PE-081

Revisão sistemática de estudos de avaliação econômica envolvendo dispositivos para mensuração de glicose utilizados por pacientes diabéticos relacionando ao contexto brasileiro

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Introdução: O diabetes mellitus (DM) é uma patologia de prevalência crescente mundialmente, com altos impactos sociais e econômicos. O automonitoramento de glicose é fundamental para o controle do DM e prevenção de complicações e este, usualmente, é realizado através de glicosímetros. No entanto, o desenvolvimento tecnológico de monitores contínuos menos invasivos levanta questões sobre custo-efetividade e impacto orçamentário nos sistemas de saúde. **Objetivo**: Sintetizar evidências de avaliações econômicas em saúde (AES) e avaliações de impacto orçamentário (AIO) que comparam monitores de glicose contínuo (MCG) e/ou flash (MFG) aos glicosímetros (AMG), utilizados no autocuidado de pacientes diabéticos, relacionando ao cenário brasileiro. **Material e Método:** Realizamos uma revisão sistemática de estudos primários com resultados de AES completas, comparando dispositivos de monitoramento da glicose no DM, sem restrições quanto a idade, sexo, condições de base ou comorbidades dos pacientes ou idioma. Os desfechos considerados foram custo-efetividade, custo-utilidade e impacto orçamentário, seguindo as diretrizes do Preferred Reporting Items for Systematic Reviews and Meta-Analyses, 2020 (PRISMA). A seleção e avaliação dos estudos foi conduzida por dois pesquisadores independentes e, para avaliar a qualidade, foi utilizado o instrumento Consolidated Health Economic Evaluation Reporting Standards, 2022 (CHEERS). Divergências foram resolvidas por um terceiro pesquisador. Os dados extraídos foram organizados em uma planilha com informações sobre: tipo de DM, métodos, perspectivas econômicas, comparadores, intervenções, horizonte temporal, e resultados financeiros, incluindo relação custo-efetividade incremental, relação custo-utilidade incremental e impacto orçamentário. **Resultados**: Foram incluídos 18 AES e 5 AIO. Entre os estudos de AES, 14 (77,78%) focaram na análise de custo-utilidade, enquanto 3 (16,66%) exploraram a custo-efetividade, 1 estudo abordou ambas as análises. A maioria dos estudos (94,44%) foi realizada em países desenvolvidos, avaliando a implementação de MCG ou MFG. Doze estudos (66,67%) concentraram-se em pacientes com DM1, com 10 estudos (55,56%) utilizaram o MCG como intervenção principal. O AMG foi utilizado como controle em 17 estudos (94,44%). Em 17 estudos, concluíram que MCG e/ou MFG seriam mais custo-efetivos que o AMG. Nos estudos de AIO, 80% foram financiados pela indústria e todos relataram a existência de conflitos de interesse; 60% dos estudos de AIO foram realizados com pacientes com DM1 e todos indicaram que a introdução de MCG e MFG teria um impacto orçamentário positivo em comparação com o AMG. **Conclusões**: A extrapolação dos resultados, considerando o câmbio de agosto de 2024, sugere que nestes cenários, MCG e MFG não seriam custo-efetivos para o Sistema Único de Saúde no Brasil, dado o limiar de R$40.000,00. Apesar da diversidade metodológica, de resultados e dos potenciais vieses, esta revisão sistemática identifica ferramentas valiosas para a realização de AES e AIO no contexto brasileiro.

Palavras-chaves: Diabetes mellitus; Avaliação Econômica em Saúde; Impacto Orçamentário em Saúde; Monitoramento; Automonitoramento; Glicose.

