

**KNOWLEDGE AND ATTITUDE AMONG VARIOUS UNDERGRADUATE STUDENTS
REGARDING CONSCIOUS SEDATION IN PEDIATRIC DENTISTRY — A CROSS-
SECTIONAL STUDY**

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ABSTRACT

Background: Behaviour management techniques are considered integral components in paediatric dentistry, to alleviate fear and anxiety, efficiently deliver effective dental treatment to the child. A lack of knowledge among dental professionals regarding sedation appears to be a factor influencing the practice of dental sedation. **Aim:** To evaluate the knowledge, attitude and practice of under graduate dental students on conscious sedation. **Methodology:** A questionnaire-based cross-sectional survey was carried out among 370 undergraduate dental students. (Final years and interns). In all, 370 questionnaires were prepared out of which 120 were filled through direct personal interview and 250 were circulated via Google forms. **Result:** A total of four hundred questionnaires were sent out and 370 questionnaires were filled and returned. The age of participants ranged from 22 to 23 years. There were 111 men (30%) and 259 female (70%) participants. **Conclusion:** This study shows that despite most undergraduate dental students have basic knowledge on sedation in dentistry, very few have formal training in sedation. The undergraduate dental students showed positive attitude regarding use of conscious sedation in uncooperative patients.

KEYWORDS: Behavior management, Conscious sedation, Undergraduate dental students, Knowledge.

INTRODUCTION

Managing anxious, uncooperative children can be one of the most challenging aspects of paediatric dentistry. Behaviour management techniques are considered integral components in paediatric dentistry, to alleviate fear and anxiety, efficiently deliver effective dental treatment to the child to achieve a better outcome and promote a positive dental attitude towards oral health care.^[1] The behaviour management techniques can be divided into basic behaviour techniques like tell-show-do, distraction, positive reinforcement, voice control, and parental presence/absence, and advanced behaviour techniques which includes protective stabilisation (active and passive restraint), sedation, and general anaesthesia.^[2] Drugs that are used include inhalational agents such as nitrous oxide, orally or parenterally administered midazolam, other benzodiazepines, tramadol, zolpidem, sevoflurane, ketamine.^[3]

Conscious sedation is becoming a popular practice and a useful adjunct for the treatment of patients in dentistry due to advances in anesthetic safety, changing patient views, and increasing treatment needs. However, a lack of knowledge among dental professionals regarding sedation appears to be a factor influencing the practice of dental sedation.^[4] Education of dentists in the use of

conscious sedation is undertaken at both undergraduate and postgraduate levels. Although postgraduate training is mandatory before a dentist can practice sedation, the undergraduate curriculum is expected to provide a thorough introduction to the subject.^[5]

The UK General Dental Council recommends that undergraduate dental students should have a sound knowledge of the basic sciences relevant to sedation, should be capable of selecting suitable cases for pharmacological sedation and have practical experience in the administration of inhalational and intravenous sedation.^[5] The low level use of sedation in dentistry has been largely attributed to a lack of proper training and proper sedation facilities and equipment, and the additional cost of purchasing equipment. A paucity of information regarding the level of knowledge and attitude of conscious sedation among dental students renders it difficult to ascertain the exact reasons for its limited use.^[4]

In light of the seriousness of in-office conscious sedation related adverse incidents, a current understanding of the compliance among undergraduate pediatric dentist through the curriculum and training is essential. Hence, the aim of this survey is to evaluate the knowledge,

attitude and practice of under graduate dental students on conscious sedation.

Research question

What is the knowledge and attitude of under graduate dental students on conscious sedation?

MATERIALS AND METHOD

Study design and participants

It is a cross-sectional study. The present study was conducted among undergraduates of dental colleges in Karnataka. Undergraduate dental students who gave voluntary informed written consent are included in the study. Voluntary informed consent was obtained from the study participants after explaining the purpose of conducting the study and procedure of collecting the data through questionnaire. A questionnaire-based cross-sectional survey was carried out among 370 undergraduate dental students. (Final years and interns). In all, 370 questionnaires were prepared out of which 120 were filled through direct personal interview and 250 were circulated via Google forms. Ethical approval was obtained from the Institutional Ethical Board from Bapuji Dental College and Hospital, Davangere (Ref. No. BDC/ Exam/509/2019-20). Participation in the study was voluntary and confidentiality of data was maintained.

Questionnaire

Structured self-administered questionnaire developed through review of the literature which was pilot tested on 10 participants and peer reviewed among the investigators. The questionnaire had a total of 19 questions in English language and was tested for face validity and content validity and reliability. The sample size was selected based on the previous studies and keeping the power of the study as 80%. The Cronbach a value for the questionnaire was found to be 0.8. Survey proforma containing demographic details of the participants along with questionnaires about knowledge, attitude and practice of under graduate dental students on conscious sedation. and practice of under graduate dental students on conscious sedation. The survey sought

information on the following items: (1) The participant's demographic data. (2) Knowledge: This section of the survey was basic and critical knowledge-based questions. (3) The participant's attitude toward conscious sedation procedure in children with dental anxiety.

