

Assessment of Parental Knowledge, Attitudes and Perceptions towards Conscious Sedation: A Quasi-experimental Study

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ABSTRACT

Introduction: Dental anxiety is a common problem among children, leading to missed dental appointments and neglect of oral health. Conscious sedation is a technique used in dental clinics to alleviate anxiety and enhance the patient's experience. However, parents often lack understanding about conscious sedation, which can hinder their consent for the procedure for their child.

Aim: To assess parents' knowledge, attitudes, and perceptions towards conscious sedation in dental care settings.

Materials and Methods: This study employed a pre-test/post-test quasi-experimental design and involved 400 parents (aged 21-40 years) whose children, aged 3 to 16 years, were randomly selected to complete a questionnaire survey at the Department of Pedodontics and Preventive Dentistry at Rajarajeswari Dental College and Hospital in Bengaluru, Karnataka, India. The survey was conducted between December 2022 and March 2023, spanning a period of four months. Data collection methods

included a pre-education questionnaire and a posteducation questionnaire after an educational intervention. The collected data underwent statistical analysis, utilising mean, Standard Deviation (SD), Analysis of Variance (ANOVA), Wilcoxon's signed rank, and Tukey's posthoc tests.

Results: Prior to education, 393 (98.25%) of the study population were unaware that conscious sedation was safe and easy. It was observed that 368 (92%) of the participants opposed conscious sedation for their child, but following education, 400 (100%) agreed, resulting in a 95.2% shift in perception.

Conclusion: The study revealed that, before the intervention, the majority of parents were unaware of and opposed to conscious sedation, indicating a significant knowledge gap. However, the implementation of educational interventions during dental visits, led by dentists, played a crucial role in improving their knowledge and significantly changing their attitude, with 400 (100%) agreeing to the use of conscious sedation.

Keywords: Conscious sedation, Intervention, Nitrous oxide, Parental attitude, Parental awareness

INTRODUCTION

Children's worry related to anticipating pain is one of the many reasons people avoid seeking dental care [1]. Due to their fear of dental procedures, a significant percentage of children visiting the dentist experience agitation and restlessness [2]. Treatment and pain reduction are fundamental human rights that apply regardless of age. Therefore, all children should expect painless, high-quality dental care [3]. In paediatric dentistry, behaviour management serves as the foundation for treatment and parental acceptance [4].

Dental treatment-related anxiety can be addressed non-pharmacologically using techniques such as tell-show-do or desensitisation, or pharmacologically using conscious sedation techniques involving inhalation sedation with a nitrous oxide/oxygen mixture, oral or intranasal sedation (midazolam), intravenous sedation (midazolam), or general anaesthesia [1]. Pharmacological techniques become an option when non pharmacological methods fail or are rejected by parents. According to the American Dental Association (1993), conscious sedation is defined as a minimally depressed level of consciousness that allows the patient to maintain an airway independently and respond appropriately to physical stimulation and verbal commands [5].

The term "conscious sedation" refers to a drug-induced depression of consciousness where the patient remains awake and consciously responds to verbal directions, either independently or with light tactile stimulation. They retain the ability to activate their defense mechanisms, maintain spontaneous breathing, and require no interventions to keep the airway open [4].

In recent years, the use of conscious sedation in dental clinics has been on the rise [6]. This is because conscious sedation effectively

alleviates fear and anxiety, especially in children. However, the use of conscious sedation has also raised concerns among parents who may be unfamiliar with this technique [7]. There is a need to educate parents about conscious sedation to address any fears or concerns they may have. Literature on assessing parents' knowledge and attitudes towards conscious sedation is limited [8]. Therefore, the aim of the present study was to assess parents' knowledge, attitudes, and perceptions regarding conscious sedation and their acceptance/willingness before and after education in dental settings.

MATERIALS AND METHODS

The study utilised a pre-test/post-test quasi-experimental study design involving 400 parents (aged 21-40 years) whose children, aged 3 to 16 years, sought care at the Department of Paediatric and Preventive Dentistry at Rajarajeswari Dental College and Hospital in Bengaluru, Karnataka, India. The participants were randomly selected to complete a questionnaire survey. The survey was conducted between December 2022 and March 2023, spanning a period of four months. Since it was a questionnaire study, Institutional Ethical Clearance (IEC) was not obtained.

