosed, elderly, or low-literacy populations, who may experience CGM differently. Moreover, systematic reporting of patient adherence and satisfaction metrics, evaluation of economic outcomes, and assessment of changes in healthcare utilization are essential. Mixed-methods approaches that integrate both quantitative data and qualitative patient perspectives could also provide a more comprehensive understanding of CGM's impact on quality of life in T2DM.

Conclusion

This systematic review highlights that while CGM consistently contributes to improved glycemic control in patients with T2DM, its impact on HR-QoL remains inconclusive. Most studies did not demonstrate statistically significant differences in QoL outcomes between CGM users and those relying on conventional monitoring; however, certain psychological benefits—such as reduced anxiety and greater treatment satisfaction—were observed in select studies. The variability in QoL outcomes may stem from differences in study design, duration of follow-up, population characteristics, and the sensitivity of QoL measurement tools used. Despite these limitations, CGM shows promise as a patient-centered tool that may enhance both clinical and psychosocial aspects of diabetes management, particularly when appropriately tailored to patient needs and supported by adequate training and engagement. Future research should focus on long-term studies, use of diabetes-specific QoL instruments, and inclusion of behavioral, economic, and equity-related outcomes to provide a more comprehensive understanding of CGM's role in T2DM care.

Data Sharing Statement

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

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Author Contributions

AD: Conceptualization, Formal Analysis, Investigation, Methodology, Resources, Validation, Visualization, Writing – original draft, Writing – review and editing. IRL: Methodology, Resources, Validation, Writing – original draft, Writing – review and editing. AH: Validation, Writing – review and editing. EH: Conceptualization, Supervision, Writing – review and editing. KL: Conceptualization, Supervision, Writing – review and editing. All authors have agreed on the journal to which the article will be submitted; reviewed and agreed on all versions of the article before submission, during revision, the final version accepted for publication, and any significant changes introduced at the proofing stage, and agree to take responsibility and be accountable for the contents of the article.

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The authors have no conflicts of interest to declare.

References

1. Galicia-Garcia U, Benito-Vicente A, Jebari S, et al. Pathophysiology of type 2 diabetes mellitus. *Int J Mol Sci*. 2020;21(17):6275. doi:10.3390/IJMS21176275
2. Hossain MJ, Al-Mamun M, Islam MR. Diabetes mellitus, the fastest growing global public health concern: early detection should be focused. *Health Sci Rep*. 2024;7(3):e2004. doi:10.1002/HSR2.2004
3. Magliano DJ, Boyko EJ, committee IDA 10th edition scientific. IDF DIABETES ATLAS. *IDF DIABETES ATLAS [Internet] Brussels*. 2021:1–141. Available from: https://www.ncbi.nlm.nih.gov/books/NBK581934/. Accessed June 18, 2025.
4. Cannon A, Handelsman Y, Heile M, Shannon M. Burden of Illness in Type 2 diabetes mellitus. *J Manag Care Spec Pharm*. 2018;24(9):S5–S13. doi:10.18553/JMCP.2018.24.9-A.S5/ASSET/IMAGES/FIG3.JPG
5. Arokiasamy P, Salvi S, Selvamani Y. Global Burden of Diabetes Mellitus. In: *Handbook of Global Health*; 2021:1–44. doi:10.1007/978-3-030-05325-3_28-2
6. Moore DJ, Gregory JM, Kumah-Crystal YA, Simmons JH. Mitigating micro-and macro-vascular complications of diabetes beginning in adolescence. *Vasc Health Risk Manag*. 2009;5:1015. doi:10.2147/VHRM.S4891
7. Hirsch IB, Pihoker C, Roberts A, Zenno A, Le P. Medication Use and Self-Care Practices in Persons With Diabetes. *Diabetes in America*. 2024. Available from: https://www.ncbi.nlm.nih.gov/books/NBK607283/. Accessed June 18, 2025.
8. Rezaei M, Valiee S, Tahan M, Ebtekar F, Gheshlagh RG. Barriers of medication adherence in patients with type-2 diabetes: a pilot qualitative study. *Diabetes Metab Syndr Obes*. 2019;12:589. doi:10.2147/DMSO.S197159

