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Editorial Letter

Artificial Intelligence as a Care Supporter for Diabetic Patients in Conflicted and Unstable Countries: Iraq as a Model

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Dear Editor-in-Chief,

The World Bank defines fragile and conflict-affected countries as regions experiencing significant institutional and social instability, often accompanied by ongoing violence. The majority of these countries are developing nations located in Asia and Africa, with Iraq being one of the prominent examples [1]. Diabetes mellitus is a highly prevalent health condition in Iraq, and its incidence continues to rise at an alarming rate [2]. Diabetes is associated with numerous complications that adversely affect health, well-being, daily functioning, and quality of life [3]. Furthermore, diabetes places an immense burden on the healthcare system, leading to increased healthcare costs due to the need for specialized treatments, hospitalizations, and medical resources [4]. Unfortunately, healthcare systems in Iraq and all conflict-affected countries often face extraordinary challenges that impede effective disease management and quality patient care. As a result, difficulties in delivering consistent, accessible, and comprehensive healthcare services are common in these countries [1]. Given the serious implications of unmanaged or poorly controlled diabetes, early detection and effective management are critical in preventing the development of life-threatening complications and minimizing the disease's overall impact on individuals and society [5]. Managing diabetes effectively involves a combination of pharmacological therapy—such as insulin or oral medications—and patient self-management practices, including blood sugar monitoring, dietary adjustments, physical activity, and medication adherence. However, these self-care routines often interfere with patients' daily activities and routines, making adherence challenging. Thus, many patients demonstrate limited compliance with their prescribed medications and self-management practices. The primary reason behind this poor adherence is inadequate knowledge about the disease and its management, which is largely due to insufficient patient education provided by healthcare professionals [6]. This issue is particularly prevalent in Iraq [6] and other developing countries, where healthcare systems often lack adequate resources for comprehensive patient education [7]. Additionally, frequent visits to healthcare providers are often difficult for patients. In private healthcare settings, appointments can be costly and inconvenient, while in public clinics, long waiting times and overburdened facilities can delay necessary adjustments in treatment [8,9], especially during episodes of hypoglycemia or hyperglycemia. As a result, timely intervention to correct these complications may be hampered, increasing the risk of adverse outcomes. Given these challenges, there is an urgent need for innovative, accessible approaches that can supplement traditional healthcare services. Recent studies suggest that artificial intelligence (AI) technology has the potential to offer valuable advice and support to diabetic patients, helping them manage their condition more effectively [10]. Consequently, AI-based solutions could improve patient outcomes and ease the strain on healthcare systems in Iraq. Therefore, it is highly recommended to evaluate the actual benefits of employing AI-based solutions in the management of diabetic patients across all countries facing conflict-related challenges.

Keywords: Artificial intelligence, Care supporter, Diabetic patients, Iraq.

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REFERENCES

1. Bogale B, Scambler S, Mohd Khairuddin AN, Gallagher JE. Health system strengthening in fragile and conflict-affected states: A review of systematic reviews. *PLoS One*. 2024;19(6):e0305234. doi: 10.1371/journal.pone.0305234.
2. Abusaib M, Ahmed M, Nwayyir HA, Alidrisi HA, Al-Abbood M, Al-Bayati A, et al. Iraqi experts consensus on the management of type 2 diabetes/prediabetes in adults. *Clin Med Insights Endocrinol Diabetes*. 2020;13:1179551420942232. doi: 10.1177/1179551420942232.
3. Kalra S, Jena BN, Yeravdekar R. Emotional and Psychological Needs of People with Diabetes. *Indian J Endocrinol Metab*. 2018;22(5):696-704. doi: 10.4103/ijem.IJEM_579_17.
4. Alshammari AM, Elnaem MH, Ong SC. Evaluating the economic impact of diabetes mellitus: A hospital-centric cost analysis in Hail, Saudi Arabia. *Clinicoecon Outcomes Res*. 2025;17:473-484. doi:10.2147/CEOR.S521701.
5. Antar SA, Ashour NA, Sharaky M, Khattab M, Ashour NA, Zaid RT, et al. Diabetes mellitus: Classification, mediators, and complications; A gate to identify potential targets for the development of new effective treatments. *Biomed Pharmacother*. 2023;168:115734. doi: 10.1016/j.biopha.2023.115734.
6. Mikhael EM, Hassali MA, Husain SA. Need of self-management education for Iraqi diabetic patients. *J Soc Health Diab*. 2020;8:1–2. doi: 10.1055/s-0040-1715994.
7. Allela OQB, Abdulkareem RA, AL-Mufti L, Kamal N, Qasim S, Sagvan R, et al. Medication adherence among diabetic patients in developing countries: review of studies. *Sys Rev Pharm*. 2020;11(8):270-275.
8. Chona EZ, Kayange LF, Iseselo MK. Barriers and facilitators to satisfaction with diabetes care: The perspectives of patients attending public diabetic clinics in Dar es Salaam, Tanzania. *PLoS One*. 2024;19(5):e0302858. doi: 10.1371/journal.pone.0302858.
9. Mikhael EM, Hassali MA, Hussain SA, Shawky N. Self-management knowledge and practice of type 2 diabetes mellitus patients in Baghdad, Iraq: a qualitative study. *Diabetes Metab Syndr Obes*. 2018;12:1-17. doi: 10.2147/DMSO.S183776.
10. Guan Z, Li H, Liu R, Cai C, Liu Y, Li J, et al. Artificial intelligence in diabetes management: Advancements, opportunities, and challenges. *Cell Rep Med*. 2023;4(10):101213. doi: 10.1016/j.xcrm.2023.101213.