Inclusion and Exclusion criteria: The inclusion criteria consisted of parents who willingly agreed to participate in the questionnaire survey and provided their consent. The exclusion criteria included parents who did not consent to participate. Participants were assured of the confidentiality of their responses. The questionnaire was pre-tested for validity and reliability.

Sample size calculation: Based on the probability that at least 50% of the parents would possess sufficient knowledge and awareness regarding stabilisation methods used during paediatric dental treatment

procedures ($p=0.50$), with a margin of error of 0.05, the sample size was calculated as $N=384.06$, which was rounded off to 400 at a 95% confidence interval.

Study Procedure

The questionnaire comprised socio-demographic information and 12 multiple-choice questions, including 3 questions on knowledge, 6 on attitude, and 3 on perception. These questions were used to assess the parents' knowledge, attitude, and perception towards conscious sedation. The authors devised the questionnaire with assistance from a previous article [1].

Face validity was performed among three subject matter experts, who scored the questionnaire with a composite score of 3.1 out of 4, indicating good face validity. Some changes were suggested to enhance the simplicity of the language. The content validity of the questionnaire was tested using Aiken's index to assess the appropriateness of the questions in relation to the study objectives. Aiken's index score for all the study questions ranged between 0.84 and 1.00 [9]. The questionnaire's reliability was assessed using the test-retest method, yielding a Cronbach's alpha score of 0.83, indicating good internal consistency among the items in the questionnaire.

A pilot study was conducted on 40 parents (10% of the sample size), and necessary changes were made based on the findings. The researcher conducted face-to-face interviews with the parents to collect data, either in English or the local language Kannada.

The parents were given the pre-test questionnaire to complete, following which educational intervention was provided. The educational intervention included the use of photographs, handouts, pamphlets, leaflets, brochures, and video demonstrations by the authors, explaining conscious sedation. The educational intervention lasted approximately 20 minutes and was conducted for all the parents present on a given day (approximately 10-15 parents per day in the Outpatient Department (OPD) who consented to participate in the study). Any doubts or queries were addressed, after which the parents' knowledge, attitude, and perception regarding conscious sedation were evaluated. The technique frequently employed by dentists in the current study was explained to the parents. Immediately after the educational session, the post-education questionnaire was administered and collected. A score of "1" was assigned for correct responses and a score of "0" for incorrect responses. Total scores were calculated to facilitate comparison based on the sociodemographic characteristics of the participating parents. The collected data were then subjected to statistical analysis.

STATISTICAL ANALYSIS

Statistical Package for Social Sciences (SPSS) for Windows Version 22.0, released in 2013 by International Business Machine (IBM) Corp. in Armonk, New York, was used for statistical analysis. Descriptive analysis was performed using frequency and proportions for categorical variables, and mean and standard deviation for continuous variables. The Wilcoxon's signed rank test was utilised to compare the mean sum scores of responses between the pre and post-intervention periods. One-way ANOVA test, followed by Tukey's posthoc test, was employed to compare the sum scores of responses during the post-intervention period based on the educational qualification of the participating parents. The independent student t-test was used to compare the mean sum scores of responses during the post-intervention period based on the gender of the participating parents. The level of significance was set at $p<0.05$.

RESULTS

The questionnaires were completed by all the parents who accepted the invitation to participate in the study. A total of 400 participants were surveyed, with more males than females. The participants

were divided into three groups, with the majority belonging to the 31-40 years age group. Based on educational qualification, undergraduate parents were the largest group [Table/Fig-1].

Variables	Category	n	%
Age	21-30 years	98	24.5%
	31-40 years	238	59.5%
	> 40 years	64	16.0%
Gender	Males	205	51.2%
	Females	195	48.8%
Qualification	Undergraduate	252	63.0%
	Graduate	134	33.5%
	Postgraduate	14	3.5%

[Table/Fig-1]: Showing distribution of socio-demographic characteristics of study parents.

