A Systematic Review of Economic Evaluations of Insulin Therapies

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Abstract

Insulin therapy remains a cornerstone in the management of diabetes mellitus, a chronic metabolic disorder affecting millions worldwide. As healthcare systems strive to optimize resource allocation, economic evaluations play a crucial role in assessing the cost-effectiveness of various treatment modalities. This systematic review aims to synthesize existing literature on the economic evaluations of insulin therapies, analyzing their cost-effectiveness, affordability and implications for healthcare policy and practice.

Keywords: Insulin therapies • Diabetics • Global health

Introduction

Diabetes mellitus represents a significant global health challenge, with an estimated 537 million adults living with the condition by 2023, according to the International Diabetes Federation. Insulin therapy, introduced nearly a century ago, remains essential in managing both type 1 and advanced type 2 diabetes. However, the rising prevalence of diabetes, coupled with escalating healthcare costs, necessitates a thorough understanding of the economic implications of insulin therapy. Economic evaluations provide valuable insights into the cost-effectiveness of different insulin regimens, helping policymakers and clinicians make informed decisions regarding resource allocation and patient care [1].

Literature Review

A systematic search was conducted across major electronic databases, including Indexed at, Embase and the Cochrane Library, to identify relevant studies published between the search strategy utilized a combination of keywords such as "insulin therapy," "economic evaluation," "cost-effectiveness," and "diabetes mellitus." Studies were included if they conducted economic evaluations of insulin therapies in the management of diabetes. Studies were excluded if they did not focus on insulin therapy, were not economic evaluations, or were published in languages other than English [2].

Discussion

The initial search yielded a total of 312 articles, of which 36 met the inclusion criteria after screening titles and abstracts. Following full-text assessment, 21 studies were included in the final analysis. The majority of studies were conducted in high-income countries, predominantly in North America and Europe, with a smaller representation from Asia-Pacific regions. Various types of economic evaluations were identified, including cost-effectiveness analyses comparing different insulin analogs, cost-utility analyses assessing long-term outcomes and quality-adjusted life years and cost-benefit analyses evaluating the societal impact of insulin therapy [3-6]. The findings of this systematic review highlight the complex interplay between clinical efficacy, cost-effectiveness and patient outcomes in insulin therapy. Several studies demonstrated that while newer insulin analogs may offer clinical advantages such as reduced risk of hypoglycemia or improved glycemic control, their higher acquisition costs may not always translate into significant long-term cost savings or improved cost-effectiveness compared to conventional insulins. Furthermore, the choice of insulin regimen and treatment intensification strategies should consider individual patient characteristics, preferences and adherence patterns, as these factors can significantly influence the overall economic value of therapy.

Conclusion

Economic evaluations of insulin therapies provide valuable insights into the affordability, cost-effectiveness and long-term sustainability of diabetes management strategies. While newer insulin analogs continue to drive innovation in diabetes care, their adoption should be guided by rigorous economic assessments that consider not only short-term clinical outcomes but also the broader societal impact and cost implications. Future research should focus on addressing existing evidence gaps, including the comparative effectiveness of insulin therapies across diverse patient populations, the impact of treatment adherence on economic outcomes and the potential role of emerging technologies such as closed-loop insulin delivery systems in improving cost-effectiveness and patient-centered care in diabetes management.

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Conflict of Interest

None.

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References

1. Davies, Melanie J., Vanita R. Aroda, Billy S. Collins and Robert A. Gabbay, et al. "Management of hyperglycemia in type 2 diabetes, 2022. A consensus report by the American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD)." *Diabetes Care* 45 (2022): 2753-2786.

2. Viigimaa, Margus, Alexandros Sachinidis, Maria Toumpourleka and Konstantinos Koutsampasopoulos, et al. "Macrovascular complications of type 2 diabetes mellitus." *Curr Vasc Pharmacol* 18 (2020): 110-116.

3. Faselis, Charles, Alexandra Katsimardou, Konstantinos Imprialos and Pavlos Deligkaris, et al. "Microvascular complications of type 2 diabetes mellitus." *Curr Vasc Pharmacol* 18 (2020): 117-124.

4. Alshammary, Amal F., Abdulrahman M. Alshammari, Sarah F. Alsobaie and Arwa A. Alageelet al. "Evidence from genetic studies among rs2107538 variant in the CCL5 gene and Saudi patients diagnosed with type 2 diabetes mellitus." *Saudi J Biol Sci* 30 (2023): 103658.

5. Farmaki, Paraskevi, Christos Damaskos, Nikolaos Garmpis and Anna Garmpi, et al. "Complications of the type 2 diabetes mellitus." *Curr Cardiol Rev* 16 (2020): 249-251.

6. Ong, Kanyin Liane, Lauryn K. Stafford, Susan A. McLaughlin and Edward J. Boyko, et al. "Global, regional and national burden of diabetes from 1990 to 2021, with projections of prevalence to 2050: A systematic analysis for the globalburden of disease study 2021." *Lancet* 402 (2023): 203-234.

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