Referências Bibliográficas

1. Chaugule S, Graham C. Cost-effectiveness of G5 Mobile continuous glucose monitoring device compared to self-monitoring of blood glucose alone for people with type 1 diabetes from the Canadian societal perspective. J Med Econ. 2017; 20: 1128–1135.
2. Fonda SJ, Graham C, Munakata J, et al. The Cost-Effectiveness of Real-Time Continuous Glucose Monitoring (RT-CGM) in Type 2 Diabetes. J Diabetes Sci Technol. 2016; 10: 898–904.
3. García-Lorenzo B, Rivero-Santana A, Vallejo-Torres L, et al. Cost-effectiveness analysis of real-time continuous monitoring glucose compared to self-monitoring of blood glucose for diabetes mellitus in Spain. J Eval Clin Pract. 2018; 24: 772–781.
4. Huang ES, O'Grady M, Basu A, et al. The cost-effectiveness of continuous glucose monitoring in type 1 diabetes. Diabetes Care. 2010; 33: 1269–1274.
5. McQueen RB, Ellis SL, Campbell JD, et al. Cost-effectiveness of continuous glucose monitoring and intensive insulin therapy for type 1 diabetes. Cost Eff Resour Alloc; 9. Epub ahead of print. 2011. DOI: 10.1186/1478-7547-9-13.
6. Roze S, Isitt J, Smith-Palmer J, et al. Long-term Cost-Effectiveness of Dexcom G6 Real-time Continuous Glucose Monitoring Versus Self-Monitoring of Blood Glucose in Patients With Type 1 Diabetes in the U.K. Diabetes Care. 2020; 43: 2411–2417.
7. Roze S, Isitt JJ, Smith-Palmer J, et al. Evaluation of the long-term cost-effectiveness of the dexcom g6 continuous glucose monitor versus self-monitoring of blood glucose in people with type 1 diabetes in canada. Clin Outcomes Res. 2021; 13: 717–725.
8. Roze S, Isitt JJ, Smith-Palmer J, et al. Long-Term Cost-Effectiveness the Dexcom G6 Real-Time Continuous Glucose Monitoring System Compared with Self-Monitoring of Blood Glucose in People with Type 1 Diabetes in France. Diabetes Ther. 2021; 12: 235–246.

