Assessing the Capability of ChatGPT in Interpreting Uroflowmetry studies and developing Clinical Management plans

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INTRODUCTION

Uroflowmetry is a key diagnostic test in assessing and diagnosing lower urinary tract symptoms.

ChatGPT is a large language model that generates human-like text responses based on user prompts, showing potential in healthcare data analysis.

The use of AI has shown promising findings in analyzing urological clinical data.

The study aims to evaluate ChatGPT's ability to interpret uroflowmetry studies and formulate appropriate management plans, comparing its performance to that of expert humans.

METHODS

We conducted a prospective observational study including patients aged 18–85 who underwent uroflowmetry between March and June 2024. **Data Provided to ChatGPT-4o:**
- Demographics & presenting symptoms
- Blinded uroflowmetry printouts
- PVR measured by ultrasound

ChatGPT Analysis Parameters: Flow shape, voided volume, Qmax, flow time, Qavg, time to max flow

**ChatGPT** was prompted to generate a clinical impression and management plan based on the provided data.

The interpretation of uroflowmetry data, clinical impressions, and management plans generated by ChatGPT was compared with those of two expert urologists, and concordance was assessed using percentage agreement, with concordance defined as exact agreement. A third urologist reviewed discordant cases.

Step 1
Write a clear prompt for ChatGPT and ask it to repeat the instructions back to confirm accurate understanding.

Note: *For this step, ask ChatGPT to save the prompt within the chat, enabling repeated analysis is for multiple patients without needing to rewrite the instructions.*
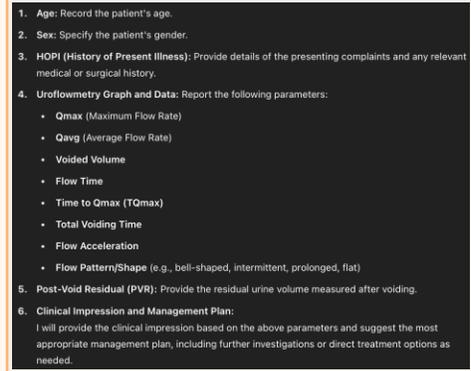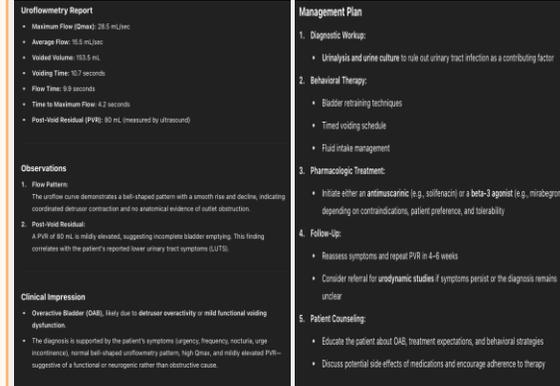
Step 2:
Provide ChatGPT with the data required for analysis.
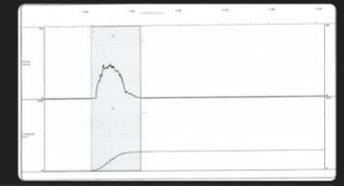
44 Years old, female, chief complaint: LUTS frequency, urgency, nocturia, incomplete bladder emptying, associated with urge incontinence.

Step 3:
Receive and review ChatGPT's analysis, clinical impressions, and management plans based on the provided data.

RESULTS

Data were collected from 100 patients, with the majority being female 60% and a mean age of 38 years.

ChatGPT demonstrated a concordance rate of **94% for the uroflowmetry graph's** shape pattern.

Uroflowmetry parameters, including voided volume, Qmax, flow time, Qavg, and time to maximum flow, showed a concordance rate of 91%.

The concordance rate for the **clinical impressions was 88%,** and for **management plans was 85%.**

Overall concordance, including uroflow shape, uroflow parameters, clinical impressions, and management plans was **89.5%.**

No unsafe management recommendations were identified among ChatGPT's outputs.

CONCLUSIONS

ChatGPT achieved high concordance rates when compared to expert interpretations of uroflowmetry studies, clinical impressions, and management plans.

These findings highlight the potential of AI software to support clinical decision-making in urology and warrant further research to explore its broader applications and integration into clinical workflows.

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DISCLOSURE