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The Use of Continuous Glucose Monitoring Systems in the Diagnosis and Monitoring of Gestational Diabetes Mellitus and Diabetes in Pregnancy – A Review of the Literature

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Abstract

Background: Gestational diabetes mellitus (GDM) and preexisting diabetes present significant risks to maternal and neonatal health. Continuous glucose monitoring (CGM) has emerged as a valuable tool for optimizing glycemic control during pregnancy, offering real-time data and insights beyond traditional methods.

Objective: This review evaluates the role of CGM in the management and diagnosis of diabetes during pregnancy, focusing on its clinical efficacy, impact on maternal and neonatal outcomes.

Methods: A systematic literature search was conducted, covering studies published between 2017 and 2024. Inclusion criteria targeted studies assessing CGM in pregnant populations with GDM, T1D, or T2D. Data were synthesized to highlight maternal glycemic control metrics, neonatal outcomes, and limitations of CGM use.

Results: CGM, particularly real-time CGM (rt-CGM), significantly improves maternal glycemic control. Enhanced glycemic management has been associated with reduced risks of large-for-gestational-age (LGA) births, macrosomia, and preeclampsia, particularly in women with T1D.

Conclusion: CGM is a transformative tool in managing diabetes during pregnancy, providing critical insights into glycemic trends and enabling personalized care. While its benefits in improving maternal outcomes are clear, further research is needed to ensure equitable access.

Keywords: continuous glucose monitoring, pregnancy, gestational diabetes mellitus, type 1 diabetes, maternal outcomes, neonatal outcomes, and glycemic control

Introduction

Gestational diabetes mellitus (GDM) and preexisting diabetes in pregnancy, including type 1 diabetes (T1D) and type 2 diabetes (T2D), are associated with significant maternal and neonatal risks, including macrosomia, large-for-gestational-age (LGA) infants, neonatal hypoglycemia, preeclampsia, and preterm delivery. Achieving optimal glycemic control during pregnancy is critical to minimizing these risks and ensuring better outcomes for both mother and baby. (Murphy, 2023) However, the physiological changes of pregnancy, including insulin resistance and glucose variability, present unique challenges for effective diabetes management. Traditional methods, such as self-monitoring of blood glucose (SMBG) and oral glucose tolerance testing (OGTT), provide limited data on glycemic trends and fail to capture the dynamic nature of glucose fluctuations, potentially leaving critical hyperglycemic and hypoglycemic episodes undetected. (Di Filippo et al., 2023)

Continuous glucose monitoring (CGM) technology has emerged as a transformative tool in the management of diabetes during pregnancy. CGM provides real-time, continuous tracking of interstitial glucose levels, offering a more comprehensive view of glycemic trends over 24 hours. Key metrics such as time-in-range (TIR), time-above-range (TAR), and glycemic variability offer actionable insights that support personalized interventions. Research has demonstrated that maintaining a TIR of at least 70% within pregnancy-specific glucose targets is associated with reduced rates of adverse outcomes, including LGA births, preterm delivery, and neonatal intensive care unit (NICU) admissions. Moreover, CGM has shown potential as a diagnostic adjunct, detecting glycemic abnormalities in women who exhibit normal OGTT results, enabling earlier detection and tailored management. (Tartaglione et al., 2021)

Advancements in CGM, including real-time CGM (rt-CGM) and integration with hybrid closed-loop insulin delivery systems, have further enhanced its efficacy, particularly for women with T1D. (Jeeyavudeen et al., 2024) Studies highlight rt-CGM’s ability to improve HbA1c levels, increase TIR, and reduce TAR, leading to fewer LGA births and other neonatal complications. Additionally, CGM's potential extends to women with GDM and T2D, offering superior glucose control compared to SMBG, improved management of gestational weight gain (GWG), and reduced rates of macrosomia. Despite these advantages, barriers such as cost,

accessibility, and limited adoption in certain populations continue to pose challenges to its widespread use.