9. Polonsky WH, Henry RR. Poor medication adherence in type 2 diabetes: recognizing the scope of the problem and its key contributors. *Patient Prefer Adherence*. 2016;10:1299–1307. doi:10.2147/PPA.S106821
10. Reddy N, Verma N, Dungan K. Monitoring Technologies- Continuous Glucose Monitoring, Mobile Technology, Biomarkers Of Glycemic Control. *Endotext*. 2023. Available from: https://www.ncbi.nlm.nih.gov/books/NBK279046/. Accessed June 18, 2025.
11. Battelino T, Danne T, Bergenstal RM, et al. Clinical targets for continuous glucose monitoring data interpretation: recommendations from the international consensus on time in range. *Diabetes Care*. 2019;42(8):1593–1603. doi:10.2337/DCI19-0028
12. Wexler DJ, Grant RW, Wittenberg E, et al. Correlates of health-related quality of life in type 2 diabetes. *Diabetologia*. 2006;49(7):1489–1497. doi:10.1007/S00125-006-0249-9/TABLES/3
13. Pylov D, Polonsky W, Imberg H, et al. Treatment satisfaction and well-being with CGM in people with T1D: an analysis based on the GOLD randomized trial. *J Diabetes Sci Technol*. 2023. doi:10.1177/19322968231183974
14. Klupa T, Czupryniak L, Dzida G, et al. Expanding the role of continuous glucose monitoring in modern diabetes care beyond type 1 disease. *Diab Ther*. 2023;14(8):1241. doi:10.1007/S13300-023-01431-3
15. Cochrane Handbook for Systematic Reviews of Interventions | cochrane Training. Available from: https://training.cochrane.org/handbook. Accessed March 18, 2024.
16. Tacconelli E. Systematic reviews: CRD's guidance for undertaking reviews in health care. *Lancet Infect Dis*. 2010;10(4):226. doi:10.1016/s1473-3099(10)70065-7
17. Bramer WM, Rethlefsen ML, Kleijnen J, Franco OH. Optimal database combinations for literature searches in systematic reviews: a prospective exploratory study. *Syst Rev*. 2017;6(1):1–12. doi:10.1186/S13643-017-0644-Y/TABLES/5
18. Jadad AR, Moore RA, Carroll D, et al. Assessing the quality of reports of randomized clinical trials: is blinding necessary? *Control Clin Trials*. 1996;17(1):1–12. doi:10.1016/0197-2456(95)00134-4
19. Beck RW, Riddlesworth TD, Ruedy K, et al. Continuous glucose monitoring versus usual care in patients with type 2 diabetes receiving multiple daily insulin injections. *Ann Intern Med*. 2017;167(6):365–374. doi:10.7326/M16-2855
20. Speight J, Holmes-Truscott E, Thuraisingam S, et al. Impact of quarterly professional-mode flash glucose monitoring in adults with type 2 diabetes in general practice (GP-OSMOTIC): secondary psychological and self-care outcomes of a pragmatic, open-label, 12-month, randomised controlled trial. *Diabet Res Clin Pract*. 2021:179. doi:10.1016/j.diabres.2021.108994
21. Lameijer A, Fokkert MJ, Edens MA, Gans ROB, Bilo HJG, Van Dijk PR. Two-year use of flash glucose monitoring is associated with sustained improvement of glycemic control and quality of life (FLARE-NL-6). *BMJ Open Diab Res Care*. 2021;9(1). doi:10.1136/BMJDRC-2021-002124
22. Cox DJ, Banton T, Moncrief M, Conaway M, Diamond A, McCall AL. Minimizing glucose excursions (GEM) with continuous glucose monitoring in type 2 diabetes: a randomized clinical trial. *J Endocr Soc*. 2020;4(11). doi:10.1210/JENDSO/BVAA118
23. Ajjan RA, Heller SR, Everett CC, et al. Multicenter randomized trial of intermittently scanned continuous glucose monitoring versus self-monitoring of blood glucose in individuals with type 2 diabetes and recent-onset acute myocardial infarction: results of the LIBERATES trial. *Diab Care*. 2022;46(2):441. doi:10.2337/DC22-1219
24. Oser TK, Cucuzzella M, Stasinopoulos M, Moncrief M, McCall A, Cox DJ. An innovative, paradigm-shifting lifestyle intervention to reduce glucose excursions with the use of continuous glucose monitoring to educate, motivate, and activate adults with newly diagnosed type 2 diabetes: pilot feasibility study. *JMIR Diab*. 2022;7(1):e34465. doi:10.2196/34465
