Continuous Glucose Monitoring (CGM) in Egypt: Adoption, Barriers, and Clinical Impact

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Abstract

Aims: Continuous glucose monitoring (CGM) has become a central tool in modern diabetes management. While many high-income countries have integrated CGM into standard care, the situation in Egypt is different. This review summarizes the current status of CGM in Egypt, including availability, adoption, clinical evidence, and barriers to wide use.

Methods and Results: A narrative review was conducted using PubMed, Scopus, Google Scholar, and local Egyptian sources up to August 2025. Relevant clinical trials, observational studies, surveys, and expert opinion reports were included.

Results show that CGM has been available in Egypt since the early 2000s but remains underutilized. Uptake is largely confined to private clinics and academic hospitals. Barriers include high cost, lack of reimbursement, limited awareness among physicians and patients, and insufficient training in interpretation of CGM data. Despite these challenges, small Egyptian studies and real-world experiences suggest that CGM improves glycemic control, reduces hypoglycemia, and facilitates safer fasting during Ramadan.

Conclusion: CGM in Egypt holds great promise but remains underutilized. To achieve its potential, national strategies should focus on reimbursement, patient and provider education, and integration of CGM into public healthcare services.

Keywords: Continuous glucose monitoring, Diabetes, Egypt, Technology adoption, Barriers, Outcomes

Introduction

Egypt faces one of the heaviest burdens of diabetes worldwide. According to the International Diabetes Federation (IDF), more than 11 million Egyptian adults are living with diabetes, ranking the country among the global top ten in prevalence (1). With rapid urbanization, lifestyle changes, and an aging population, this figure is expected to rise further. Diabetes complications such as cardiovascular disease, kidney failure, retinopathy, and amputations create profound health and economic challenges (2). Traditional diabetes care in Egypt has relied on glycated hemoglobin (HbA1c) and self-monitoring of blood glucose (SMBG). While valuable, these metrics fail to fully capture glycemic variability, postprandial excursions, and hypoglycemia episodes. Over the past two decades, continuous glucose monitoring (CGM) has revolutionized diabetes care by providing real-time or intermittent interstitial glucose readings. CGM not only improves HbA1c but also provides actionable metrics such as time in range (TIR), time below range (TBR), and glycemic variability (3-5). Globally, randomized controlled trials (e.g., DCCT extension, DIAMOND, and others) have established the benefits of CGM for type 1 and type 2 diabetes (6-8). However, in Egypt, adoption has lagged due to socioeconomic and systemic barriers.

Still, the growing presence of private endocrinology clinics, the introduction of flash CGM systems like the Abbott Libre, and increasing awareness among younger physicians have started to shift the picture. This review provides an Egypt-focused summary of CGM: its history, adoption, barriers, and clinical impact.

Methods:

We conducted a narrative review. Sources included PubMed, Scopus, Google Scholar, and local Egyptian journals. Search terms: continuous glucose monitoring, flash glucose monitoring, diabetes Egypt, Ramadan CGM in Egypt, real-world CGM.

1. Inclusion:
- Studies conducted in Egypt (2010–2025).
- Reports including Egyptian patients, physicians, or healthcare system data.
- International guidelines relevant to Egypt.
2. Exclusion:
- Non-peer-reviewed articles (except important WHO/IDF reports).
- Case reports without broader significance.

N.B.: Expert local experience and real-world observations were also included to supplement limited formal data.

Results:

1. Adoption of CGM in Egypt

- CGM was first introduced in Egypt in the early 2000s via Medtronic Guardian devices, mainly in academic hospitals.
- Widespread adoption began only after Freestyle Libre (Abbott) became available in the mid-2010s.
- Uptake is highest in private diabetes centers and among affluent patients.
- A recent survey in Cairo and Alexandria reported that <10% of type 1 diabetes patients use CGM regularly [9].
- Pediatric endocrinology units in Mansoura and Cairo report growing interest among parents of children with type 1 diabetes, particularly for school safety and Ramadan fasting.

2. Barriers to CGM in Egypt

(A) Economic barriers:

- A single Libre sensor costs 3200 EGP (≈65 USD), while average monthly income is ≈10,000-15,000 EGP.
- Government health insurance does not cover CGM, making it unaffordable for most families.

(B) Awareness and education:

- Many general practitioners and even some endocrinologists are unfamiliar with CGM metrics (TIR, TBR, coefficient of variation).
- Patients often view CGM as "luxury" technology rather than essential care.

(C) Training barriers:

- Limited access to structured training in CGM interpretation.
- Lack of standardized local guidelines for CGM use.

(D) Cultural issues:

- Concerns about wearing visible devices in public.
- Some fasting patients remove sensors during Ramadan due to a misunderstanding.

3. Clinical Impact of CGM in Egypt

Despite low adoption, several small studies highlight clinical benefits:

- Type 1 diabetes: An Egyptian pediatric study in Mansoura showed that CGM use improved HbA1c by 0.7% and reduced severe hypoglycemia compared to SMBG [10].
- Ramadan fasting: A Cairo study found that flash CGM helped type 2 diabetes patients identify nocturnal hypoglycemia during Ramadan, leading to safer fasting adjustments [11].
- Pregnancy: Limited pilot data suggest that CGM use in gestational diabetes helps in early detection of postprandial hyperglycemia [12].
- Education: CGM reports have been used in Egyptian clinics to educate patients about food and exercise patterns, increasing engagement.

Discussion

The Egyptian experience with CGM illustrates the contrast between high clinical value and low accessibility. Globally, CGM is now part of international guidelines for type 1 diabetes and insulin-treated type 2 diabetes [13]. In Egypt, however, adoption remains restricted due to cost, lack of reimbursement, and education gaps.

When compared with Europe or North America, where CGM penetration in type 1 diabetes exceeds 50–70% [14], Egypt lags behind at <10%. This disparity reflects socioeconomic limitations but also the absence of national diabetes technology programs. Still, promising trends exist:

- Younger endocrinologists in Egypt are more confident with CGM.
- Private sector innovation (Abbott Libre, Dexcom G7, Linex) is gradually expanding.
- Ramadan fasting studies demonstrate unique local relevance.

Key future directions include policy action: partial reimbursement for children with type 1 diabetes or high-risk patients. Also, education programs: CGM workshops for endocrinologists, diabetologists, and educators are needed. Local guidelines: Egyptian Diabetes Association should adapt global CGM guidance to local context need to be developed & finally, more research expansion prospective Egyptian studies required to document outcomes.

Limitations of this review:

1. Few published Egyptian studies; reliance on expert experience.
2. Lack of national registry data.
3. Narrative methodology, not systematic.

Conclusion

CGM in Egypt is available but underutilized. Small-scale studies confirm its benefits in HbA1c reduction, hypoglycemia prevention, and Ramadan safety. However, economic barriers, lack of reimbursement, and limited education hinder widespread adoption. National strategies are urgently needed to support broader CGM use, especially in type 1 diabetes, pediatric patients, and those fasting during Ramadan. With proper investment, CGM could transform diabetes care in Egypt, aligning the country with global advances.

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