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Continuous Glucose Monitoring in Type 1 Diabetes: Evidence for Glycemic Control and Quality of Life Gains

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ABSTRACT

Type 1 diabetes mellitus was characterized by absolute insulin deficiency, marked glycemic excursions, and vulnerability to hypoglycemia, particularly during sleep, exercise, and intercurrent illness. Conventional capillary testing offered episodic measurements that incompletely captured glycemic variability, thereby limiting timely behavioral and therapeutic adjustments. This review examinesd the evidence that continuous glucose monitoring (CGM) improved glycemic control and quality of life in individuals with type 1 diabetes, while appraising implementation challenges and future directions. A narrative, evidence informed synthesis was developed from peer reviewed randomized trials, meta analyses, real world observational studies, and major clinical guidance documents on CGM in type 1 diabetes. Across populations, CGM was consistently associated with higher time in range, lower time below range, reduced glycemic variability, and modest but clinically meaningful improvements in A1C, with the strongest and most reproducible benefits observed when device use is sustained and data were actively interpreted. Quality of life outcomes frequently improved through reduced fear of hypoglycemia, improved confidence in daily activities, and enhanced treatment satisfaction, although alerts, data overload, and device burden may attenuate benefit for some users. CGM has moved from an adjunct technology to a core instrument for modern type 1 diabetes care, particularly when integrated with structured education and individualized targets. Future work should strengthen equity, optimize human factors, and clarify long term complication outcomes.

Keywords: Continuous glucose monitoring, Type 1 diabetes mellitus, Time in range, Glycemic variability, Quality of life.

INTRODUCTION

Type 1 diabetes mellitus imposes a continuous biochemical challenge: exogenous insulin delivery must approximate a physiologic system that normally responds within minutes to nutrient flux, counterregulatory hormones, circadian rhythms, and cellular energy demand [1, 2]. In the absence of endogenous insulin secretion, the individual must manage glucose homeostasis using insulin dosing strategies that are intrinsically imperfect, thereby predisposing to glycemic variability [3]. Glycemic variability is not merely a numeric inconvenience; it reflects oscillations in substrate availability that can promote oxidative stress, endothelial dysfunction, and inflammatory signaling, mechanisms implicated in microvascular injury over time. Moreover, recurrent hypoglycemia engages counterregulatory pathways that may become blunted after repeated exposure, contributing to impaired awareness and increased risk of severe events [4].

The central problem in routine care is that conventional self-monitoring of blood glucose via fingerstick testing provides isolated snapshots [5]. These episodic measures often miss nocturnal hypoglycemia, postprandial peaks, and rapid glucose declines during activity, leaving patients to infer patterns from limited data. Consequently, therapeutic decisions may be driven by incomplete information, fostering both biochemical instability and psychosocial burden. Fear of hypoglycemia, fatigue from frequent testing, and uncertainty about day-to-day glucose

patterns can meaningfully erode quality of life and limit participation in work, school, exercise, and social activities [6]. This review is organized as follows. Section 1 explains CGM technologies and their biochemical rationale, including interstitial glucose dynamics and why A1C alone is insufficient. Section 2 synthesizes evidence for glycemic control benefits using contemporary metrics such as time in range, time below range, and glycemic variability. Section 3 evaluates quality of life evidence and the behavioral dimensions of living with CGM. Section 4 discusses CGM integrated care, including links with insulin delivery systems and practical implementation considerations. Section 5 addresses limitations, controversies, and future directions. The purpose of this review is to critically appraise how CGM reshapes biochemical monitoring and self-management in type 1 diabetes, and to clarify the strength and boundaries of evidence for improved glycemic outcomes and quality of life.