Furthermore, its potential cost-effectiveness, driven by decreased rates of maternal and newborn complications such as cesarean deliveries, neonatal intensive care unit (NICU) admissions, and long-term health issues, opens a space for important discussions on integrating continuous glucose monitoring into standard prenatal care as a financially and clinically viable strategy. (Levy et al. 2023)

This review aims to examine the role of CGM in the diagnosis, monitoring, and management of diabetes during pregnancy, with a focus on its clinical efficacy, impact on maternal and neonatal outcomes, and potential integration into standard prenatal care. By synthesizing recent evidence, the review underscores the transformative potential of CGM in addressing gaps in traditional diabetes care during pregnancy, advocating for broader adoption to reduce healthcare disparities and improve outcomes for women with diabetes and their offspring.

Methodes

This review was conducted to analyze the role of continuous glucose monitoring (CGM) in pregnancy, focusing on its efficacy, challenges, and outcomes in managing diabetes. A comprehensive literature search was performed using the PubMed database to identify relevant studies published between 2017 and 2024 with the emphasis on studies published after 2020. Keywords included "continuous glucose monitoring," "pregnancy," "gestational diabetes mellitus," "type 1 diabetes","maternal outcomes," "neonatal outcomes," and "glycemic control."

Inclusion criteria encompassed studies that evaluated the use of CGM or its variations, such as real-time CGM (rt-CGM) and intermittently scanned CGM (isCGM), in pregnant populations with gestational diabetes mellitus (GDM), type 1 diabetes (T1D), or type 2 diabetes (T2D). Various range of studies including observational studies, control trials and data analysis were included. Data extraction focused on participant characteristics, CGM type, metrics reported (e.g., time-in-range, time-above-range), maternal and neonatal outcomes (e.g., large-for-gestational-age births, macrosomia, neonatal hypoglycemia), and limitations of CGM use. Analysis included a synthesis of quantitative findings and qualitative insights, identifying recurring themes and gaps in the existing literature.

The methodological approach ensured a thorough evaluation of CGM's role in improving diabetes management during pregnancy, facilitating evidence-based recommendations and identifying areas requiring further research.

Results

Impact of CGM on Glycemic Control and Neonatal Outcomes

Continuous glucose monitoring (CGM) has revolutionized diabetes management in high-risk pregnancies, playing a vital role in achieving pregnancy-specific glucose targets and improving outcomes for both mother and baby. Maintaining a time-in-range (TIR) of 63–140 mg/dL for at least 70% of the time has been associated with significantly reduced risks of large-for-gestational-age (LGA) births, macrosomia, neonatal hypoglycemia, and other complications (Murphy, 2023). Key CGM metrics such as time above range (TAR), mean blood glucose (MBG), area under the curve (AUC), and mean amplitude of glycemic excursions (MAGE) provide critical insights into glycemic variability, allowing for targeted interventions. For instance, elevated MBG and TAR indicate prolonged hyperglycemia, which contributes to obstetrical complications, underscoring the advantage of CGM over traditional self-monitoring methods in detecting subtle glycemic fluctuations (Xinxiu Liang et al., 2023).

CGM, especially real-time CGM (rt-CGM), has shown particular efficacy in pregnancies complicated by type 1 diabetes (T1D). It has been linked to lower HbA1c levels, increased TIR, and reduced TAR, which collectively lead to better neonatal outcomes, including fewer LGA births and neonatal intensive care unit (NICU) admissions (Yoo et al., 2023). A randomized trial by Feig et al. (2017) demonstrated that CGM use in pregnant women with T1D significantly improved glycemic control and neonatal health, while other studies report reduced rates of neonatal hypoglycemia (Murphy, 2019). Evidence suggests that even modest improvements in TIR can lead to meaningful neonatal health benefits. Structured weekly CGM targets and maintaining early pregnancy MBG ≤7 mmol/L have been associated with reduced risks of preterm delivery and neonatal complications such as transient breathing disorders (Scott et al., 2022; Sibiak et al., 2023).

In pregnancies affected by gestational diabetes mellitus (GDM) and type 2 diabetes (T2D), rt-CGM has been shown to outperform self-monitoring of blood glucose (SMBG) in glucose control, gestational weight gain (GWG) management, and reduction of excessive fetal growth,

including lower average birth weights (Lai et al., 2023). CGM's real-time data capabilities enable healthcare providers to design personalized interventions, improving maternal health while addressing risks like macrosomia and preeclampsia (Levy et al., 2023). Notably, advanced techniques such as Functional Data Analysis (FDA) have linked early sustained hyperglycemia to LGA outcomes, emphasizing the importance of timely interventions (Scott et al., 2020).