Prior to the educational intervention, only 1.5% ($n=6$) of study participants had previously learned about conscious sedation through family and friends. However, after receiving education in the clinic, every single participant had acquired knowledge about it, indicating an increase in awareness. Initially, 393 (98.25%) of the study population were unaware that conscious sedation was a safe and easy treatment. However, following the education, 100% of the population agreed that the procedure was safe, secure, and easy [Table/Fig-2].

Questions	Responses	Pre-intervention		Post-intervention		% Change
		n	%	n	%	
Are you aware of conscious sedation?	Yes	7	1.75%	400	100.0%	98.2%
	No	393	98.25%	0	0	
If yes, how did you learn about that?	Underwent conscious sedation before	0	0	0	0	99.7%
	Internet/ Television	0	0	0	0	
	Family and friends	6	1.5%	0	0	
	Dental clinic	1	0.25%	400	100.0%	
Are you aware of the fact that it is a safe and easy procedure	Yes	7	1.75%	400	100.0%	98.2%
	No	393	98.25%	0	0	

[Table/Fig-2]: Showing comparison of distribution of parents' responses to the study questionnaire (knowledge-based questions).

Before the education, 394 (98.5%) of participants believed that performing conscious sedation in a dental clinic was very risky. However, after the education, 398 (99.5%) of participants found it to be very safe. Following the educational intervention, there was a significant change in knowledge, with 97% of parents realising that their children could undergo conscious sedation immediately. Additionally, 397 (99.3%) of parents realised that their children could resume their regular activities right away after receiving conscious sedation [Table/Fig-3].

Initially, 392 (98.0%) of parents were skeptical about sharing knowledge about conscious sedation. However, after receiving education, all 100% of participants agreed that it was important to share this knowledge. Furthermore, before the education, 228 (57.0%) of parents disagreed that conscious sedation was better than conventional treatment alone. After the education, everyone believed that conventional treatment with conscious sedation was preferable [Table/Fig-4].

The mean total scores of the responses during the post-intervention period were significantly higher (11.54 ± 0.77) compared to the pre-intervention period (0.56 ± 1.45) with $p<0.001$ [Table/Fig-5].

Questions	Responses	Pre-intervention		Post-intervention		% Change
		n	%	n	%	
Do you think it is safe to do in dental clinic?	Yes	6	1.5%	398	99.5%	98.0%
	No	394	98.5%	2	0.5%	
How do you think conscious sedation is performed?	Injecting medicine	141	35.25%	61	15.3%	58.5%
	Inhaling medicine through mask	105	26.25%	339	84.8%	
	Others	98	24.5%	0	0	
	Oral	56	14.0%	0	0	
Do you think there could be any side-effects?	No	12	3.0%	400	100.0%	97.0%
	Yes	230	57.5%	0	0	
	Don't know	158	39.5%	0	0	
Duration of waiting time after eating before undergoing conscious sedation?	Immediately	12	3.0%	400	100.0%	97.0%
	45 min to 1 h	64	16.0%	0	0	
	4-6 h	141	35.25%	0	0	
	12 h	183	45.75%	0	0	
When did your child can return to normal activities after Rx under conscious sedation?	Just after treatment	19	4.75%	397	99.3%	94.5%
	Same day	55	13.75%	0	0	
	Next day	7	1.75%	0	0	
	Don't know	319	79.75%	3	0.8%	
The reason for conscious sedation is to put the child to deep sleep like state during Rx	Agree	364	91.0%	118	29.5%	66.0%
	Disagree	7	1.75%	1	0.3%	
	Strongly agree	12	3.0%	0	0	
	Strongly disagree	17	4.25%	281	70.3%	

[Table/Fig-3]: Showing comparison of distribution of parents' responses to the study questionnaire (Attitude-based questions).

Questions	Responses	Pre-intervention		Post-intervention		% Change
		n	%	n	%	
If or when required, would you let your child undergo conscious sedation?	Yes	19	4.75%	400	100.0%	95.2%
	No	368	92.0%	0	0	
	Maybe	13	3.25%	0	0	
Will you share the information learned about conscious sedation with others?	Yes	7	1.75%	400	100.0%	98.2%
	No	1	0.25%	0	0	
	Maybe	392	98.0%	0	0	
Do you think conscious sedation is better with conventional treatment?	Yes	10	2.5%	400	100.0%	97.5%
	No	228	57.0%	0	0	
	Maybe	162	40.5%	0	0	

[Table/Fig-4]: Showing comparison of distribution of parents' responses to the study questionnaire (Perception-based questions).