9. Sekhon JK, Graham D, Li I. Continuous glucose monitoring: A cost effective tool to reduce pre-term birth in women with type 1 diabetes. Obstet Med. 2022; 15: 42.
10. Wan W, Skandari MR, Minc A, et al. Cost-effectiveness of Continuous Glucose Monitoring for Adults With Type 1 Diabetes Compared With Self-Monitoring of Blood Glucose: the DIAMOND Randomized Trial. Diabetes Care. 2018; 41: 1227–1234.
11. Bidonde J, Fagerlund BC, Frønsdal KB, et al. FreeStyle Libre Flash Glucose Self-Monitoring System: A Single-Technology Assessment [Internet]. 2017.
12. Bilir SP, Hellmund R, Wehler E, et al. Cost-effectiveness analysis of a flash glucose monitoring system for patients with type 1 diabetes receiving intensive insulin treatment in Sweden. Eur Endocrinol. 2018; 14: 80–85.
13. Gil-Ibáñez MT, Aispuru GR. Cost-effectiveness analysis of glycaemic control of a glucose monitoring system (FreeStyle Libre®) for patients with type 1 diabetes in primary health care of Burgos. Enferm Clin (English Ed). 2020; 30: 82–88.
14. Jendle J, Eeg-Olofsson K, Svensson A-M, et al. Cost-Effectiveness of the FreeStyle Libre® System Versus Blood Glucose Self-Monitoring in Individuals with Type 2 Diabetes on Insulin Treatment in Sweden. Diabetes Ther. 2021; 12: 3137–3152.
15. Zhao X, Ming J, Qu S, et al. Cost-Effectiveness of Flash Glucose Monitoring for the Management of Patients with Type 1 and Patients with Type 2 Diabetes in China. Diabetes Ther. 2021; 12: 3079–3092.
16. Isitt JJ, Roze S, Sharland H, Cogswell G, Alshannaq H, Norman GJ, Lynch PM. Cost-Effectiveness of a Real-Time Continuous Glucose Monitoring System Versus Self-Monitoring of Blood Glucose in People with Type 2 Diabetes on Insulin Therapy in the UK. Diabetes Ther. 2022 Dec;13(11-12):1875-1890. doi: 10.1007/s13300-022-01324-x.
17. Hua X, Catchpool M, Clarke P, et al. Cost-effectiveness of professional-mode flash glucose monitoring in general practice among adults with type 2 diabetes: evidence from the GP-OSMOTIC trial. Diabet Med. 2022; 39: e14747–e14747.
18. Isitt JJ, Roze S, Tilden D, et al. Long-term cost-effectiveness of Dexcom G6 real-time continuous glucose monitoring system in people with type 1 diabetes in Australia. Diabet Med. 2022; 39: e14831–e14831.
19. Rotondi MA, Wong O, Riddell M, et al. Population-Level Impact and Cost-effectiveness of Continuous Glucose Monitoring and Intermittently Scanned Continuous Glucose Monitoring Technologies for Adults With Type 1 Diabetes in Canada: A Modeling Study. Diabetes Care. 2022; 45: 2012–2019.
20. Jendle J, Buompensiere MI, Holm AL, de Portu S, Malkin SJP, Cohen O. The cost-effectiveness of an advanced hybrid closed-loop system in people with type 1 diabetes: a health economic analysis in Sweden. Diabetes Ther. 2021 doi: 10.1007/s13300-021-01157-0
21. Newman SP, Cooke D, Casbard A, et al. A randomised controlled trial to compare minimally invasive glucose monitoring devices with conventional monitoring in the management of insulin-treated diabetes mellitus (MITRE). Health Technol Assess (Rockv). 2009; 13: ix–216.
22.Chaugule S, Graham C. Cost-effectiveness of G5 Mobile continuous glucose monitoring device compared to self-monitoring of blood glucose alone for people with type 1 diabetes from the Canadian societal perspective. J Med Econ 2017; 20: 1128–1135.
23. Fonda SJ, Graham C, Munakata J, et al. The Cost-Effectiveness of Real-Time Continuous Glucose Monitoring (RT-CGM) in Type 2 Diabetes. J Diabetes Sci Technol. 2016; 10: 898–904.
24. García-Lorenzo B, Rivero-Santana A, Vallejo-Torres L, et al. Cost-effectiveness analysis of real-time continuous monitoring glucose compared to self-monitoring of blood glucose for diabetes mellitus in Spain. J Eval Clin Pract. 2018; 24: 772–781.
25. Huang ES, O'Grady M, Basu A, et al. The cost-effectiveness of continuous glucose monitoring in type 1 diabetes. Diabetes Care. 2010; 33: 1269–1274.
26. McQueen RB, Ellis SL, Campbell JD, et al. Cost-effectiveness of continuous glucose monitoring and intensive insulin therapy for type 1 diabetes. Cost Eff Resour Alloc; 9. Epub ahead of print 2011. DOI: 10.1186/1478-7547-9-13.
27. Roze S, Isitt J, Smith-Palmer J, et al. Long-term Cost-Effectiveness of Dexcom G6 Real-time Continuous Glucose Monitoring Versus Self-Monitoring of Blood Glucose in Patients With Type 1 Diabetes in the U.K. Diabetes Care. 2020; 43: 2411–2417.
28. Roze S, Isitt JJ, Smith-Palmer J, et al. Evaluation of the long-term cost-effectiveness of the dexcom g6 continuous glucose monitor versus self-monitoring of blood glucose in people with type 1 diabetes in canada. Clin Outcomes Res. 2021; 13: 717–725.
29. Roze S, Isitt JJ, Smith-Palmer J, et al. Long-Term Cost-Effectiveness the Dexcom G6 Real-Time Continuous Glucose Monitoring System Compared with Self-Monitoring of Blood Glucose in People with Type 1 Diabetes in France. Diabetes Ther. 2021; 12: 235–246.
30. Sekhon JK, Graham D, Li I. Continuous glucose monitoring: A cost effective tool to reduce pre-term birth in women with type 1 diabetes. Obstet Med. 2022; 15: 42.
31. Wan W, Skandari MR, Minc A, et al. Cost-effectiveness of Continuous Glucose Monitoring for Adults With Type 1 Diabetes Compared With Self-Monitoring of Blood Glucose: the DIAMOND Randomized Trial. Diabetes Care. 2018; 41: 1227–1234.
32. Bidonde J, Fagerlund BC, Frønsdal KB, et al. FreeStyle Libre Flash Glucose Self-Monitoring System: A Single-Technology Assessment [Internet]. 2017.
33. Bilir SP, Hellmund R, Wehler E, et al. Cost-effectiveness analysis of a flash glucose monitoring system for patients with type 1 diabetes receiving intensive insulin treatment in Sweden. Eur Endocrinol. 2018; 14: 80–85.
34. Gil-Ibáñez MT, Aispuru GR. Cost-effectiveness analysis of glycaemic control of a glucose monitoring system (FreeStyle Libre®) for patients with type 1 diabetes in primary health care of Burgos. Enferm Clin (English Ed) 2020; 30: 82–88.