CGM has also shown promise in detecting glycemic abnormalities in women with GDM who present normal oral glucose tolerance test (OGTT) results. In one study, abnormal glycemic patterns detected via CGM in 33 out of 53 women led to timely dietary or insulin adjustments, highlighting CGM's utility in complementing traditional diagnostic tools, though without significant differences in neonatal outcomes (Tartaglione et al., 2021). Integration with hybrid closed-loop insulin delivery systems especially enhances CGM's efficacy, particularly in T1D pregnancies, by optimizing TIR and reducing neonatal complications, such as hypoglycemia (Jeeyavudeen et al., 2024).

Despite these benefits, CGM adoption faces barriers, including cost and accessibility, which limit its availability, especially in underserved populations. Advocates emphasize the need for expanded access and incorporation into standard prenatal care protocols. The UK National Institute for Health and Clinical Excellence (NICE) has taken a progressive step by recommending government-funded rt-CGM access for all pregnant women with T1D, recognizing its essential role in optimizing maternal glycemia and neonatal health (Yamamoto and Murphy, 2021).

Feasibility, Acceptance, and Diagnostic Potential of CGM in GDM

The Freestyle Libre Pro continuous glucose monitoring (CGM) system has demonstrated high feasibility and acceptability as an alternative to the oral glucose tolerance test (OGTT) for gestational diabetes mellitus (GDM) screening. Participants appreciated the convenience, minimal invasiveness, and comfort of CGM, addressing common concerns associated with the discomfort of the OGTT. CGM metrics such as mean glucose levels, glycemic variability, and time in range (TIR) showed significant correlations with OGTT results, further supporting CGM's potential as a diagnostic tool. Moreover, CGM provided valuable insights into glucose fluctuations, revealing postprandial spikes and nocturnal trends, and identified abnormal patterns in some participants who had normal OGTT results. This suggests that CGM could

detect cases of GDM that might otherwise go undiagnosed, enabling earlier detection and personalized management. (Di Filippo et al., 2023), (Song et al., 2023) The real-time data captured by CGM provided detailed glycemic profiles that were often missed by traditional methods like fasting plasma glucose and OGTT. While time-in-range (TIR) metrics were similar between the CGM and SMBG (self-monitoring of blood glucose) groups, CGM detected more frequent low glucose episodes and fewer high glucose episodes. These findings suggest that CGM may be particularly useful in detecting glycemic variability, such as hypoglycemia, which could influence management strategies. (O'Malley et al., 2023) Participants valued CGM's minimally intrusive nature and real-time glucose feedback, which empowered them to better manage their health during pregnancy. Satisfaction of participants was generally high. (Kusinski et al., 2023) A comparative study of CGM and OGTT for GDM diagnosis found that women overwhelmingly preferred CGM for its minimal disruption to daily life and higher overall satisfaction. A significant majority of participants (81%) rated CGM as highly acceptable, compared to only 27% for OGTT. (Di Filippo et al., 2024) Also the Dexcom G7 CGM system demonstrated high accuracy and safety in managing diabetes during pregnancy. The system performed comparably to its use in non-pregnant individuals, highlighting its reliability for pregnant women with diabetes, including those with type 1, type 2, and GDM. The Dexcom G7 was well tolerated with minimal adverse effects reported, reinforcing its potential as a user-friendly and precise tool for pregnancy care. (Polsky et al., 2024) These findings highlight CGM's potential to improve compliance, revolutionize GDM diagnostics, and contribute to better maternal and fetal outcomes.

The Economic Impact of CGM in Gestational Diabetes Management

Although the costs of continuous glucose monitoring (CGM) are higher compared to traditional glucose monitoring, additional factors must be considered when evaluating its overall value. The introduction of CGM for the management of gestational diabetes mellitus (GDM) has the potential to significantly reduce healthcare expenditures by lowering the incidence of cesarean sections, neonatal intensive care unit (NICU) admissions, and other complications associated with poor glycemic control. In a study by Levy et al. (2023) analyzing costs within the United States healthcare system, the authors calculated that a modest 5% reduction in cesarean deliveries and NICU admissions could lead to substantial cost savings, highlighting the economic benefits of improved glycemic management.