Period	N	Mean	SD	Mean Diff	p-value
Pre-intervention	400	0.56	1.45	-10.98	<0.001*
Post intervention	400	11.54	0.77		

[Table/Fig-5]: Showing comparison of mean total scores between pre and post intervention period using Wilcoxon's signed rank test.
*Statistically significant

Before the intervention, there was no significant difference (p-value=0.9) in mean total scores among parents based on their educational qualification. However, after the intervention, there was

a statistically significant difference (p<0.05) in mean total scores among different education levels, with undergraduate parents scoring significantly lower compared to both graduate (p=0.04) and postgraduate (p=0.03) parents [Table/Fig-6]. The mean total scores of the responses during the post-intervention period among male parents were 11.52±0.74, and among female parents, it was 11.55±0.79. However, no significant difference was observed in the mean total scores during the post-intervention period based on the gender of the study parents (p<0.05).

Comparison of mean total scores of the responses during the post-intervention period based on the educational qualification of study parents using one-way ANOVA test followed by Tukey's posthoc test

Education	N	Mean	SD	p-value ^a	Sig. Diff	p-value ^b
Undergraduate (UG)	252	11.46	0.82	0.005*	UG vs G	0.04*
Graduate (G)	134	11.64	0.65		UG vs PG	0.03*
Postgraduate (PG)	14	12.00	0.00		G vs PG	0.21

[Table/Fig-6]: Comparison of mean total scores of the responses during the post-intervention period based on the educational qualification of the parents.
*Statistically significant. One-way ANOVA Test and Tukey's Posthoc Test

DISCUSSION

In the present study, a significant proportion of parents had limited awareness and knowledge regarding conscious sedation before the intervention. However, following the educational intervention, there was a notable increase in the proportion of parents who indicated familiarity with conscious sedation, suggesting that the educational intervention implemented in the present study was successful in increasing parents' awareness of conscious sedation. These findings are consistent with a study by Bhandari R et al., which reported that only 3% of parents had prior knowledge of the term "conscious sedation" [1]. Similarly, another study by Sanguida A et al., found that 27% of parents did not know what conscious sedation entailed [10]. Another study by Cote CJ et al., reported that parents had limited knowledge about oxygen or nitrous oxide sedation (3.6%) [11]. Due to this limited knowledge, parents may feel apprehensive and may not be willing to give consent for the use of conscious sedation.

Among the 400 parents in the present study, only 6 (1.5%) were aware of conscious sedation and had learned about it through family and friends. Only 1 person (0.25%) had learned about it from a dental clinic, and none had learned about it from the internet or television. In contrast, a study by Coté CJ and Wilson S found that 47% of parents learned about conscious sedation through television and the internet [11]. After receiving education in the dental clinic, the study participants in the present study primarily learned about conscious sedation from dental clinics.

In the present study, initially 393 (98.25%) of parents did not believe conscious sedation was safe for their children. However, following the intervention, nearly all participants agreed that it was a simple and safe procedure. Initially, the majority of participants in the present study objected to the use of conscious sedation in a dental office due to safety concerns. However, after the educational intervention, the majority of participants agreed that it was safe to be carried out in a dental clinic. Similarly, a study by Bhandari R et al., found that awareness increased after education, and participants felt that conscious sedation was safe in a dental office [1].

Most parents in the present study initially believed that the purpose of conscious sedation was to put the child into a sleep-like state similar to general anaesthesia during treatment. However, after receiving instruction, the majority of the population strongly disagreed with this belief. This finding is inconsistent with the study by Bhandari R et al., where only 40% of parents thought that sedation was used to put the child to sleep during treatment [1].

In addition to increased knowledge, there was also a significant change in the attitudes and perceptions of parents towards

conscious sedation in the present study. Before the intervention, more than half of the parents 368 (92.0%) were reluctant to consent to conscious sedation for their child if it was deemed necessary. However, following the educational intervention, the proportion of parents who would consent to conscious sedation for their child increased to 400 (100.0%). This finding is consistent with a survey by Alkandari SA et al., where it was found that most parents were unaware of nitrous oxide sedation as a behaviour management technique, but more than half of them accepted its usage for their children upon their dentist's advice and recommendation [12].

