DEVELOPMENT AND VALIDATION OF A BARIATRIC SURGERY PROMPT USING LARGE LANGUAGE MODELS FOR SURGICAL EDUCATION

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Background

Large Language Models (LLMs) provide a novel tool for delivering advanced, evidence-based content in surgical education. Given the complexity of bariatric surgery and the need for precise, up-to-date clinical guidelines, there is significant potential to leverage a well-structured prompt integrated with LLMs.

Objectives

This study aimed to design and validate a bariatric surgery prompt capable of generating accurate, clinically relevant, and practice-oriented information for surgeons in training, junior surgeons, and physicians.

Methods

- A structured questionnaire was developed in collaboration with a expert digestive surgeon, addressing eight domains:
  - **FUNDAMENTALS.**
  - **EVALUATION.**
  - **SURGICAL APPROACH.**
  - **PERIOPERATIVE.**
  - **COMPLICATIONS.**
  - **EVIDENCE.**
  - **SPECIAL CONSIDERATIONS.**
  - **INNOVATIONS.**
- Three procedures **Classic Gastric Bypass, Sleeve Gastrectomy, and SADI-S (Single Anastomosis Duodeno-Ileal Bypass with Sleeve Gastrectomy)** were assessed.
- Content was generated using three LLM platforms (one subscription-based and two open-access)
  - **ChatGPT**
  - **DeepSeek**
  - **Qwen**

Methods

- **Five bariatric fellows and five expert bariatric surgeons** evaluated the answers using a six-item Likert 1–5 scale
  - **Accuracy**
  - **Relevance**
  - **Comprehensibility**
  - **Clarity**
  - **Consistency**
  - **Practical utility**
- Descriptive statistics were applied to aggregated scores, and model preferences were recorded.

ChatGPT

deepseek

Qwen

PROMPT

1) OBJECTIVE: To provide an ultra-detailed and comprehensive explanation of [PROCEDURE] in bariatric surgery with specialist precision, based on up-to-date scientific evidence, using a structured extended book chapter format. Response in spanish

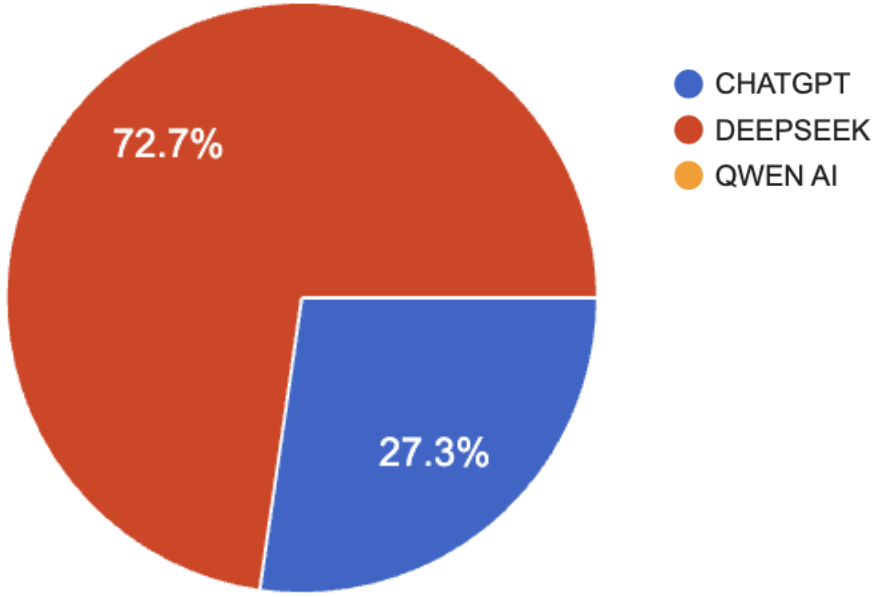
2) CONTEXT: Assume you are an expert bariatric surgeon (20+ years, 5000+ procedures, high-impact publications) familiar with ASMBS/IFSO guidelines. Your explanation should combine solid theory with practical experience, covering both fundamentals and technical details, complications, and management for a resident/fellow.