CGM has demonstrated efficacy in mitigating risks such as macrosomia, preeclampsia, and neonatal hypoglycemia, which are the major contributors to maternal and neonatal morbidity and associated healthcare expenses. By enabling real-time glucose monitoring and improving adherence to glycemic targets, CGM empowers patients and clinicians to take proactive measures, potentially avoiding costly interventions and long-term complications. While the initial costs of CGM may be higher than traditional blood glucose monitoring, the downstream savings from reduced surgical deliveries, shorter NICU stays, and improved maternal-neonatal outcomes present a noteworthy cost-benefit advantage.

Despite the well-documented positive effects of CGM on maternal and newborn health, further research is needed to evaluate the balance between CGM's financial costs and the savings from reduced complications and additional procedures. This will help assess CGM's role as a cost-effective option in managing GDM

Discussion

The findings of this review highlight the transformative role of continuous glucose monitoring (CGM) in optimizing maternal glycemic control during pregnancy, particularly in women with type 1 diabetes (T1D), type 2 diabetes (T2D), and gestational diabetes mellitus (GDM). One of the strengths of CGM is its ability to provide continuous, real-time insights into glycemic variability, enabling personalized interventions that are crucial for maintaining time-in-range (TIR) and minimizing time-above-range (TAR). Perea et al. (2022) reported that intermittently scanned CGM (isCGM) led to initial improvements in TIR among pregnant women with T1D using multiple daily insulin injections, further demonstrating CGM's efficacy in short-term glycemic management. However, these benefits were not sustained throughout pregnancy, raising concerns about the consistency of CGM's effectiveness.

Despite its advantages, limitations persist. The GlucoMOMS study (Voormolen et al., 2018) found no significant reductions in macrosomia or other adverse neonatal outcomes with CGM use compared to standard care, even though maternal glycemic control improved. Similarly, Perea et al. (2022) observed a higher incidence of neonatal hypoglycemia in infants born to isCGM users, suggesting potential areas where CGM usage could be optimized. These findings highlight the need for further investigation into the mechanisms underlying these outcomes.

Moreover, discrepancies between maternal glycemic control and neonatal outcomes may indicate the influence of other factors, such as placental function or maternal metabolic adaptations, which CGM alone cannot address. The lack of sustained improvements in glycemic control with isCGM also points to the need for evaluating long-term adherence, the effectiveness of associated interventions, and integration with advanced insulin delivery systems, such as hybrid closed-loop technologies.

Future research should focus on addressing these gaps. Large-scale, randomized controlled trials are needed to assess the long-term impact of various CGM modalities—real-time CGM (rt-CGM), isCGM, and retrospective CGM—on both maternal and neonatal outcomes. Investigations into combining CGM with advanced analytics, such as functional data analysis, may offer insights into patterns that influence neonatal health. Additionally, studies evaluating accessibility, and integration of CGM into routine prenatal care will be vital in expanding its adoption. A more detailed study evaluating the cost-effectiveness of broader implementation of continuous glucose monitoring systems is essential to fully assess their potential as a valuable tool for healthcare.

Conclusion

CGM, particularly rt-CGM, has become an indispensable tool in managing pregnancies complicated by diabetes.This review underscores the pivotal role of continuous glucose monitoring (CGM) in managing diabetes during pregnancy, particularly in achieving pregnancy-specific glycemic targets and improving maternal outcomes. CGM, especially real-time CGM (rt-CGM), has demonstrated significant benefits in optimizing glycemic control, as evidenced by improved metrics such as time-in-range (TIR), time-above-range (TAR), and mean blood glucose (MBG). These improvements are critical for reducing maternal risks, such as preeclampsia and excessive gestational weight gain, and for mitigating long-term metabolic complications.

However, while studies like Feig et al. (2017) report improved neonatal health with CGM, others, including Voormolen et al. (2018) and Perea et al. (2022), highlight challenges such as inconsistent neonatal benefits and elevated risks of neonatal hypoglycemia in certain cases. These discrepancies emphasize the complexity of maternal-fetal glycemic dynamics and the influence of additional factors beyond glucose control.

