



## RESEARCH ARTICLE

### PERCEPTION AMONG DENTISTS OF GUJARAT STATE REGARDING THE USE OF CONSCIOUS SEDATION IN PEDIATRIC DENTAL PRACTICE

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#### ABSTRACT

**Background:** Conscious sedation is a safe and effective method of anxiolysis. However, the use of conscious sedation in pediatric dental patients is a controversial topic as it involves the intersection of dentistry and medicine. Apart from nitrous oxide, other forms of sedation, such as oral benzodiazepines, midazolams, triclofos etc are little used. Among the many questions that could be asked, it is clearly necessary to find out what dental practitioners think about the use of sedatives in their routine pediatric dental practice. This is important in view of the fact that in the culture there is a certain mystique regarding human anesthesiology.

**Aim:** To evaluate the perceptions of dentists on use of Conscious Sedation in paediatric dental practice in Gujarat.

**Methodology:** Dentists registered with the Indian Dental Association of Gujarat state were included in a cross-sectional survey. A self prepared questionnaire comprising of 10 questions were sent to the dentists via an e mail. Questions pertaining to their knowledge and preferences for the use of conscious sedation were asked. The data was evaluated using Statistical software IBM SPSS statistics 20.0.

**Results:** The questionnaire was sent to 400 dentists from the four zones of Gujarat state. 74.25% (297 dentists) responded to the questionnaire. 43.5% were female practitioners and 53.5% were male practitioners. 78.5% were in favor of using conscious sedation as a behavior management technique in pediatric dental practice, irrespective of their qualification or years of experience. Maximum knowledge about conscious sedation was obtained through the curriculum (80%) followed by CDE/Workshops (10.1%) and self reading and internet (7.7%). 49.5% felt there is no need for an anesthesiologist during the use of conscious sedation. 66.3% felt conscious sedation is a good way to manage an anxious child 79.1% felt the need for conscious sedation in their routine pediatric dental practice however 40.4% managed without it. 45.5% have never used or observed conscious sedation techniques. Lack of training was the major hindrance to practice conscious sedation (54.2%) followed by fear of adverse reactions (16.5%), cost of sedation unit (12.8%) difficulty in procuring the equipment (11.4%) and 5.1% had lack of motivation.

**Conclusion:** It can be concluded that the dentists of Gujarat state in general felt optimistic about the use of conscious sedation, however, complained of a lack of training to the subject.

**Key words:** Conscious Sedation, Children, Perceptions, Dentists, Gujarat, India.

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#### INTRODUCTION

Traditionally, dental practice has been strongly associated with pain and anxiety. Misconceptions about the specialty still persist despite modern advances in methods of analgesia and anxiolysis. Many anxious or phobic dental patients require the support of pharmacological methods of sedation to enable them to undergo routine dental treatment. However, the use of conscious sedation in pediatric dental patients is still a controversial topic as it involves the intersection of dentistry and medicine (Costa *et al.*, 2004).

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The use of conscious sedation in India is not very popular or strongly accepted technique among general practitioners.

Sedation should be regarded as a vital part of management of pain and dental anxiety in apprehensive patients, to make the treatment a pleasant learning experience (Krishna *et al.*, 2016). The appropriate use of Conscious sedation (CS) can reduce the need for general anesthesia and thereby decrease the associated risks. Sedation teaching as a part of dental curriculum in India has been a low priority by many dental colleges until recently. Therefore the general practitioners practicing since over a decade and more have not been sufficiently exposed to the sedation techniques as a part of behavior management technique (BMT) for children. However, we are reaching an era where clinical demand of sedation use in dentistry is predicted to increase. This warrants the need of this study which aims to assess the perceptions of the current dental practitioners, thereby creating awareness among them, motivating them and in addition, create a baseline data to aid in

reforms necessary in the current scenario in India regarding the use of conscious sedation among pediatric population. Among the many questions that could be asked, it is clearly necessary to find out what dental practitioners think about the use of different sedative agents in their routine pediatric dental practice. This is important in view of the fact that in the culture there is a certain mystique regarding human anesthesiology (Krishna *et al.*, 2016). The purpose of this study was to evaluate and assess the Perception among Dentists of Gujarat State regarding the use of Conscious Sedation in Pediatric Dental Practice. An awareness of the perceptions of the dentists regarding use of conscious sedation can be useful to identify and address the questions and misconceptions regarding the subject, which will thereby aid as a guide to future research and help in motivating practitioners to practice the same.

