

## Case study reports singing lowers patient's blood pressure prior to surgery

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Doctors report that singing reduced the blood pressure of a 76-year-old woman who had experienced severe preoperative hypertension prior to total knee replacement surgery for osteoarthritis (OA). While the patient was unresponsive to aggressive pharmacologic interventions, the woman's blood pressure dropped dramatically when she sang several religious songs. This case-report appears in the April issue of *Arthritis Care & Research*, a journal published by Wiley-Blackwell on behalf of the American College of Rheumatology (ACR).

Traditional therapy for preoperative [hypertension](#), doctors say, involves drug-based therapies that include diuretics, beta blockers, calcium-channel blockers, and angiotensin-converting enzyme (ACE) inhibitors. These medications are used to lower [blood pressure](#) to acceptable levels for surgery, however, a number of patients do not respond to these treatments. In patients unresponsive to standard therapies, as in the current case study patient, alternative hypertension interventions are needed.

Several studies suggest that listening to music can be effective in reducing blood pressure by calming or diverting patients prior to surgery, which lessens stress and anxiety," explains lead author Nina Niu, a researcher from Harvard Medical School in Boston. "Our case study expands on medical evidence by showing that producing music or singing also has potential therapeutic effects in the preoperative setting."

The current case subject was a 76-year-old woman from the Dominican

Republic who had hypertension and a 15-year history of bilateral knee OA. The patient was treated with ACE inhibitors and calcium-channel blockers for high blood pressure and diclofenac, a non-steroidal anti-inflammatory drug (NSAID), for knee pain. She was accepted into Operation Walk Boston, a philanthropic program providing total joint replacement to poor Dominican patients with advanced OA of the hip or knee. The case study authors served as members of her medical team.

Upon admission to the hospital for surgery the patient's blood pressure was 160/90 mm Hg, controlled by her normal regimen of nifedipine and lisinopril. In the preoperative area, the woman's blood pressure increased to 240/120 mm Hg and persisted, requiring doctors to postpone surgery. The Operation Walk medical team was onsite site at the Dominican hospital for a limited time; therefore it was imperative that the patient's blood pressure be reduced so surgery could proceed.

The patient asked doctors if she could sing, which the patient reported doing frequently to calm herself down and to help with sleeping. The medical team encouraged her to so, and after two songs checked her blood pressure which had lowered to 180/90 mm Hg. With continued singing for 20 minutes, the patient's blood pressure remained lower and persisted for several hours after. As instructed by doctors, the patient sang periodically through the night which kept her blood pressure at acceptable levels. The following morning, the woman was cleared for [knee replacement surgery](#), which was successful and without complications.

Niu commented, "Singing is simple, safe, and free. Patients should be encouraged to sing if they wish." This single case study showed the positive effective of singing in reducing blood pressure and controlling pain. "To be formally considered as an alternative therapy for the OA patient population, larger studies are needed to explore the effects of signing on hypertension and chronic pain relief," said Niu.

**More information:** "Singing Intervention for Preoperative Hypertension Prior to Total Joint Replacement: A Case Report." Nina N. Niu, María Teresa Perez, and Jeffrey N. Katz. *Arthritis Care and Research*; Published Online: March 30, 2011 ( [DOI:10.1002/acr.20406](https://doi.org/10.1002/acr.20406) ); Print Issue Date: April 2011.

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