The integration of CGM with advanced technologies, such as hybrid closed-loop insulin delivery systems, shows promise in addressing some of these limitations. Furthermore, CGM's potential to enhance GDM screening and detect subtle glycemic abnormalities, even in women with normal oral glucose tolerance test (OGTT) results, reinforces its utility as a diagnostic and monitoring tool. However, barriers such as cost, accessibility, and patient adherence remain significant challenges.

Beyond clinical benefits, CGM has shown potential for partial cost savings in maternal healthcare. Studies, such as Levy et al. (2023), estimate that even a modest 5% reduction in cesarean sections and NICU admissions achieved through improved glycemic management with CGM could lead to significant healthcare savings. Additionally, CGM has been effective in mitigating complications like macrosomia, neonatal hypoglycemia, and preeclampsia, which are major contributors to maternal and neonatal morbidity and associated healthcare expenses. While initial CGM costs are higher than traditional blood glucose monitoring, these expenses could be potentially reduced by lower rates of surgical deliveries, shorter NICU stays, and improved maternal-neonatal outcomes.

Future efforts should focus on refining CGM technologies to improve consistency in glycemic management across all trimesters and on exploring innovative intervention strategies that address both maternal and neonatal outcomes. Large-scale trials and cost-effectiveness analyses are essential for guiding policy changes that support equitable access to CGM in prenatal care.

In conclusion, while CGM has undoubtedly revolutionized diabetes management during pregnancy, its full potential in optimizing maternal and neonatal health outcomes requires further exploration. Enhanced research, broader accessibility, and integration into routine care will be critical in ensuring that CGM becomes a standard tool for improving the health of mothers and their children.

Disclosure

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References:

1. Di Filippo D, Darling J, Chang MHY, Henry A, Welsh A. Oral glucose tolerance test and continuous glucose monitoring for gestational diabetes diagnosis: a survey study of women and health care professionals. Arch Gynecol Obstet. 2024 Feb;309(2):483-489. doi:

10.1007/s00404-023-06949-2. Epub 2023 Feb 5. PMID: 36739593; PMCID: PMC9899442. https://pmc.ncbi.nlm.nih.gov/articles/PMC9899442/

2. Di Filippo D, Henry A, Bell C, Haynes S, Chang MHY, Darling J, Welsh A. A new continuous glucose monitor for the diagnosis of gestational diabetes mellitus: a pilot study. BMC Pregnancy Childbirth. 2023 Mar 18;23(1):186. doi: 10.1186/s12884-023-05496-7. PMID: 36932353; PMCID: PMC10023314. https://pmc.ncbi.nlm.nih.gov/articles/PMC10023314/

3. Feig DS, Donovan LE, Corcoy R, Murphy KE, Amiel SA, Hunt KF, Asztalos E, Barrett JFR, Sanchez JJ, de Leiva A, Hod M, Jovanovic L, Keely E, McManus R, Hutton EK, Meek CL, Stewart ZA, Wysocki T, O'Brien R, Ruedy K, Kollman C, Tomlinson G, Murphy HR; CONCEPTT Collaborative Group. Continuous glucose monitoring in pregnant women with type 1 diabetes (CONCEPTT): a multicentre international randomised controlled trial. Lancet. 2017 Nov 25;390(10110):2347-2359. doi: 10.1016/S0140-6736(17)32400-5. Epub 2017 Sep 15. Erratum in: Lancet. 2017 Nov 25;390(10110):2346. doi: 10.1016/S0140-6736(17)32712-5. PMID: 28923465; PMCID: PMC5713979. https://pmc.ncbi.nlm.nih.gov/articles/PMC5713979/

4. Jeeyavudeen MS, Crosby M, Pappachan JM. Continuous glucose monitoring metrics in pregnancy with type 1 diabetes mellitus. World J Methodol. 2024 Mar 20;14(1):90316. doi: 10.5662/wjm.v14.i1.90316. PMID: 38577196; PMCID: PMC10989406. https://pmc.ncbi.nlm.nih.gov/articles/PMC10989406/

5. Kusinski LC, Brown J, Hughes DJ, Meek CL. Feasibility and acceptability of continuous glucose monitoring in pregnancy for the diagnosis of gestational diabetes: A single-centre prospective mixed methods study. PLoS One. 2023 Sep 27;18(9):e0292094. doi: 10.1371/journal.pone.0292094. PMID: 37756288; PMCID: PMC10529558. https://pmc.ncbi.nlm.nih.gov/articles/PMC10529558/

