

Artificial Intelligence in Endocrinology and Diabetes: Challenges, Opportunities and Future Directions

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Abstract

Artificial Intelligence (AI) is reshaping healthcare by enabling algorithms to learn from complex medical data and assist in clinical decision-making. In endocrinology and diabetes, AI holds promise for predicting disease risk, optimizing glucose control, automating insulin delivery, and screening for complications using patient's clinical data and physiological signals. However, the use of AI also raises concerns about risks such as, demographic bias, domain variability, explainability and fairness-particularly when models trained on Western populations are applied to diverse LMIC settings. This talk will outline key applications and future directions of AI in diabetes and endocrine care, highlighting the integration of multimodal data, emerging foundation models, and ethical challenges. Drawing from the mHealth Lab's work at BUET, examples will demonstrate how locally developed AI tools-such as smartphone-based clinical decision systems and low-cost physiological monitoring platforms-can bridge the gap between cutting-edge algorithms and equitable, real-world healthcare delivery in Bangladesh. [*J Assoc Clin Endocrinol Diabetol Bangladesh, 2025;4(Suppl 1): S3*]

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