

Balancing comfort and care: Assessment of parental awareness and knowledge regarding conscious sedation in pediatric dentistry

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Abstract

Background: Conscious sedation is an established pharmacological behavior guidance technique in pediatric dentistry, particularly beneficial for anxious, fearful, or pre-cooperative children requiring dental treatment. Parental awareness and knowledge regarding conscious sedation remain pivotal determinants of its acceptance and successful implementation. Limited parental understanding of its benefits, safety profile, and procedural aspects may contribute to reluctance and refusal, thereby compromising the quality of dental care delivered to children.

Aim: To assess the level of parental awareness and knowledge regarding conscious sedation in pediatric dentistry.

Materials and Methods: A cross-sectional questionnaire-based study was conducted among parents/legal guardians of children aged 5–9 years. Data were collected through an online structured and validated questionnaire comprising 20 items assessing parental awareness, knowledge regarding benefits and safety, risk perception, and acceptance of conscious sedation in pediatric dentistry. The questionnaire was circulated through online platforms, and responses from 154 parents fulfilling the inclusion criteria were included in the study. Data obtained were analyzed descriptively, and the association between parental knowledge and children's prior dental experience was evaluated.

Results: Awareness of conscious sedation was reported by 66.7% of parents, with dentists being the primary source of information. Knowledge regarding benefits was moderate, with 53.3% aware that conscious sedation facilitates comfortable dental treatment and 60% acknowledging its role in reducing unpleasant dental memories. Side effects (46.7%) and safety concerns (33.3%) were the most frequently cited parental concerns. Overall acceptance was favorable, with 53.3% preferring conscious sedation over postponing dental treatment and 86.7% expressing a desire for further information. Parents whose children had prior dental experience demonstrated higher awareness (80%) compared to those without prior experience (40%).

Conclusion: Parental awareness regarding conscious sedation in pediatric dentistry was moderate, with knowledge gaps particularly evident regarding procedural aspects and safety. Parental acceptance was generally positive, and prior dental experience was positively associated with greater awareness. Targeted parental education by dental professionals is essential to improve informed decision-making and acceptance of conscious sedation.

Keywords: Conscious sedation, pediatric dentistry, parental awareness, dental anxiety, behavior guidance, nitrous oxide

Introduction

Dental fear and anxiety represent significant challenges in the management of pediatric dental patients, frequently resulting in uncooperative behavior, avoidance of dental care, and compromised oral health outcomes [1]. Behavior guidance techniques in pediatric dentistry range from non-pharmacological approaches such as tell-show-do, positive reinforcement, and distraction to pharmacological modalities including conscious sedation and general anesthesia.[2] Among these, conscious sedation occupies an important intermediate position, offering anxiolysis and cooperation facilitation while preserving the child's protective reflexes and ability to respond to verbal commands.[3]

Conscious sedation, as defined by the American Academy of Pediatric Dentistry (AAPD), is a minimally depressed level of consciousness that retains the patient's ability to independently and continuously maintain an airway and respond appropriately to physical stimulation and verbal command. [4] Nitrous oxide–oxygen inhalation sedation remains the most widely used and safest modality of conscious sedation in pediatric dental practice,

supplemented in selected cases by oral sedative agents such as midazolam, hydroxyzine, or chloral hydrate. [5]

Despite its established safety and efficacy, the successful implementation of conscious sedation in pediatric dentistry is significantly influenced by parental awareness, knowledge, and acceptance. [6] Parents serve as primary decision-makers regarding their child's healthcare, and their understanding of sedation procedures, benefits, limitations, and associated risks directly impacts consent, cooperation, and treatment outcomes. [7] Studies conducted across various populations have reported variable levels of parental awareness regarding conscious sedation, with a consistent finding that dental professionals remain the most influential source of information. [8]

In India, the use of conscious sedation in pediatric dentistry remains relatively underutilized compared to Western nations, which may be attributed to limited parental awareness, cultural perceptions regarding sedation, and inadequate dissemination of information at the primary care level. Parental understanding and acceptance play a crucial role in the successful implementation of pharmacological behavior management techniques in children requiring dental treatment.

Limited literature is available assessing parental awareness and knowledge regarding conscious sedation in pediatric dentistry among the general population in India. Therefore, the present cross-sectional study was undertaken to evaluate parental awareness, knowledge of benefits and safety, risk perception, and acceptance of conscious sedation in pediatric dentistry, and to determine the association between parental knowledge and prior dental experience.