This shift in perception is particularly noteworthy because it indicates that parents' acceptance of conscious sedation has also grown. Additionally, it may help in reducing the amount of time the dentist needs to treat a patient and ease any anxiety or dread that parents might feel when their child needs to undergo dental procedures [1].

Similarly, all 400 parents (100%) in the present study agreed to share the information they learned about conscious sedation and were able to explain conscious sedation in their own words. This highlights the importance of educating parents about conscious sedation and its benefits. In a study by Shaw AJ et al., it was found that inhalation sedation was rated "better" or "much better" than general anaesthesia by 79% of parents who had previously undergone general anaesthesia. Inhalation sedation was also anticipated to be significantly less expensive to administer than general anaesthesia [13].

Before the educational intervention, more than half of the parents in the present study disagreed that utilising conscious sedation in addition to conventional treatment was preferable to using conventional treatment alone. However, after the education, everyone believed that standard treatment with conscious sedation is superior. This highlights the importance of educating parents on conscious sedation to ensure the safety and comfort of children during dental procedures.

For over 150 years and continuing today, inhalation sedation with nitrous oxide-oxygen has been the primary method for treating dental phobias and anxiety. This procedure has a high rate of effectiveness and a low incidence of negative effects and complications when administered correctly and using well-maintained equipment [14]. Nitrous oxide sedation provides the practitioner with a more predictable clinical outcome compared to other pharmaceutical methods [15].

According to studies, oral conscious sedation and general anaesthesia were the least popular and accepted behaviour modification approaches among parents, compared to other available methods [16,17]. However, an increase in the acceptability of oral sedation and general anaesthesia was observed in a different study, where the authors theorised that this increase in acceptance could be attributed to viewers' increased exposure to surgical general anaesthesia on television and their growing understanding of outpatient general anaesthesia [18]. Another study by White J et al., stated that prior sedation experience was not associated with greater parental understanding, highlighting the need to reeducate parents on treatment expectations when sedation is planned for a child [19].

Resources such as brochures, videos, and one-on-one consultations with dental professionals should be provided to parents in the waiting room. These materials can address common misconceptions about conscious sedation, explain the procedure in simple terms, and highlight its benefits. Additionally, the materials can provide information about the risks and side-effects of conscious sedation, as well as the steps that dental professionals take to ensure the safety of the patient. By providing these resources, parents can make informed decisions about whether to consent to conscious sedation for their child or not. In the present study, the educational intervention had a positive impact on parents' attitudes towards using conscious sedation in their children. Therefore, it is important to educate parents on a larger scale, increasing their knowledge and acceptance of conscious

sedation, which can be beneficial for dentists when managing children in the clinic.

The results of the present study have several implications for dental practitioners. Firstly, the findings suggest that it is vital for dentists to educate parents about conscious sedation before carrying out dental procedures when necessary. This can help reduce patient anxiety and improve the overall patient and parent experience. Secondly, the results highlight the need for dental practitioners to be able to communicate complex medical concepts in a language that parents can easily understand. Further studies can be conducted on larger sample sizes using artificial intelligence and technology to enhance the educational process.

Limitation(s)

The questionnaire was prepared only in English but was communicated to parents in the local language, who didn't understand English. To avoid this linguistic limitation, future research can include questionnaires prepared in multiple languages. Additionally, conducting studies with larger sample size and in multiple geographical locations would allow for better generalisation of the results.

CONCLUSION(S)

The study highlights the importance of providing parents with an educational intervention regarding the use of conscious sedation in dental procedures. The results suggest that parents lack knowledge and awareness about conscious sedation before the educational intervention. The educational intervention was effective in improving parents' knowledge and awareness of conscious sedation, leading to a significant improvement in their attitude towards conscious sedation. Thus, it emphasises the need for dental professionals to provide parents with information and education about conscious sedation before the procedure. The dentists have a role in bringing about this change in society by spreading awareness, which, in turn, helps improve the oral health of patients by delivering proper dental care to children.