CGM Technologies and Biochemical Rationale in Type 1 Diabetes

CGM systems estimate glucose concentrations in interstitial fluid, typically using enzymatic electrochemical sensors [7]. Although interstitial glucose tracks blood glucose closely, it exhibits physiological lag, particularly during rapid rises or falls. This lag is not a flaw so much as a property of glucose transport and distribution between vascular and interstitial compartments. For the clinician and patient, it mandates interpretive sophistication: trend arrows and rate of change often matter as much as the absolute value. CGM broadly includes rtCGM, which continuously transmits readings and can generate alerts, and is CGM, which stores readings that are retrieved when the user scans the sensor [8]. Both approaches provide dense data streams that enable recognition of nocturnal hypoglycemia, dawn phenomenon, postprandial excursions, and exercise-associated declines that are commonly invisible to fingerstick monitoring. From a biochemical perspective, CGM transforms glycemic monitoring from an episodic measurement to a dynamic profile, enabling intervention aligned with the kinetics of insulin action and glucose flux.

A1C remains a valuable integrative marker reflecting average glycemia over weeks to months, largely through hemoglobin glycation [9]. Yet A1C cannot distinguish stable near normoglycemia from oscillations between hyperglycemia and hypoglycemia that average to a similar value. Furthermore, conditions affecting erythrocyte lifespan or hemoglobin structure can render A1C misleading. CGM-derived metrics address these limitations by quantifying glycemic exposure and variability directly. Time in range (commonly 70 to 180 mg/dL) captures the proportion of time spent in a desired metabolic zone. Time below range (including clinically significant hypoglycemia thresholds) reflects hypoglycemic risk, while time above range captures hyperglycemic exposure [10]. Glycemic variability measures, such as coefficient of variation, quantify oscillatory behavior that is mechanistically relevant to oxidative stress and cellular injury pathways.

In addition to biochemical reasoning, CGM offers a cognitive advantage: it reduces the uncertainty inherent to insulin decision making. Instead of guessing whether glucose is rising or falling, the user receives actionable context. The net effect is not simply more data, but improved temporal alignment between insulin dosing, carbohydrate intake, and physical activity, all of which operate on distinct kinetic schedules. This alignment is foundational to the observed clinical benefits of CGM.

Evidence for Improved Glycemic Control with CGM

The glycemic control literature on CGM has matured from early feasibility work to robust clinical trials and extensive real-world evidence [11, 12]. Across many settings, CGM use is associated with improved time in range, reduced time below range, and lower glycemic variability. A1C reductions are often modest in absolute magnitude but remain clinically meaningful when accompanied by safer hypoglycemia profiles. The most consistent findings occur when CGM is used frequently, when users respond to trends and alerts, and when clinicians incorporate CGM reports into structured follow-up.

Randomized trials in adults with type 1 diabetes have repeatedly shown that rtCGM improves time in range and reduces hypoglycemia compared with conventional fingerstick testing [13]. Importantly, the biochemical gains are frequently observed even when A1C changes are small, highlighting that CGM improves the distribution of glucose values rather than merely shifting the average. This is particularly evident in individuals who already have near-target A1C but experience problematic hypoglycemia or variability. For such patients, CGM often reduces time below range and severe hypoglycemic episodes, an outcome of high clinical significance because severe hypoglycemia can cause seizures, injury, and rarely death. Adolescents and children present a distinct physiological and behavioral context. Pubertal insulin resistance, irregular dietary patterns, variable physical activity, and reliance on caregivers can intensify glycemic volatility. Evidence suggests CGM can improve glycemic outcomes in youth, though benefits may be more contingent on sustained wear, family engagement, and supportive education [14]. In practice, the technology can reduce caregiver anxiety by providing visibility into nocturnal glycemia and enabling remote monitoring where available. Nonetheless, alert burden and device fatigue can be prominent in this age group, underscoring that glycemic benefit is not solely a device property but a function of human factors and support structures.