STATISTICAL ANALYSIS

Data collected was compiled on to a MS Office excel worksheet & was subjected to statistical analysis using a SPSS software. Descriptive statistics like frequency (n) & percentage (%) of categorical data, mean & standard deviation of numerical data in each group was depicted.

RESULTS

SOCIODEMOGRAPHIC CHARACTERISTICS

A total of four hundred questionnaires were sent out and 370 questionnaires were filled and returned. The age of participants ranged from 22 to 23 years. There were 111 men (78.1%), and 259 female participants. (Table 1).

Table 1: Demographic Details.

Gender	Frequency	Percent
Male	111	30
Female	259	70
Total	370	100

KNOWLEDGE OF UNDERGRADUATE ON CONSCIOUS SEDATION USED IN DENTISTRY:

Fourteen questions were asked to assess participant's knowledge regarding sedation in dentistry. The majority (55.4%) knew that sedation could be used to reduce anxiety in dental patients and 77.3% agrees that conscious sedation is a better behaviour management method than general anesthesia. Majority (33%) of the participants does not believe conscious sedation can be used in combination with other drugs. Only 30% agreed that the patient will be able to respond to verbal comments and all of the participants agreed that nitrous oxide is most effective sedative agent to treat uncooperative patient. (Table 2). More than half participants had satisfactory knowledge regarding conscious sedation in dentistry.

Table 2.

Questions	Strongly Agree	Agree	Disagree	Strongly disagree
1. Do you think behaviour management is the solution to perform treatment for a child with dental anxiety?	55.4	29.2	0	0
2. Do you think pharmacological behavior management methods should only be admitted if non pharmacological methods fail?	77.3	6.5	0.8	0
3. Do you think conscious sedation is a better pharmacological behaviour management method than general anesthesia?	73.2	11.4	0	0
4. Do you think conscious sedative agents can be used alone or in combination to reduce anxiety and fear associated with dental treatment?	16.5	35.7	32.4	0
5. Do you think that during sedation the patient will be able to independently maintain an open mouth, and also respond sensibly to verbal commands?	10.3	21.9	52.4	0

6. Do you think nitrous oxide inhalation sedation is the most effective conscious sedative agent to treat uncooperative patients?	30.5	48.9	0	0
7. Do you think nitrous oxide sedation is better than aversive conditioning for treating a child with dental anxiety?	30.5	49.2	4.9	0
8. Do you think its important to record vitals including pulse rate, oxygen saturation, blood pressure, oxygen saturation to be monitored throughout the procedure	54.6	29.2	0.8	0
9. Do you think that during sedation patient will be able to independently maintain an open mouth and also respond sensibly to verbal commands?	10.3	21.9	52.4	0
10. Do you think nitrous oxide inhalation sedation is the most effective conscious sedative agent to treat uncooperative patients?	35.7	48.9	0	0
11. Do you think midazolam can be used as a conscious sedative agent in pediatric patients at a dose of 0.2 to 1.0 mg/kg?	32.2	48.1	2.4	0
12. Do you think oral midazolam is safe and easy to use than IV midazolam in uncooperative patients?	30.5	49.2	2.4	0
13. Do you think nitrous oxide unit should be available in all dental clinics?	24.1	15.7	44.9	0
14. Do you think conscious sedation administration must require the presence of an anesthetist?	4.6	14.3	64.6	0
	4 hrs	1 hr	30 mins	4-6 hrs
15. Before sedation, how long should the patient should maintain a fasting period before sedation to avoid the risk of aspiration.	57.8	11.1	0.8	14.9
	Yes	No	Maybe	
16. Do you think midazolam is an alternative option in highly uncooperative child of Frankl's scale of 1 who refuse to accept nasal mask?	42.4	3.2	37	
17. would you recommend oral midazolam over nitrous oxide for pediatric patients with dental anxiety?	47.3	2.4	33	

ATTITUDE OF UNDERGRADUATE DENTAL STUDENTS ON THE USE OF CONSCIOUS SEDATION IN DENTISTRY

Majority of the participants (68.6%) recommend nitrous oxide inhalation sedation for highly uncooperative patients and 47.3% of participants recommend oral midazolam over nitrous oxide for patients with dental

anxiety. 26.8% have treated highly uncooperative patient, 68.6% of participants have read articles on conscious sedation and 54.1% have witnessed patient being treated under conscious sedation. Hence 68.9% of the participants have positive attitude about the conscious sedation use in treating children with dental anxiety.