6. Lai M, Weng J, Yang J, Gong Y, Fang F, Li N, Kang M, Xu X, Wang Y. Effect of continuous glucose monitoring compared with self-monitoring of blood glucose in gestational diabetes patients with HbA1c<6%: a randomized controlled trial. Front Endocrinol (Lausanne). 2023 Apr 19;14:1174239. doi: 10.3389/fendo.2023.1174239. PMID: 37152928; PMCID: PMC10155499.

https://pmc.ncbi.nlm.nih.gov/articles/PMC10155499/

7. Levy CJ, Galindo RJ, Parkin CG, Gillis J, Argento NB. All Children Deserve to Be Safe, Mothers Too: Evidence and Rationale Supporting Continuous Glucose Monitoring Use in

Gestational Diabetes Within the Medicaid Population. J Diabetes Sci Technol. 2024 Sep;18(5):1198-1207. doi: 10.1177/19322968231161317. Epub 2023 Mar 15. PMID: 36919680; PMCID: PMC11418457. https://pmc.ncbi.nlm.nih.gov/articles/PMC11418457/

8. Liang X, Fu Y, Lu S, Shuai M, Miao Z, Gou W, Shen L, Liang Y, Xu F, Tian Y, Wang J, Zhang K, Xiao C, Jiang Z, Shi MQ, Wu YY, Wang XH, Hu WS, Zheng JS. Continuous glucose monitoring-derived glycemic metrics and adverse pregnancy outcomes among women with gestational diabetes: a prospective cohort study. Lancet Reg Health West Pac. 2023 Jun 12;39:100823. doi: 10.1016/j.lanwpc.2023.100823. PMID: 37927990; PMCID: PMC10625020.
https://pmc.ncbi.nlm.nih.gov/articles/PMC10625020/

9. Murphy HR. Continuous glucose monitoring targets in type 1 diabetes pregnancy: every 5% time in range matters. Diabetologia. 2019 Jul;62(7):1123-1128. doi: 10.1007/s00125-019-4904-3. Epub 2019 Jun 3. PMID: 31161344; PMCID: PMC6560014. https://pmc.ncbi.nlm.nih.gov/articles/PMC6560014/

10. Murphy HR. Roadmap to the Effective Use of Continuous Glucose Monitoring in Pregnancy. Diabetes Spectr. 2023 Fall;36(4):315-319. doi: 10.2337/dsi23-0004. Epub 2023 Nov 15. PMID: 37982059; PMCID: PMC10654120. https://pmc.ncbi.nlm.nih.gov/articles/PMC10654120/

11. O'Malley G, Arumugam D, Ogyaadu S, Levister C, Nosova E, Vieira L, Levy CJ. Pilot Study for Use of Intermittently Scanned Continuous Glucose Monitoring in Women with Gestational Diabetes. J Diabetes Sci Technol. 2023 Jan;17(1):259-261. doi: 10.1177/19322968221134544. Epub 2022 Nov 2. PMID: 36321571; PMCID: PMC9846409. https://pmc.ncbi.nlm.nih.gov/articles/PMC9846409/

12. Perea V, Picón MJ, Megia A, Goya M, Wägner AM, Vega B, Seguí N, Montañez MD, Vinagre I. Addition of intermittently scanned continuous glucose monitoring to standard care in a cohort of pregnant women with type 1 diabetes: effect on glycaemic control and pregnancy outcomes. Diabetologia. 2022 Aug;65(8):1302-1314. doi: 10.1007/s00125-022-05717-2. Epub 2022 May 12. PMID: 35546211. https://pubmed.ncbi.nlm.nih.gov/35546211/

13. Polsky S, Valent AM, Isganaitis E, Castorino K, O'Malley G, Beck SE, Gao P, Laffel LM, Brown FM, Levy CJ. Performance of the Dexcom G7 Continuous Glucose Monitoring System in Pregnant Women with Diabetes. Diabetes Technol Ther. 2024 May;26(5):307-312.