Materials and Methods

Study Population and Sampling

Parents or legal guardians of children aged 5–9 years were recruited through online circulation of the study questionnaire during the study period. A total of 154 parents fulfilling the eligibility criteria participated in the study.

Inclusion Criteria

Parents/legal guardians of children aged 5–9 years who were willing to participate and provide informed consent were included in the study. Parents able to understand and respond to the questionnaire were enrolled.

Exclusion Criteria

Incomplete or duplicate questionnaire responses were excluded from the study. Parents unwilling to participate or provide informed consent were also excluded.

Study Instrument

A structured questionnaire comprising 20 items was developed and validated for the purpose of this study. The questionnaire was organized into five domains aligned with the study objectives:

1. Parental awareness of conscious sedation as a behavior guidance technique
2. Knowledge of benefits, procedural aspects, and safety
3. Understanding of risks and complications
4. Parental acceptance of conscious sedation; and
5. Background information including prior dental experience.

The questionnaire was administered in English or Kannada based on parental preference, and responses were recorded on a structured scale including dichotomous (Yes/No), trichotomous (Yes/No/Not Sure), and Likert-type response options where applicable.

Data Collection

Data were collected using a structured online questionnaire circulated to parents/legal guardians through online platforms. Before participation, the purpose of the study was explained, and informed consent was obtained electronically. Responses were collected anonymously and recorded in a spreadsheet for analysis. Demographic details including parental educational background, prior dental experience of the child, and history of child dental anxiety were also obtained.

Statistical Analysis

Data were analyzed using descriptive statistics. Frequencies and percentages were computed for categorical variables. Cross-tabulation was performed to evaluate the association between parental knowledge and prior dental experience. Due to the preliminary sample size, results are presented descriptively. Chi-square or Fisher's exact test would be

applied in a larger sample to determine statistical significance of associations.

Results

Demographic and Background Characteristics

The study enrolled 15 parents/legal guardians. A majority of children (66.7%, $n=10$) had previously undergone dental treatment, while 33.3% ($n=5$) had no prior dental experience. Dental anxiety was reported in 40% ($n=6$) of children, while 60% ($n=9$) were reported as not appearing anxious during dental visits by their parents (Table 1).

Table 1: Background Characteristics of Study Participants

Parameter	Yes n (%)	No n (%)
Child had previous dental treatment	10 (66.7%)	5 (33.3%)
Child appears anxious at dental visits	6 (40.0%)	9 (60.0%)

Parental Awareness of Conscious Sedation and Source of Information

Awareness of conscious sedation was reported by 66.7% ($n=10$) of parents, while 33.3% ($n=5$) had not heard of the technique. Among those aware, the dentist was the most frequently cited source of information (80%), followed by internet (10%) and social media (10%) (Table 2).

Table 2: Parental Awareness of Conscious Sedation and Source of Information

Parameter	Frequency	Percentage
Heard about conscious sedation — Yes	10	66.7%
Heard about conscious sedation — No	5	33.3%
Source of Information		
Dentist	8	80.0%
Internet	1	10.0%
Social Media	1	10.0%

Parental Knowledge of Benefits, Procedural Aspects, and Safety

Knowledge regarding the benefits of conscious sedation was moderate across the sample. Awareness that conscious sedation can reduce a child's dental fear was reported by 46.7% of parents, while 53.3% were aware that it facilitates comfortable dental treatment completion. Awareness that nitrous oxide (laughing gas) is used in conscious sedation was present in 40% of participants. A majority (60%) agreed that conscious sedation can help reduce unpleasant dental memories in children (Table 3).

Table 3: Parental Knowledge of Benefits of Conscious Sedation

Question	Yes/Agree n (%)	No/Disagree n (%)	Not Sure n (%)
CS can reduce child's dental fear	7 (46.7%)	4 (26.7%)	4 (26.7%)
CS helps complete treatment comfortably	8 (53.3%)	3 (20.0%)	4 (26.7%)
Laughing gas used in CS	6 (40.0%)	6 (40.0%)	3 (20.0%)
CS reduces unpleasant dental memories	9 (60.0%)	3 (20.0%)	3 (20.0%)

CS = Conscious Sedation

Regarding procedural and safety knowledge, 66.7% of parents were aware that medical history review is performed prior to conscious sedation. However, knowledge regarding the non-requirement of routine blood tests in healthy children was limited, with only 33.3% responding correctly. The outpatient nature of conscious sedation was recognized by 60% of parents, while 20% incorrectly believed hospital admission was required (Table 4).