35. Jendle J, Eeg-Olofsson K, Svensson A-M, et al. Cost-Effectiveness of the FreeStyle Libre® System Versus Blood Glucose Self-Monitoring in Individuals with Type 2 Diabetes on Insulin Treatment in Sweden. Diabetes Ther. 2021; 12: 3137–3152.
36. Zhao X, Ming J, Qu S, et al. Cost-Effectiveness of Flash Glucose Monitoring for the Management of Patients with Type 1 and Patients with Type 2 Diabetes in China. Diabetes Ther. 2021; 12: 3079–3092.
37. Isitt JJ, Roze S, Sharland H, Cogswell G, Alshannaq H, Norman GJ, Lynch PM. Cost-Effectiveness of a Real-Time Continuous Glucose Monitoring System Versus Self-Monitoring of Blood Glucose in People with Type 2 Diabetes on Insulin Therapy in the UK. Diabetes Ther. 2022 Dec;13(11-12):1875-1890. doi: 10.1007/s13300-022-01324-x.
38. Hua X, Catchpool M, Clarke P, et al. Cost-effectiveness of professional-mode flash glucose monitoring in general practice among adults with type 2 diabetes: evidence from the GP-OSMOTIC trial. Diabet Med. 2022; 39: e14747–e14747.
39. Isitt JJ, Roze S, Tilden D, et al. Long-term cost-effectiveness of Dexcom G6 real-time continuous glucose monitoring system in people with type 1 diabetes in Australia. Diabet Med. 2022; 39: e14831–e14831.
40. Rotondi MA, Wong O, Riddell M, et al. Population-Level Impact and Cost-effectiveness of Continuous Glucose Monitoring and Intermittently Scanned Continuous Glucose Monitoring Technologies for Adults With Type 1 Diabetes in Canada: A Modeling Study. Diabetes Care. 2022; 45: 2012–2019.
41. Jendle J, Buompensiere MI, Holm AL, de Portu S, Malkin SJP, Cohen O. The cost-effectiveness of an advanced hybrid closed-loop system in people with type 1 diabetes: a health economic analysis in Sweden. Diabetes Ther. 2021 doi: 10.1007/s13300-021-01157-0
42. Newman SP, Cooke D, Casbard A, et al. A randomised controlled trial to compare minimally invasive glucose monitoring devices with conventional monitoring in the management of insulin-treated diabetes mellitus (MITRE). Health Technol Assess (Rockv). 2009; 13: ix–216.
43. Brasil. Ministério da Saúde. Secretaria de Ciência, Tecnologia e Insumos Estra-tégicos. Departamento de Ciência e Tecnologia. Diretrizes metodológicas: Dire-triz de Avaliação Econômica / Ministério da Saúde, Secretaria de Ciência, Tecnologia e Insumos Estratégicos, Departamento de Ciência e Tecnologia. – 2. ed.
44. International Diabetes Federation. IDF Diabetes Atlas, 10th edn. Brussels, Belgium: 2021. Disponível em https://www.diabetesatlas.org (Acesso em 01/05/2022).