25. Foster NC, Beck RW, Miller KM, et al. State of type 1 diabetes management and outcomes from the T1D exchange in 2016-2018. *Diab Technol Ther*. 2019;21(2):66–72. doi:10.1089/DIA.2018.0384
26. Aleppo G, Ruedy KJ, Riddlesworth TD, et al. REPLACE-BG: a randomized trial comparing continuous glucose monitoring with and without routine blood glucose monitoring in adults with well-controlled type 1 diabetes. *Diab Care*. 2017;40(4):538–545. doi:10.2337/DC16-2482
27. Pickup JC, Freeman SC, Sutton AJ. Glycaemic control in type 1 diabetes during real time continuous glucose monitoring compared with self monitoring of blood glucose: meta-analysis of randomised controlled trials using individual patient data. *BMJ*. 2011;343(7815). doi:10.1136/BMJ.D3805
28. Polonsky WH, Hessler D, Ruedy KJ, Beck RW. The impact of continuous glucose monitoring on markers of quality of life in adults with type 1 diabetes: further findings from the DIAMOND randomized clinical trial. *Diab Care*. 2017;40(6):736–741. doi:10.2337/DC17-0133
29. Nair R, Kachan P. Outcome tools for diabetes-specific quality of life: study performed in a private family practice clinic. *Can Fam Phys*. 2017;63(6):e310.
30. Seidu S, Kunutsor SK, Ajjan RA, Choudhary P. Efficacy and Safety of Continuous Glucose Monitoring and Intermittently Scanned Continuous Glucose Monitoring in Patients With Type 2 Diabetes: a Systematic Review and Meta-analysis of Interventional Evidence. *Diab Care*. 2024;47(1):169–179. doi:10.2337/DC23-1520
31. Heald AH, Stedman M, Paisley A, et al. Consistency of the personalized glycated haemoglobin (pHbA1c) methodology over time in people with type 1 diabetes (T1D) using continuous glucose monitoring. *Diabet Med*. 2025;42(4). doi:10.1111/DME.15520
32. van Beers CAJ, DeVries JH, Kleijer SJ, et al. Continuous glucose monitoring for patients with type 1 diabetes and impaired awareness of hypoglycaemia (IN CONTROL): a randomised, open-label, crossover trial. *Lancet Diab Endocrinol*. 2016;4(11):893–902. doi:10.1016/S2213-8587(16)30193-0
33. Larson RJ, Philbrick AM, Carlin CS, Harris IM. Evaluating the clinical effect of personal continuous glucose monitoring in a diverse population with type 2 diabetes. *J Pharm Technol*. 2023;39(5):231. doi:10.1177/87551225231194027
34. Martens T, Beck RW, Bailey R, et al. Effect of continuous glucose monitoring on glycemic control in patients with type 2 diabetes treated with basal insulin: a randomized clinical trial. *JAMA*. 2021;325(22):2262–2272. doi:10.1001/JAMA.2021.7444
35. Taylor PJ, Thompson CH, Brinkworth GD. Effectiveness and acceptability of continuous glucose monitoring for type 2 diabetes management: a narrative review. *J Diab Investig*. 2018;9(4):713. doi:10.1111/JDI.12807
36. Peyrot M, Barnett AH, Meneghini LF, Schumm-Draeger PM. Insulin adherence behaviours and barriers in the multinational global attitudes of patients and physicians in insulin therapy study. *Diabetic Med*. 2012;29(5):682–689. doi:10.1111/J.1464-5491.2012.03605.X;PAGE:STRING:ARTICLE/CHAPTER
37. Jiao Y, Lin R, Hua X, et al. A systematic review: cost-effectiveness of continuous glucose monitoring compared to self-monitoring of blood glucose in type 1 diabetes. *Endocrinol Diab Metab*. 2022;5(6):e369. doi:10.1002/EDM2.369

38. Ostini R, Dower J, Donald M. The audit of diabetes-dependent quality of life 19 (ADDQoL): feasibility, reliability and validity in a population-based sample of Australian adults. *Qual Life Res*. 2012;21(8):1471–1477. doi:10.1007/S11136-011-0043-0
39. Papazafiropoulou AK, Bakomitrou F, Trikallinou A, et al. Diabetes-dependent quality of life (ADDQOL) and affecting factors in patients with diabetes mellitus type 2 in Greece. *BMC Res Notes*. 2015;8(1). doi:10.1186/S13104-015-1782-8

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