Table 4: Parental Knowledge of Procedural and Safety Aspects

Question	Yes n (%)	No n (%)	Not Sure n (%)
Medical history reviewed before CS	10 (66.7%)	2 (13.3%)	3 (20.0%)
Routine blood tests not required (healthy child)	5 (33.3%)	5 (33.3%)	5 (33.3%)
CS requires hospital admission	3 (20.0%)	7 (46.7%)	5 (33.3%)
CS performed on outpatient basis	9 (60.0%)	3 (20.0%)	3 (20.0%)

Parental Understanding of Risks and Complications

Side effects were the most frequently cited concern regarding conscious sedation, reported by 46.7% of parents, followed by general safety concerns (33.3%), breathing problems (13.3%), and cost (6.7%). Fear that conscious sedation may negatively affect the child's health was expressed by 40% of parents, while 33.3% did not share this concern and 26.7% were unsure. Regarding worry about sedative medications, 40% of parents reported being slightly worried, 33.3% were not worried, 13.3% were moderately worried, and 13.3% were extremely worried (Tables 5, 6, 7).

Table 5: Primary Parental Concerns Regarding Conscious Sedation

Concern	Frequency	Percentage
Side effects	7	46.7%
Safety	5	33.3%
Breathing problems	2	13.3%
Cost	1	6.7%

Table 6: Fear That CS May Negatively Affect Child's Health

Response	Frequency	Percentage
Yes	6	40.0%
No	5	33.3%
Not Sure	4	26.7%

Table 7: Level of Parental Worry About Sedative Medications

Level of Worry	Frequency	Percentage
Not worried	5	33.3%
Slightly worried	6	40.0%
Moderately worried	2	13.3%
Extremely worried	2	13.3%

Parental Acceptance of Conscious Sedation

Parental acceptance of conscious sedation was generally favorable. Preference for conscious sedation if it reduced the number of dental visits was reported by 46.7% of parents. Preference for conscious sedation over postponing dental treatment was expressed by 53.3% of parents. A large majority (86.7%) expressed a desire for more information about conscious sedation, and 66.7% stated they would recommend conscious sedation to other parents if their child had a positive experience (Table 8).

Table 8: Parental Acceptance of Conscious Sedation

Question	Yes/Agree n (%)	No/Disagree n (%)	Neutral/Not Sure n (%)
Prefer CS if fewer dental visits required	7 (46.7%)	3 (20.0%)	5 (33.3%)
Laughing gas considered safe	7 (46.7%)	3 (20.0%)	5 (33.3%)
Prefer CS over postponing treatment	8 (53.3%)	3 (20.0%)	4 (26.7%)
Would like more information on CS	13 (86.7%)	0 (0.0%)	2 (13.3%)
Would recommend CS to others	10 (66.7%)	0 (0.0%)	5 (33.3%)

Association Between Parental Knowledge and Prior Dental Experience

Cross-tabulation of prior dental experience and awareness of conscious sedation revealed that 80% of parents whose children had prior dental experience were aware of conscious sedation, compared to only 40% of parents whose children had no prior dental experience (Table 9). Similarly, preference for conscious sedation over postponing treatment was expressed by 60% of parents with prior dental experience compared to 40% of those without (Table 10), suggesting a positive association between prior dental experience and both awareness and acceptance of conscious sedation.

Table 9: Cross-tabulation — Prior Dental Experience vs. Awareness of Conscious Sedation

Prior Dental Experience	Aware of CS n (%)	Not Aware of CS n (%)	Total
Yes (n=10)	8 (80.0%)	2 (20.0%)	10
No (n=5)	2 (40.0%)	3 (60.0%)	5
Total	10	5	15

Table 10: Cross-tabulation — Prior Dental Experience vs. Preference for CS Over Postponing Treatment

Prior Dental Experience	Prefer CS n (%)	Do Not Prefer CS / Neutral n (%)	Total
Yes (n=10)	6 (60.0%)	4 (40.0%)	10
No (n=5)	2 (40.0%)	3 (60.0%)	5
Total	8	7	15

Discussion

The present cross-sectional study assessed parental awareness, knowledge, risk perception, and acceptance of conscious sedation in pediatric dentistry among parents of children aged 5–9 years. The findings revealed a moderate level of parental awareness, with notable knowledge gaps in procedural and safety aspects, alongside generally favorable acceptance attitudes.