## MATERIALS AND METHOD

This study was a cross sectional survey conducted among the Dentists of Gujarat, India. The study was approved by the institutional ethical committee (SVIEC/ON/Dent/SRP/16152). The participants included only registered members of the Indian Dental Association (IDA) from branches of the selected cities. The participants who refused to give consent, who could not be contacted and those who did not fill the questionnaire form completely were excluded from the study. Informed consent was obtained from the participants participating in the study. The state of Gujarat is geographically divided into 4 zones Central, North, Saurashtra and South Gujarat. One city representing each of the four zones was selected. Central zone: Vadodara; North Zone: Mehsana; South Zone: Surat; Saurashtra Zone: Jamnagar 100 dentists registered with the IDA were randomly selected using the lottery method from the 4 selected districts (n=400). A self prepared questionnaire comprising of 10 validated questions was then sent to the dentists via e-mail. The questionnaire was sent twice at an interval of 3 months. A response was awaited for a period of 3 months. The data collected was entered into a computer and analyzed using the SPSS software. Only frequency and quantitative analysis of the data was carried out.

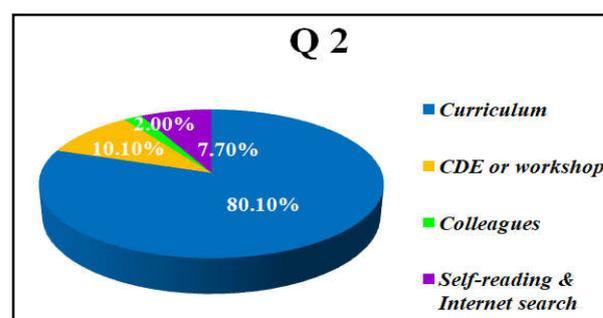
## RESULTS

An overall response rate of 74.25% (297/400) was obtained. The demographic details of the participants are described in the Table 1. Of the total participants, 53.5 % (n= 159) were male respondents and 46.5% (n=138) were female respondents. The age of the participants varied from 25 years to 61 and above with the majority of participants lying between 31-40 years 29.6% (n=88) and 41-50 years 27.9% (n=83). 63% (n= 187) of the participants were BDS by qualification and 37% (n=110) were MDS by qualification.

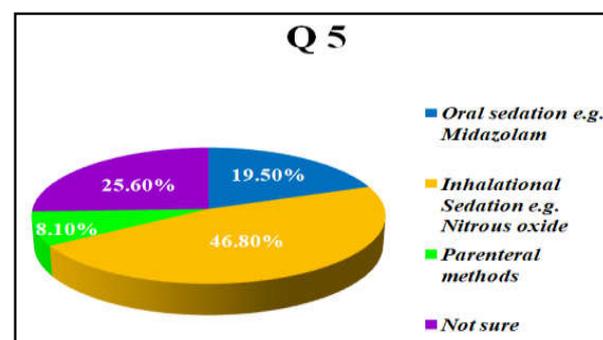
### Question wise obtained results

- 78.5% (n= 233) of the participants were in favor of using conscious sedation in paediatric dental practice
- Knowledge regarding the use of conscious sedation was obtained from the curriculum in 80.3% (n=238) of the participants, followed by CDE or workshop, Self-reading & Internet search and Colleagues (Graph 1)
- 69.4% (n= 206) felt there is need for a Diploma course or a short term certified course for the use of conscious sedation.

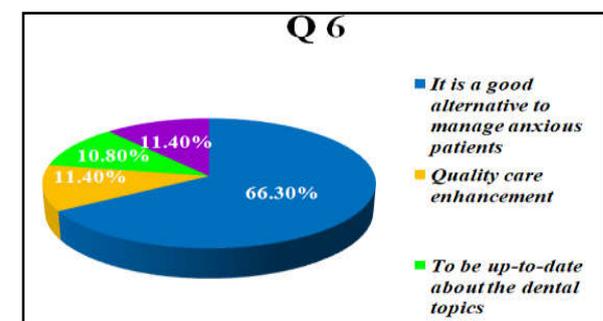
- 90.2% (n= 268) were aware of the different routes of administration of Conscious Sedation in paediatric dental practice
- Majority (48.8%, n= 139) of the participants preferred inhalational sedation of nitrous oxide for conscious sedation in children. (Graph 2)
- 66.3% (n= 197) conscious sedation was helpful as it thought could be a good alternative to manage anxious patients. (Graph 3)
- 49.5% (n= 147) thought there is need for an anaesthesiologist during the use of conscious sedation
- About 79.1% (n= 235) felt the need of Conscious sedation (as a behavior management technique for children) in routine dental practice
- Although 47.8% (n= 142) referred an anxious child to a specialist, about 40.4% (n= 120) managed the child using other aversive techniques of behavior management. (Graph 4)
- 54.2% (n= 161) felt lack of training as the major factors that hinder them from practicing Conscious Sedation. (Graph 5).