In pregnancy complicated by type 1 diabetes, the biochemical stakes are high because maternal hyperglycemia is associated with fetal overgrowth, neonatal hypoglycemia, and other adverse outcomes [15, 16]. CGM has been associated with improved time in range and reduced hyperglycemic exposure in many reports, and its use can facilitate tighter glycemic targets while maintaining safety. However, pregnancy also amplifies the challenge of interpreting sensor data because insulin sensitivity changes rapidly across gestation, and nausea or variable intake can destabilize patterns. Here again, CGM benefit depends on clinician engagement and timely insulin adjustment. Comparisons between rtCGM and isCGM suggest that real-time alerts and continuous transmission may confer additional protection against hypoglycemia, particularly nocturnal events [17]. isCGM provides substantial informational value, but scanning frequency becomes a behavioral determinant of benefit. Real-world studies, including registry analyses and large observational cohorts, generally mirror trial results, showing improved time in range and reduced acute events after CGM adoption. Yet real-world evidence also reveals heterogeneity: individuals with consistent sensor wear and proactive use of trend information gain the most, whereas intermittent use yields attenuated outcomes.

A crucial interpretive point is that CGM improves glycemic control through several mechanisms: earlier detection of impending hypoglycemia, improved postprandial insulin timing, feedback-driven behavior change, and more precise clinician-guided adjustments based on ambulatory glucose profiles. These mechanisms jointly reduce exposure to extremes without requiring the patient to increase fingerstick testing frequency, thereby improving both biochemical outcomes and the lived experience of self-management.

Quality of Life, Patient Reported Outcomes, and Behavioral Dimensions

Quality of life in type 1 diabetes is tightly interwoven with glycemic uncertainty [18]. The fear of hypoglycemia, particularly severe and nocturnal episodes, can drive compensatory hyperglycemia, avoidance of exercise, and disrupted sleep. CGM addresses this uncertainty by providing continuous feedback and, in many rtCGM systems, alerts for impending lows or highs. Patient-reported outcomes frequently demonstrate improved confidence in daily activities, reduced diabetes distress related to hypoglycemia, and greater treatment satisfaction. For many individuals, the biochemical data stream functions as a safety net that permits more physiologic behavior, including exercise and sleep, without constant apprehension.

Nocturnal hypoglycemia has long been a vexing risk, compounded by blunted symptom recognition during sleep [19, 20]. CGM alerts may reduce nocturnal lows and provide reassurance, but they can also disrupt sleep through false alarms, compression lows, or overly sensitive thresholds. Thus, sleep outcomes may improve when alert settings are individualized and when users develop trust in sensor behavior, but worsen when alarm fatigue emerges. This duality illustrates a fundamental principle: CGM is not universally liberating; it can impose new cognitive and sensory demands. The psychosocial burden extends beyond the individual. Parents and partners often experience significant anxiety, and CGM data sharing can reduce this burden by enabling remote oversight. In pediatric contexts, caregivers frequently report improved peace of mind. However, shared data can also introduce interpersonal strain if monitoring is experienced as surveillance rather than support. Clinicians should therefore encourage explicit agreements about how data will be used in families, emphasizing collaboration rather than control.

CGM may also improve engagement with self-care by making cause and effect visible [21]. Seeing postprandial excursions after certain meals, or a rapid decline after activity, can motivate behavior change and improve self-efficacy. This learning effect has a biochemical consequence: it can reduce glycemic variability by improving timing of insulin dosing and carbohydrate intake. Yet for some patients, constant exposure to glucose numbers can provoke anxiety, perfectionism, or a sense of failure when targets are not met. In such cases, the clinician's role is to reframe CGM data as information rather than judgment, emphasizing trends and incremental improvement.

Device visibility, skin reactions, and insertion discomfort can influence quality of life. Stigma or self consciousness may be salient in adolescents and young adults . Practical burdens, including sensor adhesion challenges, supply logistics, and cost, also shape perceived benefit. The quality of life literature therefore supports a nuanced conclusion: CGM often improves psychosocial outcomes, particularly by reducing hypoglycemia fear and enhancing confidence, but benefit is maximized when technology is matched to patient preferences, education is structured, and alert settings are personalized to reduce unnecessary disruptions.

