The association between surgeon communication patterns and patients' perceptions of their decision-making role: A qualitative study using large language model analysis

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Background:

- Colorectal surgery decisions are preference-sensitive, involving trade-offs between oncologic outcomes, functional results, and quality of life
- Shared decision-making (SDM) improves patient satisfaction, quality of life, and reduces decisional regret
- However, SDM remains inconsistently implemented in surgical consultations, resulting in patients feeling excluded from treatment decisions
- Surgeon communication behaviours influencing patients' perceived decision-making roles remain poorly understood

Objective:

To identify surgeon verbal cues associated with patients' perceived decision-making roles during colorectal surgery consultations using large language model (LLM)-assisted transcript analysis

Methods:

Study design:

- LLM-assisted qualitative analysis of audio-recorded colorectal surgery consultations at a tertiary academic centre

Participants:

- Adult patients undergoing preference-sensitive consultations (May 2025–Feb 2026)

Data collection:

- Consultations were audio-recorded and transcribed verbatim
- Patients completed post-visit questionnaires (demographics, BRIEF health literacy tool, SDM-Q-9, CPS)

Exposure:

- Surgeon verbal communication patterns identified through LLM-assisted transcript analysis

Outcome:

- Patient-perceived decision-making role (active, collaborative, or passive), measured using the Control Preferences Scale (CPS)

Analysis:

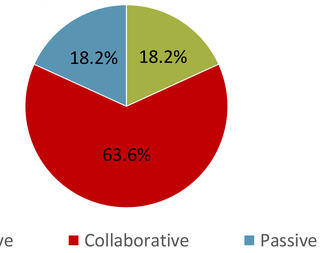
- A custom GPT-4 model extracted surgeon verbal cues and categorized them by CPS role
- Descriptive statistics summarized participant and consultation characteristics
- Fisher's exact tests and ANOVA compared variances across CPS role groups

Results:

Participant and consultation characteristics:

- 44 patients and 3 colorectal surgeons included
- Mean age: 61.2 ± 15.5 years
- Male: 56.8%
- Most common indication: colorectal cancer (45.5%)

Figure 1. CPS role distribution



- No differences in patient or consultation characteristics across CPS roles
- Preferred-experienced role concordance was higher in collaborative vs. passive consultations ($p = 0.043$)

Surgeon communication patterns:

Table 1. Surgeon communication (LLM-identified) associated with patient-reported decision-making roles (CPS)

Role	Characteristic Surgeon Cues	Example Verbal Cues
Active	Emphasis on patient autonomy	"It's only you that can answer that."
	Encouragement of patient reflection	"Think about it a bit more."
	Elicitation of patient values	"It's your life and what's important to you?"
Collaborative	Inclusive language	"We want to come to the decision together."
	Balanced presentation of treatment options	"The choice is a bigger surgery versus a smaller one… avoiding the bag but having higher risk of cancer coming back."
	Elicitation of patient goals and values	"What is your ultimate goal?"
Passive	Directive language	"You will need…"
	Authoritative framing of treatment decisions	"This is the plan."
	Strong clinician recommendations	"I would strongly, strongly, strongly advocate for having surgery."

Conclusion:

- Distinct surgeon verbal communication patterns were associated with patients' perceived decision-making roles during colorectal surgery consultations
- Promoting collaborative communication behaviours may help guide patients toward shared roles in decision-making, strengthening the quality of patient-centred care