Awareness of conscious sedation was reported by 66.7% of parents in the present study, with the dentist identified as the primary source of information in 80% of aware respondents. This finding is consistent with reports from previous studies

conducted in similar populations, which have consistently highlighted the dental professional as the most influential source of patient and parental education regarding sedation.^[10] The relatively high proportion of dentist-derived awareness underscores the critical responsibility of dental professionals in providing comprehensive, unbiased information about conscious sedation to parents during clinical consultations.

The moderate level of knowledge regarding benefits of conscious sedation, with 53.3% aware of its role in facilitating comfortable treatment and 60% recognizing its ability to reduce unpleasant dental memories, reflects findings reported by Elyassi *et al.*^[11] and Kapur *et al.*,^[12] who similarly observed that parental knowledge of sedation benefits remains incomplete in populations with limited prior exposure to specialist pediatric dental care. The relatively poor awareness of nitrous oxide as a sedation agent (40%) is noteworthy, given that nitrous oxide–oxygen inhalation sedation is the most widely recommended and utilized modality of conscious sedation in pediatric dentistry due to its excellent safety profile, rapid onset, and ease of titration.^[5]

Knowledge gaps regarding procedural aspects were particularly evident in the domain of blood test requirements, where only 33.3% of parents correctly identified that routine blood tests are not required in healthy children undergoing conscious sedation. This finding suggests that parental misconceptions regarding the procedural complexity of conscious sedation may contribute to unwarranted apprehension and resistance. Educational interventions targeting such specific misconceptions may therefore be of value in improving parental acceptance. Parental concerns regarding side effects (46.7%) and general safety (33.3%) were the predominant barriers to acceptance identified in the present study. These findings are aligned with those of Arapostathis *et al.*^[13] and Somri *et al.*,^[15] who reported that parental fear of adverse effects and safety concerns constitute the most significant determinants of sedation refusal. Importantly, 40% of parents in the present study feared that conscious sedation may negatively affect their child's health, while only 33.3% were not worried about sedative medications. These perceptions highlight the need for structured pre-sedation counseling that addresses specific safety concerns, provides evidence-based reassurance, and facilitates informed parental consent. Parental acceptance of conscious sedation was generally favorable, with 53.3% preferring it over postponing dental treatment and 86.7% expressing a desire for additional information. The high proportion of parents seeking more information is a particularly encouraging finding, as it suggests receptivity to educational interventions and professional guidance. The willingness of 66.7% of parents to recommend conscious sedation to others further reflects a positive underlying attitude, which may be leveraged through community awareness programs and peer education initiatives.

The observed association between prior dental experience and greater awareness and acceptance of conscious sedation is clinically meaningful. Parents whose children had previously undergone dental treatment demonstrated awareness of conscious sedation in 80% of cases, compared to 40% among parents without prior dental experience. This finding is consistent with the broader literature indicating that familiarity with dental settings and procedures reduces

anxiety and improves parental receptivity to advanced behavior management techniques.^[15] It further emphasizes the importance of introducing parents to behavior guidance options, including conscious sedation, at early dental visits, even when immediate sedation is not indicated.

The present study has certain limitations that warrant acknowledgment. Although the study included 154 participants, the findings may not be fully generalizable to the wider population due to the online mode of data collection and voluntary participation. Additionally, the cross-sectional design precludes assessment of changes in parental knowledge and acceptance over time or following educational interventions. Responses were self-reported and may therefore be subject to response or recall bias. Future studies with larger and more diverse community-based samples, along with longitudinal designs, are recommended to further validate and expand upon these findings.

Conclusion

The present study demonstrates a moderate level of parental awareness regarding conscious sedation in pediatric dentistry, with dentists identified as the primary source of information. Knowledge gaps were evident particularly in procedural and safety aspects, while parental concerns predominantly centered around side effects and general safety. Parental acceptance was generally favorable, and prior dental experience was positively associated with greater awareness and acceptance of conscious sedation. These findings underscore the critical role of dental professionals in providing structured, evidence-based parental education regarding conscious sedation to facilitate informed decision-making, improve acceptance, and ultimately enhance the quality of pediatric dental care.

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