

The Impact of Capnography Based Education on Knowledge Modification Amongst Dental Staff

Pearl Akpaka, BSN, RN, CCRN, SRNA and Tamesha Rolle, BSN, RN, CCRN, SRNA.

Martin Rivera, DNP, CRNA, Ndala Booker, EdD, Dana Williams, MBA
AdventHealth University Doctor of Nurse Anesthesia Practice

Problem

- Airway management during sedation dentistry is essential to maintaining patient safety.
- PICOT**
- Amongst the clinical staff at Simmonds Dental Center located in Orlando, Florida, does the implementation of an educational session on the use of end-tidal capnography in patients undergoing dental sedation, influence the knowledge level and retention on the early recognition of oxygen desaturation after a period of 30 days?
- Current evidence supports capnography use for patients receiving dental sedation for the early detection of adverse respiratory events

Methods

- A quantitative descriptive research design was utilized to provide insight on the use of capnography during dental sedation and identify areas of process improvement.
- The sample consisted of six clinical staff members of Simmonds Dental Center.
- The questionnaire was downloaded via a scannable Quick Response (QR) code and the participants created a unique identifier for anonymity.
- The data collected consisted of information retrieved from one pretest and two posttests and stored via a secure Microsoft Forms platform.
- Data was analyzed using the Wilcoxon Signed Rank Test.

Illustration

		N	Mean Rank	Sum of Ranks	Test Statistic	Critical Value
Pretest-First Posttest	Negative Rank	6	3.50	-21.00	0*	2
	Positive Rank	0	0.00	0.00		
	Ties	3				
First-Second Posttest	Negative Rank	5	4.00	-20.00	0*	1
	Positive Rank	0	0.00	0.00		
	Ties	2				
Pretest-Second Posttest	Negative Rank	6	3.50	-21.00	0*	2
	Positive Rank	0	0.00	0.00		
	Ties	2				

Wilcoxon Signed Rank Test at 10% level of Significance ($\alpha = 0.10$)

Discussion & Implications

- The co-investigators adopted the PDSA (Plan-Do-Study-Act) cycle of process improvement for the implementation of this project.
- Results obtained from the first and second posttests exhibited an increase in the knowledge base of the dental staff, compared to the pretest prior to the educational session.
- Limitations were small sample size, use of self-validated questionnaire and time constraints.

Literature Review

- The use of procedural sedation and analgesia (PSA) is steadily increasing, and clinicians with minimal or no training in the administration of medications known to cause moderate to deep levels of sedation are performing these activities.
- Adverse events associated with procedural sedation in the dental setting primarily result from respiratory depression and airway obstruction.
- Proper education and training are necessary to strengthen the reliability of capnography when monitoring is done by non-anesthetists.

Results

- The analysis of the results was between each matched pair consisting of the pretest and first posttest, pretest and second posttest, and the first and second posttests.
- All results showed statistically significant evidence that there was a difference in participant scores after the implementation of the educational seminar compared to before.
- Comparison of the scores from the pretest and first posttest, as well as the pretest and second posttest, which was conducted after a period of 30 days, yielded higher scores for each of the participants.

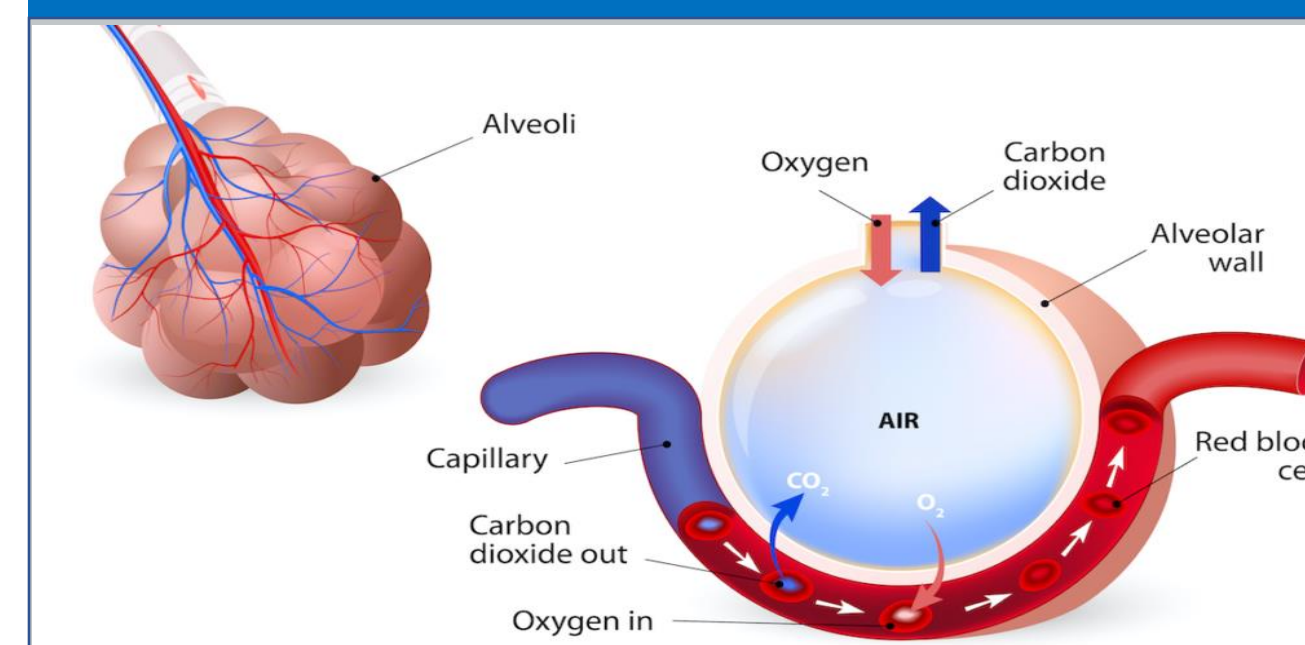
More Results

- Results demonstrated a positive correlation between the educational session on capnography and knowledge retention of the dental clinical staff.
- This scholarly project demonstrated that educating dental staff on the importance of capnography monitoring is a viable proposition for the prevention of adverse events during procedural sedation in the dental setting.

Conclusions

- Educating dental staff on the importance of capnography use during procedural sedation is necessary for the prevention of life-threatening ventilatory events in the dental setting.
- Due to the small sample size of 6 participants and the use of only one setting, there is not enough statistical evidence to contribute to existing literature and to healthcare in general.

Illustration



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