3) PERSON/TONE: Adopt the role of a tenured professor of bariatric surgery at an elite academic institution. Communicate with precision, clarity, and academic rigor. Use appropriate specialized terminology with a didactic and direct tone, as in an advanced clinical session.

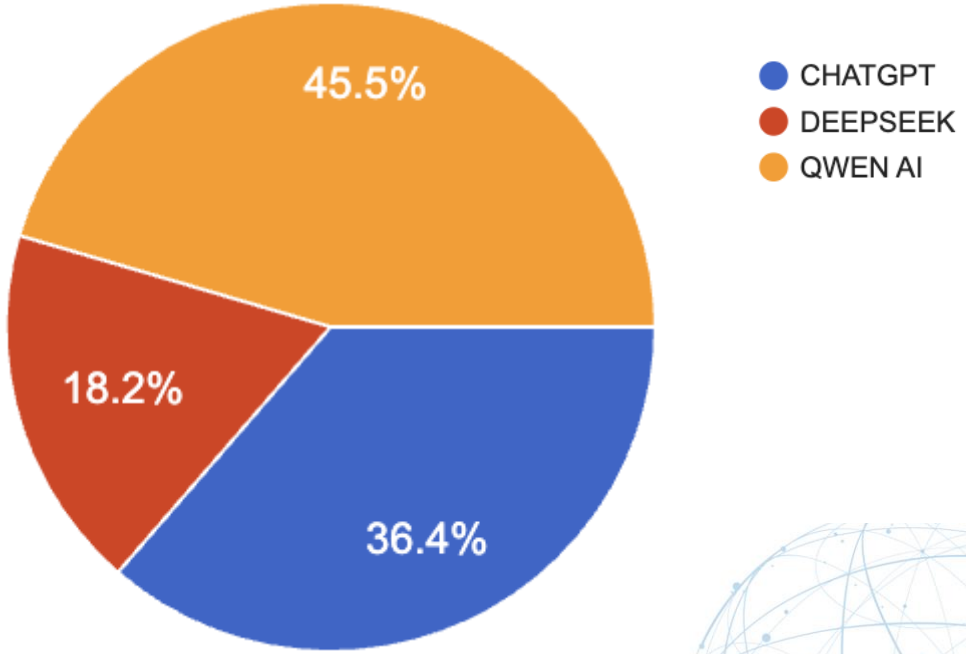
4) FORMAT: You must extract information in an extended and explained book format, strictly adhering to and following the following index: I. FUNDAMENTALS/II. EVALUATION/ III. SURGICAL APPROACH/ IV. PERIOPERATIVE/ V. COMPLICATIONS/ VI. EVIDENCE/ VII. SPECIAL CONSIDERATIONS./ VIII. INNOVATIONS.

Results

Which model seemed the most complete and detailed?



Which of the three models performed the worst?



