

## Utilizing Literature Review and Shared Decision-Making to Support a Patient Make the Decision: A Case Study of Virtual Reality for Postoperative Pain

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**Abstract :** Background: A 58-year-old man with a history of osteoporosis and diabetes presented with chronic pain in his left knee due to severe knee joint degeneration. The knee replacement surgery was recommended by the doctor. But the patient suffered from low pain tolerance and wondered if virtual reality could relieve acute postoperative wound pain. Methods: We used the PICO (patient, intervention, comparison, and outcome) approach to generate indexed keywords and searched systematic review articles from 2017 to 2021 on the Cochran Library, PubMed, and Clinical Key databases. Results: The initial literature results included 38 articles, including 12 Cochran library articles and 26 PubMed articles. One article was selected for further analysis after removing duplicates and off-topic articles. The eight trials included in this article were published between 2013 and 2019 and recruited a total of 723 participants. The studies, conducted in India, Lebanon, Iran, South Korea, Spain, and China, included adults who underwent hemorrhoidectomy, dental surgery, craniotomy or spine surgery, episiotomy repair, and knee surgery, with a mean age ( $24.1 \pm 4.1$  to  $73.3 \pm 6.5$ ). Virtual reality is an emerging non-drug postoperative analgesia method. The findings showed that pain control was reduced by a mean of 1.48 points (95% CI: -2.02 to -0.95, p-value < 0.0001) in minor surgery and 0.32 points in major surgery (95% CI: -0.53 to -0.11, p-value < 0.03), and the overall postoperative satisfaction has improved. Discussion: Postoperative pain is a common clinical problem in surgical patients. Research has confirmed that virtual reality can create an immersive interactive environment, communicate with patients, and effectively relieve postoperative pain. However, virtual reality requires the purchase of hardware and software and other related computer equipment, and its high cost is a disadvantage. We selected the best literature based on clinical questions to answer the patient's question and used share decision making (SDM) to help the patient make decisions based on the clinical situation after knee replacement surgery to improve the quality of patient-centered care.

**Keywords :** knee replacement surgery, postoperative pain, share decision making, virtual reality

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