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Artificial intelligence–assisted preoperative communication for patients with prostate cancer: A prospective, single-blinded, randomized phase II trial

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Background

Preoperative communication is essential for patients undergoing radical prostatectomy (RP), yet conventional physician-led communication is often limited by clinical time and diverse patient concerns. This study evaluated whether artificial intelligence (AI)-assisted preoperative communication could reduce patient anxiety and physician workload compared with standard communication.

Methods

We conducted a prospective, randomized, single-blinded, phase II trial in newly diagnosed prostate cancer patients scheduled for RP. Patients with severe psychiatric or cognitive disorders were excluded. Upon admission, participants were randomized at the room level to receive either standard or AI-assisted preoperative communication. After baseline assessment, patients in the AI-assisted group received individualized responses generated by a locally deployed large language model before routine face-to-face communication. Physicians remained blinded to group allocation. Primary outcomes were patient anxiety assessed by GAD-7 and physician workload assessed by NASA-TLX. Comparisons were performed using linear mixed-effects models.

Results

A total of 268 patients were randomized to the control group (n=130) or AI-assisted group (n=138). Overall, 3,507 patient questions were collected, with a mean of 13.1 questions per patient. Post-communication anxiety was significantly lower in the AI-assisted group than in the control group (GAD-7 mean [SD], 3.2 [2.7] vs 5.7 [3.1]; $P=0.001$). Physician workload was also reduced, with lower NASA-TLX scores (39.9 [16.9] vs 56.8 [19.5]; $P<0.001$) and shorter communication time (11.3 [4.5] vs 19.9 [6.1] minutes; $P<0.001$). AI-assisted patients further showed more favorable emotional profiles, reduced negative illness perceptions, and higher satisfaction.

Conclusions

AI-assisted preoperative communication reduced patient anxiety and physician workload in prostate cancer patients undergoing RP. By addressing patient-initiated concerns before physician consultation, this approach may improve the quality and efficiency of perioperative communication.

Clinical trial identification

NCT07082049.

Legal entity responsible for the study

Bo Dai.

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Disclosure

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