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REFERENCES

- [1] Bhandari R, Thakur S, Singhal P, Chauhan D, Jayam C, Jain T. Parental awareness, knowledge, and attitude toward conscious sedation in North Indian children population: A questionnaire-based study. *Indian J Dent Res.* 2018;29(5):693-97.
- [2] Divya S, Pallavi A, Manivi M, Vinod S. Parents and children perception towards the nitrous oxide inhalation sedation as behavioural management technique during Paediatric Dental Care. *International Journal of Current Research.* 2021;13(12):19802-05.
- [3] Hallonsten AL, Jensen B, Raadal M, Veerkamp J, Hosey MT, Poulsen S, et al. EAPD Guidelines on Sedation in Paediatric Dentistry. 2003.
- [4] Galeotti A, Garret BA, D'Antò V, Ferrazzano GF, Gentile T, Viarani V, et al. Inhalation conscious sedation with nitrous oxide and oxygen as alternative to general anesthesia in preoperative, fearful, and disabled paediatric dental patients: A large survey on 688 working sessions. *Biomed Res Int.* 2016;2016:7289310.
- [5] Guidelines for the use of sedation and general anesthesia by dentists as adopted by the October 2007 ADA House of Delegates.
- [6] Attri JP, Sharan R, Makkar V, Gupta KK, Khetarpal R, Kataria AP. conscious sedation: Emerging trends in paediatric dentistry. *Anesth Essays Res.* 2017;11(2):277-81.
- [7] Harris R. Conscious sedation: Considering operator and patient safety. *BDJ In Pract.* 2020;33:26. <https://doi.org/10.1038/s41404-020-0365-0>.
- [8] Pooja VR, Victor Samuel A, Ramar K. Changing trends in conscious sedation at paediatric dental offices: A bibliometric analysis. *Cureus.* 2023;15(6):e40191.
- [9] Aiken LR. Content validity and reliability of single items or questionnaires. *Educational and Psychological Measurement.* 1980;40(4):955-59.
- [10] Sanguida A, Vinothini V, Prathima GS, Santhadevy A, Premal K, Kavitha M. Age and reasons for first dental visit and knowledge and attitude of parents toward dental procedures for Puducherry children aged 0-9 years. *J Pharm Bioallied Sci.* 2019;11(2):S413-19.
- [11] Coté CJ, Wilson S. American Academy of Paediatric Dentistry Guidelines for monitoring and management of paediatric patients before, during, and after sedation for diagnostic and therapeutic procedures. *Paediatr Dent.* 2019;41(4):E26-E52.

- [12] Alkandari SA, Almousa F, Abdulwahab M, Boynes SG. Dentists' and parents' attitude toward nitrous oxide use in Kuwait. *Anesthesia Progress*. 2016;63(1):08-16.
- [13] Shaw AJ, Meechan JG, Kilpatrick NM, Welbury RR. The use of inhalation sedation and local anaesthesia instead of general anaesthesia for extractions and minor oral surgery in children: A prospective study. *Int J Paediatr Dent*. 1996;6(1):07-11.
- [14] Malamed SF, Clark MS. Nitrous oxide-oxygen: A new look at a very old technique. *J Calif Dent Assoc*. 2003;31(5):397-403.
- [15] American Academy of Paediatric Dentistry (AAPD): Guideline on use of nitrous oxide for paediatric dental patients. *Paediatr Dent*. 2013;35(5):E174-78.
- [16] Murphy MG, Fields HW Jr., Machen JB. Parental acceptance of paediatric dentistry behaviour management techniques. *Paediatr Dent*. 1984;6(4):193-98.
- [17] Lawrence SM, McTigue DJ, Wilson S, Odom JG, Waggoner WF, Fields HW Jr., et al. Parental attitudes toward behaviour management techniques used in paediatric dentistry. *Paediatr Dent*. 1991;13(3):151-55.
- [18] Eaton JJ, Mc Tigue DJ, Fields HW Jr., Beck M. Attitudes of contemporary parents toward behaviour management techniques used in paediatric dentistry. *Paediatr Dent*. 2005;27(2):107-13.
- [19] White J, Wells M, Arheart KL, Donaldson M, Woods MA. A questionnaire of parental perceptions of conscious sedation in paediatric dentistry. *Paediatr Dent*. 2016;38(2):116-21.

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