Results

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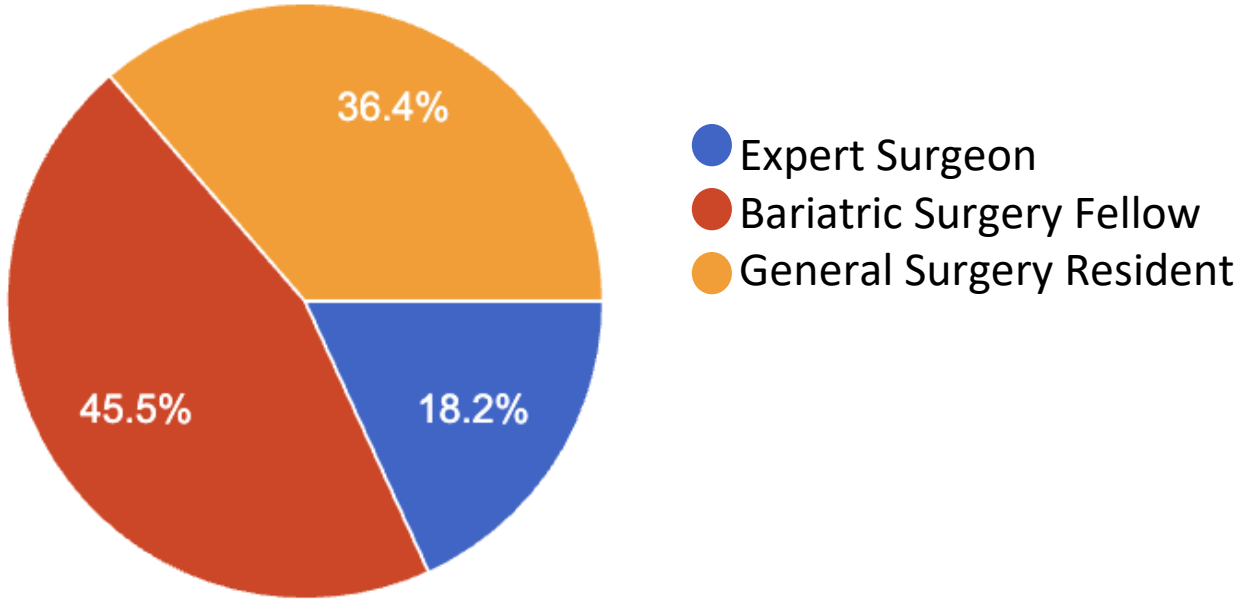
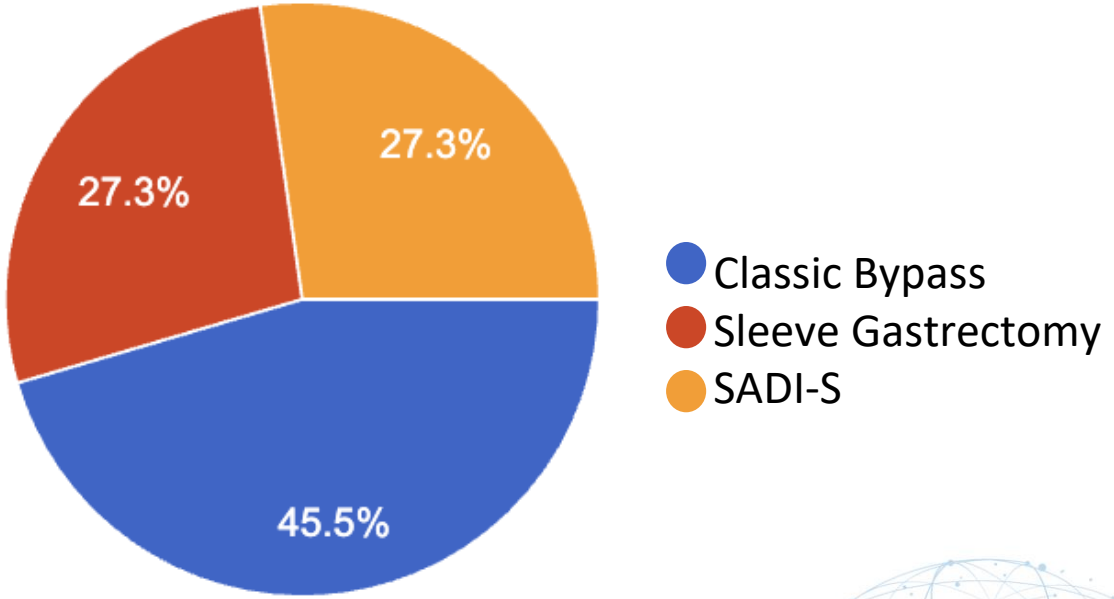
Who is this information best suited for?



What topic did participants read?