CGM Integrated Care, Insulin Delivery Systems, and Clinical Implementation

The clinical value of CGM is amplified when embedded within an integrated care model. Whether the patient uses multiple daily injections (MDI) or insulin pump therapy, CGM data can inform basal insulin adequacy, mealtime dosing strategy, and correction factor adjustments. For MDI users, CGM trend information can guide safer correction dosing and improve pre-meal timing, particularly for rapid-acting analogs whose onset and peak may not align with meal absorption. For pump users, CGM can inform basal profiling across circadian patterns and exercise days.

The integration of CGM with insulin delivery has progressed from sensor-augmented pumps to hybrid closed loop systems that automate basal adjustments and, in some systems, deliver automated correction boluses [22]. In these contexts, CGM is not merely a monitoring tool; it becomes the biochemical input that drives algorithmic insulin modulation. The evidence base for hybrid closed loop systems demonstrates substantial improvements in time in range and reductions in hypoglycemia, often exceeding gains seen with CGM alone, though outcomes remain dependent on sensor wear, accurate carbohydrate estimation, and user interaction with the system. The biochemical logic is compelling: automated systems can respond to trends with a frequency and consistency unattainable for most humans, thereby smoothing glucose oscillations and reducing variability. Implementation requires education that goes beyond device mechanics. Users should learn how to interpret ambulatory glucose profiles, identify recurrent patterns, and adjust behavior and dosing accordingly. Clinicians should establish individualized targets for time in range and hypoglycemia exposure, recognizing that a patient with a history of severe hypoglycemia may initially prioritize reducing time below range even if A1C is acceptable. Follow up visits should include structured CGM review, focusing on a small number of high yield changes rather than exhaustive analysis.

Equity and access represent central implementation challenges. CGM costs, supply chain stability, and coverage policies can limit adoption, especially in low resource settings [23]. Additionally, digital literacy, language barriers, and limited clinic time can reduce effective use even when devices are available. Pragmatic strategies include group education sessions, simplified interpretation frameworks, and use of standardized reports that highlight time in range and hypoglycemia. In settings where smartphone connectivity is limited, selecting systems that permit standalone receivers or simplified workflows may reduce barriers.

Finally, successful integration depends on aligning CGM with the patient's context. Athletes, shift workers, pregnant women, and individuals with impaired awareness of hypoglycemia have distinct priorities and risk profiles. Alert thresholds should be individualized, and clinicians should explicitly address alarm fatigue and data anxiety [24]. When CGM is implemented as part of a supportive therapeutic alliance, it becomes a catalyst for safer glycemic control and improved quality of life.

Limitations, Controversies, and Future Directions

Despite strong evidence for benefit, CGM is not without limitations. Sensor accuracy may be reduced in the hypoglycemic range, where clinical decisions are most consequential, and artifacts such as compression lows can trigger false alarms [25]. This can undermine trust and contribute to alarm fatigue. Skin irritation, contact dermatitis, and adhesion issues can limit wear time. In addition, physiological lag during rapid glucose change can mislead users who interpret interstitial readings as immediate blood values. These limitations reinforce the need for education, including guidance on confirmatory fingerstick testing when symptoms and sensor readings diverge.

Data privacy and governance have become increasingly relevant as CGM systems integrate with cloud platforms and share data across devices. Patients may have legitimate concerns about who accesses their data and for what purposes. Algorithm transparency is also a growing issue, particularly for automated insulin delivery systems where proprietary decision rules may be opaque to users and clinicians. From an ethical standpoint, trust requires clarity, informed consent, and robust protections.

