

ORIGINAL ARTICLE

Comparison of Artificial Intelligence and Guidelines in Answering Questions on Gestational Diabetes: a CLEAR Tool Analysis

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SUMMARY

Background: Gestational diabetes mellitus (GDM) affects millions of people worldwide. Patients often turn to the internet and artificial intelligence (AI)-based conversational models for information. The CLEAR tool evaluates the quality of health-related content produced by AI-based models. This study assessed the responses provided by medical guidelines, ChatGPT, and Google Bard to the ten most frequently asked online questions about GDM, utilizing the CLEAR tool for evaluation.

Methods: The most common online questions about GDM were identified using Google Trends, and the top 10 questions were selected. Answers were then gathered from two experienced physicians, ChatGPT 4.0o-mini, and Google Bard, with responses categorized into 'Guide,' 'ChatGPT,' and 'Bard' groups. Answers from the AI models were obtained using two computers and two separate sessions to ensure consistency and minimize bias.

Results: ChatGPT received higher scores than the medical guidelines, while Bard scored lower than ChatGPT. The medical guidelines provided more accessible answers for the general audience, while ChatGPT and Bard required higher literacy levels. Good reliability (0.781) was observed between the two reviewers. Regarding readability, the medical guidelines were the easiest to read, while Bard provided the most challenging text.

Conclusions: ChatGPT and Google Bard perform well in content completeness and relevance but face challenges in readability and misinformation. Future research should improve accuracy and readability, integrate AI with peer-reviewed sources, and ensure healthcare professionals guide patients to reliable AI information.

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Supplementary Data

Table S1. Comparative responses to selected questions.

Question	Source	Response
3. When is the gestational diabetes test performed?	ADA Guideline	The ADA recommends screening for gestational diabetes mellitus (GDM) between 24 and 28 weeks of gestation in pregnant individuals who are not previously known to have diabetes. Earlier screening may be considered in those with risk factors.
3. When is the gestational diabetes test performed?	ChatGPT	The gestational diabetes test is usually done between 24 and 28 weeks of pregnancy. However, if you are at higher risk, your doctor might suggest testing earlier.
3. When is the gestational diabetes test performed?	Bard	Typically, gestational diabetes testing is done between 24 and 28 weeks of pregnancy. If you have risk factors, your doctor may test you earlier.
6. What are the normal ranges for the 1-hour and 2-hour glucose tolerance tests during pregnancy?	ADA Guideline	According to the ADA, in a 75g oral glucose tolerance test (OGTT), the diagnostic thresholds for GDM are: fasting ≥ 92 mg/dL, 1-hour ≥ 180 mg/dL, or 2-hour ≥ 153 mg/dL. Meeting or exceeding any one of these values confirms a diagnosis.
6. What are the normal ranges for the 1-hour and 2-hour glucose tolerance tests during pregnancy?	ChatGPT	For the 75g OGTT, normal values are: fasting less than 92 mg/dL, 1-hour less than 180 mg/dL, and 2-hour less than 153 mg/dL. If any of these are higher, it may indicate gestational diabetes.
6. What are the normal ranges for the 1-hour and 2-hour glucose tolerance tests during pregnancy?	Bard	In the glucose tolerance test, the normal ranges are: fasting below 92 mg/dL, 1-hour under 180 mg/dL, and 2-hour under 153 mg/dL. Higher numbers may mean gestational diabetes.
10. What factors increase the risk of gestational diabetes?	ADA Guideline	Risk factors for GDM include advanced maternal age, obesity, a family history of diabetes, previous GDM or large-for-gestational-age infant, polycystic ovary syndrome (PCOS), and certain ethnic backgrounds.
10. What factors increase the risk of gestational diabetes?	ChatGPT	Risk factors for gestational diabetes include being overweight, older than 25, having a family history of diabetes, PCOS, or a history of GDM or large babies.
10. What factors increase the risk of gestational diabetes?	Bard	Common risk factors include being overweight, over age 25, having a close family member with diabetes, PCOS, or a past history of gestational diabetes.

Table 2. Examples of incorrect or misleading chatbot responses.

Question	Source	Response	Issue/Explanation
2. What are the symptoms of gestational diabetes?	ChatGPT	Gestational diabetes often causes symptoms like increased thirst, frequent urination, and fatigue.	Misleading: GDM is usually asymptomatic and is detected through screening, not symptoms. The symptoms listed are nonspecific and may lead to false reassurance or unnecessary concern.
9. How does gestational diabetes affect the baby?	Bard	Gestational diabetes usually does not cause any problems for the baby.	Incorrect/Minimizing: GDM can lead to serious complications such as macrosomia, neonatal hypoglycemia, and increased risk of future metabolic disease. This response underrepresents clinical risk.