doi: 10.1089/dia.2023.0516. Epub 2024 Mar 1. PMID: 38315503; PMCID: PMC11058415. https://pmc.ncbi.nlm.nih.gov/articles/PMC11058415/

14. Scott EM, Feig DS, Murphy HR, Law GR; CONCEPTT Collaborative Group. Continuous Glucose Monitoring in Pregnancy: Importance of Analyzing Temporal Profiles to Understand Clinical Outcomes. Diabetes Care. 2020 Jun;43(6):1178-1184. doi: 10.2337/dc19-2527. Epub 2020 Mar 24. PMID: 32209645; PMCID: PMC7245356. https://pmc.ncbi.nlm.nih.gov/articles/PMC7245356/

15. Scott EM, Murphy HR, Kristensen KH, Feig DS, Kjölhede K, Englund-Ögge L, Berntorp KE, Law GR. Continuous Glucose Monitoring Metrics and Birth Weight: Informing Management of Type 1 Diabetes Throughout Pregnancy. Diabetes Care. 2022 Aug 1;45(8):1724-1734. doi: 10.2337/dc22-0078. PMID: 35696191. https://pubmed.ncbi.nlm.nih.gov/35696191/

16. Sibiak R, Mantaj U, Gutaj P, Zozulińska-Ziółkiewicz D, Wender-Ozegowska E. Continuous glucose monitoring parameters in pregnancy-related complications in patients with type 1 diabetes: a retrospective cohort study. Pol Arch Intern Med. 2023 Nov 29;133(11):16501. doi: 10.20452/pamw.16501. Epub 2023 May 22. PMID: 37227218. https://pubmed.ncbi.nlm.nih.gov/37227218/

17. Song Y, Zhai X, Bai Y, Liu C, Zhang L. Progress and indication for use of continuous glucose monitoring in patients with diabetes in pregnancy: a review. Front Endocrinol (Lausanne). 2023 Aug 23;14:1218602. doi: 10.3389/fendo.2023.1218602. PMID: 37680884; PMCID: PMC10482265. https://pmc.ncbi.nlm.nih.gov/articles/PMC10482265/

18. Tartaglione L, di Stasio E, Sirico A, Di Leo M, Caputo S, Rizzi A, Caneschi A, De Carolis S, Pitocco D, Lanzone A. Continuous Glucose Monitoring in Women with Normal OGTT in Pregnancy. J Diabetes Res. 2021 Aug 23;2021:9987646. doi: 10.1155/2021/9987646. PMID: 34476261; PMCID: PMC8408006. https://pmc.ncbi.nlm.nih.gov/articles/PMC8408006/

19. Voormolen DN, DeVries JH, Sanson RME, Heringa MP, de Valk HW, Kok M, van Loon AJ, Hoogenberg K, Bekedam DJ, Brouwer TCB, Porath M, Erdtsieck RJ, NijBijvank B, Kip H, van der Heijden OWH, Elving LD, Hermsen BB, Potter van Loon BJ, Rijnders RJP, Jansen HJ, Langenveld J, Akerboom BMC, Kiewiet RM, Naaktgeboren CA, Mol BWJ, Franx A, Evers IM. Continuous glucose monitoring during diabetic pregnancy (GlucoMOMS): A multicentre randomized controlled trial. Diabetes Obes Metab. 2018 Aug;20(8):1894-1902.

doi: 10.1111/dom.13310. Epub 2018 May 8. PMID: 29603547. https://pubmed.ncbi.nlm.nih.gov/29603547/

20. Yamamoto JM, Murphy HR. Benefits of Real-Time Continuous Glucose Monitoring in Pregnancy. Diabetes Technol Ther. 2021 Mar;23(S1):S8-S14. doi: 10.1089/dia.2020.0667. PMID: 33512267; PMCID: PMC7957373. https://pmc.ncbi.nlm.nih.gov/articles/PMC7957373/

21. Yoo JH, Kim JH. The Benefits Of Continuous Glucose Monitoring In Pregnancy. Endocrinol Metab (Seoul). 2023 Oct;38(5):472-481. doi: 10.3803/EnM.2023.1805. Epub 2023 Oct 11. PMID: 37821081; PMCID: PMC10613771. https://pmc.ncbi.nlm.nih.gov/articles/PMC10613771/