Another controversy concerns the relative value of CGM metrics. Time in range is intuitive and clinically meaningful, yet it can be misused if pursued rigidly without regard to patient safety, mental health, or contextual feasibility. Some individuals may experience distress if targets are interpreted as mandates rather than goals. Furthermore, quality of life outcomes are heterogeneous, with some users reporting benefit and others describing increased anxiety. The field therefore requires a patient-centered approach that recognizes diverse preferences and avoids one-size-fits-all expectations. Evidence gaps remain. While CGM improves intermediate outcomes such as time in range and hypoglycemia, the degree to which it reduces long-term microvascular and macrovascular complications remains less directly established, partly because such outcomes require long follow-up [26]. There is also a need to better characterize which subgroups benefit most, including those with limited resources, variable adherence, or comorbid mental health challenges.

Future directions are promising. Next-generation sensors aim for longer wear, improved accuracy, reduced calibration needs, and fewer skin complications. Integration with decision support tools may help patients translate data into action without cognitive overload. Advances in personalization, including adaptive targets based on hypoglycemia risk and lifestyle patterns, could improve both biochemical outcomes and quality of life. Finally, equitable implementation must be treated as a scientific and ethical priority, ensuring that CGM's benefits are not confined to those with the most resources [27].

CONCLUSION

CGM has redefined glycemic monitoring in type 1 diabetes by shifting assessment from episodic readings to a continuous biochemical profile that captures variability, nocturnal risk, and rapid excursions. The accumulated evidence supports clinically meaningful improvements in time in range, reductions in time below range, and lower

glycemic variability, with modest but relevant improvements in A1C in many populations. These benefits are not automatic; they depend on sustained sensor wear, appropriate alert settings, structured education, and clinical workflows that translate CGM reports into actionable therapeutic adjustments. Quality of life outcomes frequently improve through reduced fear of hypoglycemia, enhanced confidence in daily activities, and greater treatment satisfaction. Nonetheless, CGM can introduce burdens, including alert fatigue, data overload, and device-related discomfort, emphasizing that effective use is a behavioral and contextual process rather than a purely technological one. Integration with automated insulin delivery systems further amplifies glycemic benefits, reflecting the power of coupling continuous sensing with responsive insulin modulation. In the coming years, the most important determinants of impact will include human factors optimization, privacy-conscious data governance, and equitable access across diverse health systems. CGM should be offered as a standard component of type 1 diabetes management, paired with structured education and individualized targets that prioritize safety, sustained engagement, and quality of life.