Results

PROMPT EVALUATION

Accuracy → 82%

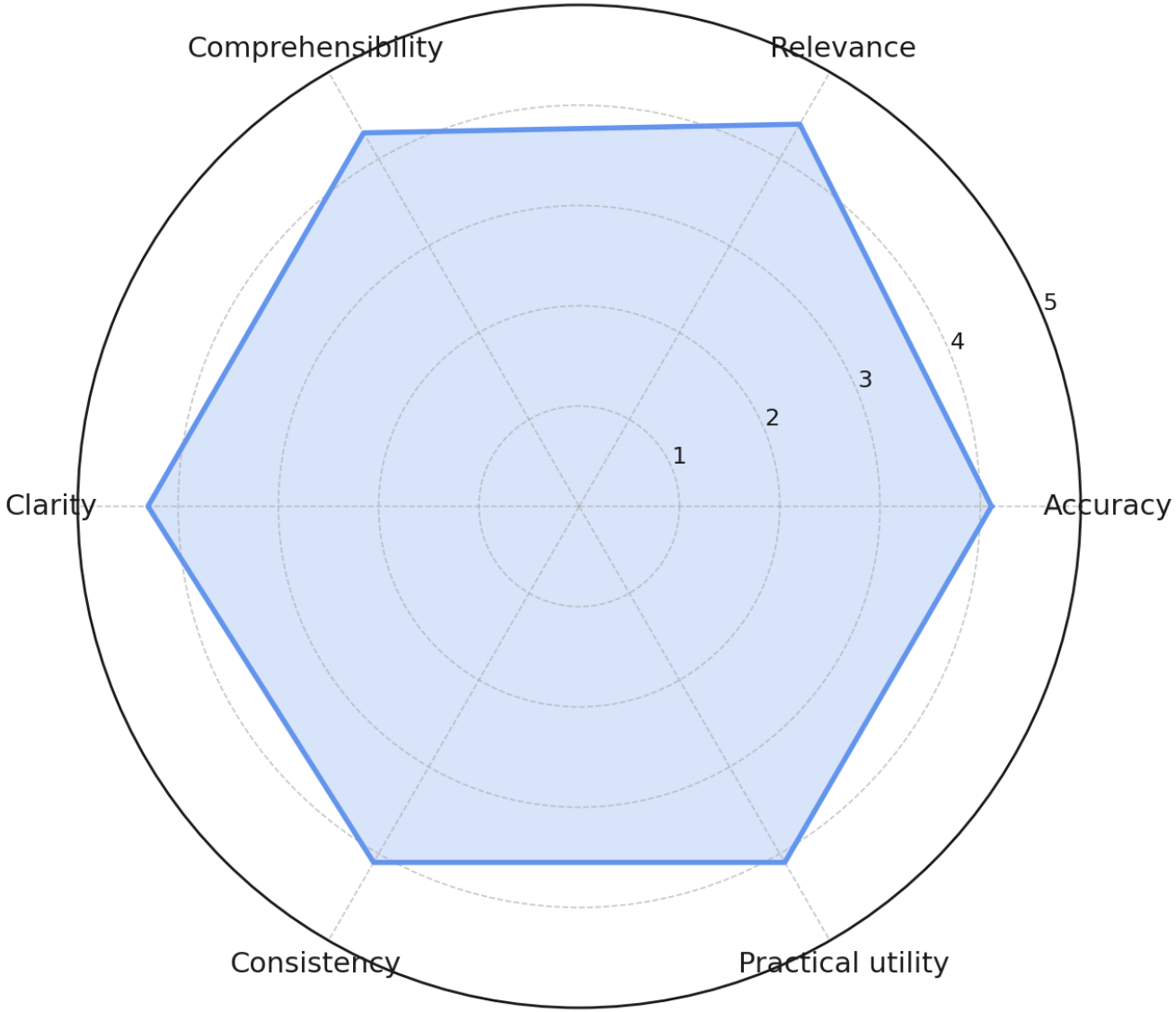
Relevance → 88%

Comprehensibility → 86%

Clarity → 90%

Consistency → 92%

Practical utility → 86%



CONCLUSION

- This LLM-driven bariatric surgery prompt achieved **high acceptability and reliability** among both fellows and expert bariatric surgeons.
- The findings underscore the potential of integrating AI-based tools into **surgical training to deliver consistent, context-specific guidance.**
- Future studies should extend the sample size to further validate these results and explore the influence of such prompting on clinical outcomes and decision-making.