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Conversations in Health-Literacy using AI-Technology in OsteoArthritis (CHAT-OA): Analysis of a Randomized Controlled Trial

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Abstract:

Many orthopaedic patients experience uncertainty and anxiety when choosing among treatment options for hip or knee osteoarthritis, and limited health literacy may worsen decisional stress. We conducted a randomized controlled trial in which adults presenting for orthopaedic consultation were randomized 1:1 to usual care or access to a large language model-based chatbot before the visit. This preliminary report focuses on post-visit baseline outcomes completed within 7 days. The primary outcome was the Beck Anxiety Inventory (BAI; 0–63), and the primary analysis was per-protocol (controls vs participants who completed the chatbot).

At the time of analysis, 86 participants had been randomized; 70 had complete BAI data. Mean post-visit BAI was 4.47 (SD 5.30) among participants who interacted with the chatbot and 8.25 (SD 7.65) among those who did not (mean difference –3.78; 95% CI –7.59 to 0.03; $p=0.052$). In adjusted linear regression controlling for LiMP score, age, sex, and baseline PROMIS physical and mental health, chatbot interaction remained associated with lower BAI but was not statistically significant ($\beta=-1.97$; 95% CI –5.36 to 1.41; $p=0.249$). Higher PROMIS physical health was independently associated with lower BAI ($\beta=-0.41$ per 1-point; 95% CI –0.69 to –0.13; $p=0.0047$). Ongoing enrollment and longer follow-up will clarify durability and effects on decisional conflict.

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