REFERENCES

1. Boscari, F., Avogaro, A.: Current treatment options and challenges in patients with Type 1 diabetes: Pharmacological, technical advances and future perspectives. Rev Endocr Metab Disord. 22, 217–240 (2021). https://doi.org/10.1007/s11154-021-09635-3
2. Handwerk, P.: The effect of physical exercises on glucose control in patients with type 1 diabetes mellitus. literature review, https://epublications.vu.lt/object/elaba:238869390/, (2025)
3. Obasi, D.C., Abba, J.N., Aniokete, U.C., Okoroh, P.N., Akwari, A.Ak.: Evolving Paradigms in Nutrition Therapy for Diabetes: From Carbohydrate Counting to Precision Diets. Obesity Medicine. 100622 (2025). https://doi.org/10.1016/j.obmed.2025.100622
4. Alum, E.U., Umoru, G.U., Uti, D.E., Aja, P.M., Ugwu, O.P., Orji, O.U., Nwali, B.U., Ezeani, N.N., Edwin, N., Orinya, F.O.: Hepato-Protective Effect of Ethanol Leaf Extract of Datura stramonium in Alloxan-induced diabetic albino Rats. Journal of Chemical Society of Nigeria. 47, (2022). https://doi.org/10.46602/jcsn.v47i5.819
5. Montero, A.R., Toro-Tobon, D., Gann, K., Nassar, C.M., Youssef, G.A., Magee, M.F.: Implications of remote monitoring Technology in Optimizing Traditional Self-Monitoring of blood glucose in adults with T2DM in primary care. BMC Endocr Disord. 21, 222 (2021). https://doi.org/10.1186/s12902-021-00884-6
6. Chatwin, H., Broadley, M., Jensen, M.V., Hendrieckx, C., Carlton, J., Heller, S., Amiel, S., Galan, B. de, Hermanns, N., Finke-Groene, K., Speight, J., Pouwer, F.: 'Never again will I be carefree': a qualitative study of the impact of hypoglycemia on quality of life among adults with type 1 diabetes. BMJ Open Diab Res Care. 9, (2021). https://doi.org/10.1136/bmjdrc-2021-002322
7. Wang, M., Zheng, J., Zhang, G., Lu, S., Zhou, J.: Wearable Electrochemical Glucose Sensors for Fluid Monitoring: Advances and Challenges in Non-Invasive and Minimally Invasive Technologies. Biosensors. 15, (2025). https://doi.org/10.3390/bios15050309
8. Edelman, S.V., Argento, N.B., Pettus, J., Hirsch, I.B.: Clinical Implications of Real-time and Intermittently Scanned Continuous Glucose Monitoring. Diabetes Care. 41, 2265–2274 (2018). https://doi.org/10.2337/dc18-1150
9. Lundholm, M.D., Emanuele, M.A., Ashraf, A., Nadeem, S.: Applications and pitfalls of hemoglobin A1C and alternative methods of glycemic monitoring. Journal of Diabetes and its Complications. 34, 107585 (2020). https://doi.org/10.1016/j.jdiacomp.2020.107585
10. Deshmukh, H., Wilmot, E.G., Choudhary, P., Ssemmondo, E., Barnes, D., Walker, N., Walton, C., Ryder, R.E.J., Sathyapalan, T.: Time Below Range and Its Influence on Hypoglycemia Awareness and Severe Hypoglycemia: Insights From the Association of British Clinical Diabetologists Study. Diabetes Care. 48, 437–443 (2025). https://doi.org/10.2337/dc24-1833
11. Gavin, J.R., Bailey, C.J.: Real-World Studies Support Use of Continuous Glucose Monitoring in Type 1 and Type 2 Diabetes Independently of Treatment Regimen. Diabetes Technology & Therapeutics. 23, S-19 (2021). https://doi.org/10.1089/dia.2021.0211
12. Charleer, S., Mathieu, C., Nobels, F., De Block, C., Radermecker, R.P., Hermans, M.P., Taes, Y., Vercammen, C., T'Sjoen, G., Crenier, L., Fieuws, S., Keymeulen, B., Gillard, P., RESCUE Trial Investigators: Effect of Continuous Glucose Monitoring on Glycemic Control, Acute Admissions, and Quality of Life: A Real-World Study. J Clin Endocrinol Metab. 103, 1224–1232 (2018). https://doi.org/10.1210/jc.2017-02498
13. Dicembrini, I., Cosentino, C., Monami, M., Mannucci, E., Pala, L.: Effects of real-time continuous glucose monitoring in type 1 diabetes: a meta-analysis of randomized controlled trials. Acta Diabetol. 58, 401–410 (2021). https://doi.org/10.1007/s00592-020-01589-3