Table: 3.

Questions	Yes	No	Maybe
1. Would you recommend nitrous oxide inhalation sedation to highly uncooperative patients?	68.6	15.1	0.8
2. Have you ever treated an highly uncooperative child of Frankl's scale of 1 or 2 ?	26.8	22.7	34.9
3. Have you anytime read any articles on conscious sedation?	61.9	22.7	0
4. Have you ever witnessed a patient being treated under conscious sedation?	54.1	29.7	0.8

DISCUSSION

The present survey was conducted among the undergraduate students to assess their knowledge and attitude on the conscious sedation. A total of 370 final year BDS students and interns were included in the study. The survey consisted of a questionnaire consisting of 19 questions. The results of this study provide a clear

picture of the level of knowledge and attitude of conscious sedation among undergraduate dental students. From this study, it was evident that majority (68.9%) of the undergraduate dental students had adequate knowledge regarding nitrous oxide sedation and its use in reducing anxiety, but were not aware of other sedative drugs or drugs used in combination.

In association with a study, among the students who took part in the study, 36.3% of the students were postgraduates and 63.7% of them were undergraduates. The study showed that most students did not have enough knowledge about neurolept anesthesia. However, dentists should make efforts to improve knowledge, awareness of neurolept anesthesia for further advancement, and the need for high-quality anesthesia.^[10]

In a study it was found that while specialists of special care dentistry had more knowledge of behaviour management practice, compared to nonspecialists, overall knowledge of behaviour management was low among all the dentists. There is a clear need to provide teaching and learning opportunities in behavior management techniques for the entire dental team at both the undergraduate and graduate level, which ultimately will lead to better clinical experiences.^[11]

In accordance with a study which concluded that, there has been an increase in didactic teaching. There has been a decrease in the observing of inhalational cases, but an increase in the hands-on performance of this type of sedation. There is an increase in the hands-on teaching of intravenous sedation.^[5]

It was also seen that most dental professionals in Tanzania had basic knowledge of sedation in dentistry, although knowledge regarding sedative agents is generally low. The practice of sedation in dentistry in Tanzania is very low compared to that in middle- and high-income countries. Inadequate knowledge, lack of equipment, and the cost of practicing sedation are the main reasons for not practicing sedation.^[4]

Not only undergraduate dental students had satisfactory knowledge of sedation in dentistry, 68.6% of the participants recommend nitrous oxide inhalation sedation for highly uncooperative patients and 47.3% of participants recommend oral midazolam over nitrous oxide for patients with dental anxiety.

Majority (68.9%) of the undergraduate dental students have positive attitude towards the practice of conscious sedative agent for uncooperative patients. According to a survey conducted among dentist and parents of patients in Kuwait it was concluded that, parents are accepting nitrous oxide sedation as a behaviour management technique for their children. It also showed the willingness of the dentists to provide such behaviour management technique to their patients. The lack of training and lack of equipment are the main barriers to providing such service to the patients. More training courses and more facilities should be provided to eliminate such barriers.^[4]

The lack of formal training in sedation explains the finding that the participants in this study had little information regarding other sedative agents. For

instance, most participants did not know that midazolam, which affects neuromuscular transmission, has a greater amnestic effect and shorter duration of action than diazepam.^[4]

In the current study, there was no statistically significant association between the level of knowledge on sedation and factors such as the demographic characteristics of the participants and previous training on sedation. This may be attributed to the fact that during their training, from the undergraduate stage, dental students are taught and thus expected to provide safe and pain-free dental care, consequently, they are given some knowledge on sedation as a means of pain control. Therefore, regardless of proper training in sedation, every dental students had some awareness of sedation. Similar to reports from Jordan and India, fewer than a quarter of participants in this study reported using sedation in their practice; of these, only a few practiced sedation frequently.^[8]

The current study, where the majority of the participants had knowledge on other sedative agents that can be used in dentistry. Since most dental students think sedation in dentistry must be performed using nitrous oxide, which requires expensive equipment and installation, the cost and lack of equipment becomes a challenge.

The limitation of this study may be that it did not include undergraduate dental students of all colleges. As such, this might have led to selection bias, limiting the generalizability of our findings. However, if consideration is given to clinical practice, then this study provides an actual scenario of the knowledge and attitude of sedation among undergraduate dental students.

CONCLUSION

This study shows that despite most undergraduate dental students have basic knowledge on sedation in dentistry, very few have formal training in sedation. The undergraduate dental students showed positive attitude regarding use of conscious sedation in uncooperative patients. It is important to overcome the ignorance of sedation in dentistry, continuing education programs and training for undergraduate dental students should be organized by the appropriate authorities.

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