Noise Pollution in the Operating Room
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Problem
• In operating room personnel participating in surgical procedures (P), how do routine surgical-related noises (I) influence critical thinking (O) during the performance of effective clinical care (T)?
• What are the current evidence-based practices for managing operating room noise pollution, as well interventions that may be advantageous in reducing its effect on operating room personnel?

Literature Review
• Noise can be defined as any unwanted sound that interferes with normal hearing, interrupts performance, and is stressful [measured in decibel dB(A) scale]
• Excessive noise levels in the OR can impede the delivery of safe anesthesia care.
• Occupational Regulations of Noise Limits
  • Occupational Safety and Health Administration (OSHA): range from 8 hours of exposure at 90 dB(A) to only 15 minutes at 115 dB(A)
  • National Institute for Occupational Safety (NIOSH): peak noise levels no more than 140 dB(A)
  • Environmental Protection Agency (EPA): limit 35 to 45 dB(A) for ambient OR noises
• Causes of Noise Pollution
  • Staff Related (95%): reach up to 78 dB(A)
  • Equipment: peak of 120 dB(A), some instruments 131-140 dB(A)
  • Inherent Operating Room Environment: baseline 13 dB(A)
• Music as a Potential Distractor
  • Music in the OR is a choice and levels are estimated to be as high as 87 dB(A)
  • Over 60 to 70 percent of personnel report they like to listen to music in the OR
• Implications for Anesthesia Providers
  • Noisiest parts of most non-orthopedic surgeries occur during induction and emergence (most critical moments)
  • Distractions such as background noise can impair or delay provider response to alarms from ventilators and monitors
• Impact on Practice
  • Behavior modification programs can educate staff members about the potential harm of noise pollution and its sources by bringing awareness to noise-reducing strategies

Methods
• With SRC and IRB approval, an educational PowerPoint presentation based on current literature was presented to the AHU SRNA Cohort of 2019
• Pre-test utilized as a knowledge baseline
• After PowerPoint, identical post-test administered
• Data analyzed by AHU statistician

Analysis and Conclusions
• When comparing pre- and post-test mean percentage scores, the post-test scores increased significantly ($p < 0.001$)
• The outcome of this scholarly project was an increase in awareness and knowledge of current noise pollution in the operating room literature among the AHU SRNA Cohort of 2019

Findings
• Operating room noises cannot be managed alone
• Educate staff members about noise pollution
• Decrease noise levels
  • Avoid unnecessary conversations
  • Turn off music
  • Limit telephone usage
  • Minimize entrance and exit of the operating room
  • Be mindful of patient anxiety

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