14. Peyyety, V., Zupa, M.F., Hewitt, B., Rodriguez Gonzalez, A., Mani, I., Prioleau, T., McCurley, J., Lin, Y.K., Vajravelu, M.E.: Barriers and Facilitators to Uptake of Continuous Glucose Monitoring for Management of Type 2 Diabetes Mellitus in Youth. The Science of Diabetes Self-Management and Care. 49, 426–437 (2023). https://doi.org/10.1177/26350106231205030
15. Ornoy, A., Becker, M., Weinstein-Fudim, L., Ergaz, Z.: Diabetes during Pregnancy: A Maternal Disease Complicating the Course of Pregnancy with Long-Term Deleterious Effects on the Offspring. A Clinical Review. International Journal of Molecular Sciences. 22, (2021). https://doi.org/10.3390/ijms22062965
16. Apata, T., Samuel, D., Valle, L., Crimmins, S.D.: Type 1 Diabetes and Pregnancy: Challenges in Glycemic Control and Maternal–Fetal Outcomes. Seminars in Reproductive Medicine. 42, 239–248 (2024). https://doi.org/10.1055/s-0044-1791704
17. Edelman, S.V., Argento, N.B., Pettus, J., Hirsch, I.B.: Clinical Implications of Real-time and Intermittently Scanned Continuous Glucose Monitoring. Diabetes Care. 41, 2265–2274 (2018). https://doi.org/10.2337/dc18-1150
18. Dias, R.J., Neves, J.S., Poínhos, R.: Glycemic Control and Quality of Life Among People with Type 1 Diabetes: Relationships with Insulin Therapy and Carbohydrate Counting. Nutrients. 17, (2025). https://doi.org/10.3390/nu17121951
19. Siamashvili, M., Davis, H.A., Davis, S.N.: Nocturnal hypoglycemia in type 1 and type 2 diabetes: an update on prevalence, prevention, pathophysiology and patient awareness. Expert Review of Endocrinology & Metabolism. 16, 281–293 (2021). https://doi.org/10.1080/17446651.2021.1979391
20. Ugwu, O.P.-C., Erisa, K., Obeagu., E.I., Alum, E.U., Michael B, O., Subbarayan, S., Sankarapandiyan, V.: Exploring Indigenous Medicinal Plants for Managing Diabetes Mellitus in Uganda: Ethnobotanical Insights, Pharmacotherapeutic Strategies, and National Development Alignment. INOSR ES. 12, 214–224 (2023). https://doi.org/10.59298/INOSRES/2023/2.17.1000
21. Chang, H.-Y., Yeh, K.-C., Huang, Y.-Y., Li, J.-H.: The Impact of Self-Regulation Education Combined with Continuous Glucose Monitoring (CGM) on Diabetes Outcomes: A Randomized Controlled Study. Nursing Reports. 15, (2025). https://doi.org/10.3390/nursrep15030094
22. Aleppo, G., Webb, K.M.: Integrated Insulin Pump and Continuous Glucose Monitoring Technology in Diabetes Care Today: A Perspective of Real-Life Experience With the Minimed™ 670G Hybrid Closed-Loop System. Endocrine Practice. 24, 684–692 (2018). https://doi.org/10.4158/EP-2018-0097
23. Bila, R., Varo, R., Madrid, L., Sitoe, A., Bassat, Q.: Continuous Glucose Monitoring in Resource-Constrained Settings for Hypoglycaemia Detection: Looking at the Problem from the Other Side of the Coin. Biosensors. 8, (2018). https://doi.org/10.3390/bios8020043
24. Alum, E.U.: Optimizing patient education for sustainable self-management in type 2 diabetes. Discov Public Health. 22, 44 (2025). https://doi.org/10.1186/s12982-025-00445-5
25. Diouri, O., Cigler, M., Vettoretti, M., Mader, J.K., Choudhary, P., Renard, E., Consortium, H.-R.: Hypoglycaemia detection and prediction techniques: A systematic review on the latest developments. Diabetes/Metabolism Research and Reviews. 37, e3449 (2021). https://doi.org/10.1002/dmrr.3449
26. Zakir, M., Ahuja, N., Surksha, M.A., Sachdev, R., Kalariya, Y., Nasir, M., Kashif, M., Shahzeen, F., Tayyab, A., Khan, M.S.M., Junejo, M., Manoj Kumar, F., Varrassi, G., Kumar, S., Khatri, M., Mohamad, T.: Cardiovascular Complications of Diabetes: From Microvascular to Macrovascular Pathways. Cureus. (2023). https://doi.org/10.7759/cureus.45835
27. Ekpang II, J.E., Ekpang, P.O., Ainebyoona, C., Nwagu, K.E., Nwuruku, O.A., Muhammad, K.: Toward an ethical future for orphan drugs: balancing access, affordability, and innovation. Journal of Medical Economics. 0, 1–24. https://doi.org/10.1080/13696998.2025.2577514

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