



Abstract

Objective: Pediatric dentists often employ oral sedation as a method of advanced pharmacological behavior management to safely treat uncooperative children with extensive needs. Two commonly employed sedatives are midazolam and diazepam. These benzodiazepines are popular due to their wide safety margin, rapid onset, reversibility and potential for anterograde amnesia. Triazolam is a benzodiazepine classified by the FDA as a hypnotic but has off label use for minimal/moderate sedation. It has a longer onset and half-life than midazolam, but shorter half-life than diazepam. This could make it a preferable drug for children. However, there are not many studies which investigate triazolam as a sedative for this population. The purpose of this study is to investigate the efficacy of triazolam as a oral sedative agent for uncooperative pediatric dental patients who require extensive dental treatment at the University of Iowa College of Dentistry Department of Pediatric Dentistry.

Methods: Subjects in this study are patients who had already been planned to undergo oral sedation with either triazolam or diazepam. In order to compare the effectiveness of the medications, researchers will utilize the Ramsey sedation scale to describe subjects behavior and sedation level throughout the appointment. We will also employ a 22-36 hour post-op questionnaire for the parents of the subjects

Results: We are in the early phase of data collection

Conclusion: Results of this study could be used to help clinicians make evidence based decisions when selecting a drug regimen for pediatric oral sedation

Introduction

Pediatric dentists often employ oral sedation as a method of advanced pharmacological behavior management to safely treat uncooperative children with extensive needs. Two commonly employed sedatives are midazolam and diazepam1. These benzodiazepines are popular due to their wide safety margin, rapid onset, reversibility and potential for anterograde amnesia2-5. Triazolam is a benzodiazepine classified by the FDA as a hypnotic but has off label use for minimal/moderate sedation. It has a longer onset and half-life than midazolam, but shorter half-life than diazepam6. This could make it a preferable drug for children. However, there are not many studies which investigate triazolam as a sedative for this population. The purpose of this study is to investigate the efficacy of triazolam as a oral sedative agent for uncooperative pediatric dental patients who require extensive dental treatment at the University of Iowa College of Dentistry Department of Pediatric Dentistry.

Drug	Class	Time to peak plasma conc.	Half life
Triazolam	Benzodiazepine	1 to 2 hours	Up to 5 hours
Diazepam	Benzodiazepine	1 to 1.5 hours	Up to 48 hours

Materials & Methods

Subjects in this study are patients who had already been planned to undergo oral sedation with either triazolam or diazepam. In order to compare the effectiveness of the medications, researchers will utilize the Ramsey sedation scale to describe subjects behavior and sedation level throughout the appointment. We will also employ a 22-36 hour post-op questionnaire for the parents of the subjects

Table 1. PROVIDER SURVEY

Please rate the **pre-operative (baseline)** sedation level of the patient using the Ramsay Sedation Scale

1. Awake; agitated or restless or both
2. Awake; cooperative, oriented, and tranquil
3. Awake but responds to commands only
4. Asleep; brisk response to light glabellar tap or loud auditory stimulus
5. Asleep; sluggish response to light glabellar tap or loud auditory stimulus
6. Asleep; no response to glabellar tap or loud auditory stimulus

Please rate the **intra-operative sedation** level of the patient using the Ramsay Sedation Scale

1. Awake; agitated or restless or both
2. Awake; cooperative, oriented, and tranquil
3. Awake but responds to commands only
4. Asleep; brisk response to light glabellar tap or loud auditory stimulus
5. Asleep; sluggish response to light glabellar tap or loud auditory stimulus
6. Asleep; no response to glabellar tap or loud auditory stimulus

Please rate the **immediate post-operative sedation** level of the patient using the Ramsay Sedation Scale

1. Awake; agitated or restless or both
2. Awake; cooperative, oriented, and tranquil
3. Awake but responds to commands only
4. Asleep; brisk response to light glabellar tap or loud auditory stimulus
5. Asleep; sluggish response to light glabellar tap or loud auditory stimulus
6. Asleep; no response to glabellar tap or loud auditory stimulus

Please rate the **discharge post-operative sedation** level of the patient using the Ramsay Sedation Scale

1. Awake; agitated or restless or both
2. Awake; cooperative, oriented, and tranquil
3. Awake but responds to commands only
4. Asleep; brisk response to light glabellar tap or loud auditory stimulus
5. Asleep; sluggish response to light glabellar tap or loud auditory stimulus
6. Asleep; no response to glabellar tap or loud auditory stimulus

Table 2. PARENT SURVEY

How long did it take your child to become fully alert following the sedation procedure?

- less than 1 hour
- 1 to 2 hours
- 2 to 3 hours
- 3 to 4 hours
- 4 to 5 hours
- more than 5 hours

Please ask your child to describe.

- Their favorite part of the appointment?
- Their least favorite part of the appointment?

Was there at any time any evidence of an adverse reaction? This would include things like nausea, vomiting, fever, emotional outburst?

- Yes/No
- If yes, please describe?

Do you think that the technique of sedation was effective in allowing your child to receive the needed dental care?

- Yes/No
- If no, please describe?

If your child needed more dental treatment in the future, would you choose oral sedation again?

- Yes/No
- If no please describe?

Do you have any other questions or concerns?

Trends

Drug	# of subjects	Intraoperative level of sedation > 1 on the RSS	Recovery time greater > 5 hours	Parents would not choose this method again
Triazolam	4	3	0	0
Diazepam	2	0	2	1

Future implications

Results of this study may be used to help clinicans make evidence based decisions when selecting a drug regimen for pediatric oral sedation

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