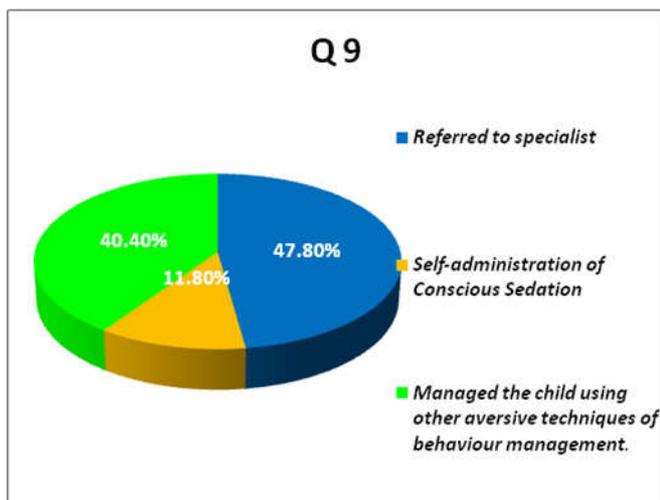
Graph 1. Practitioners' source of knowledge regarding use of CS



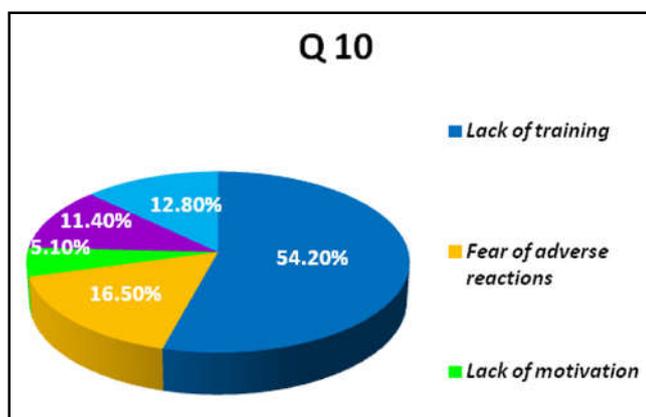
Graph 2. Practitioners preference of route for using CS



Graph 3. Reason for use of CS



Graph 4. Measures opted to manage an anxious child



Graph 5. Factor hindering the use of conscious sedation

## DISCUSSION

Dental fear and anxiety have always remained a major limitation amongst young children posing behavior management problems and thereby preventing children to undergo a dental procedure successfully. Despite the long history of use of Conscious Sedation (CS) especially nitrous oxide inhalational sedation (NOIS), it is underused in most parts of the world, particularly in India. The present survey was an online survey. In a survey conducted by Hohwü L *et al.*, (2013), they affirmed though traditional paper based questionnaire has been the epidemiological mode of choice for collecting survey data so far; however with the escalating use of the Internet, Web-based questionnaires may be an understandable option. The rapid growth in access to the Internet has decreased the coverage differential between paper-and Web-based questionnaires. In addition conducting a State wide or nationwide surveys makes traditional paper based surveys difficult and time consuming. The target population of the present survey was practitioners, who were members of the IDA Branches from four cities representing each geographic zones of the state of Gujarat. The practitioners included both graduates and post graduates, as membership to IDA is inclusive to all registered dentists. However, the present study observed higher number of graduate (BDS) participants (63%) as opposed to postgraduates (MDS) (37%) (Table 1). The specialty of the post graduates was not evaluated. The present study was not targeted at pediatric dentist in particular; hence the responses are regarded as responses from general practitioners in general. As a thumb rule, most parents tend to

first consult the general dentist for their child's treatment. This norm may be attributed to various factors such as:

- Scarcity of pediatric dentist in every part of the nation as only 9% of the total dentists in India are specialized to provide pediatric oral health care (Agrawal and Agrawal, 2017) or;
- Lack of awareness among people regarding the availability of an exclusive specialist trained for pediatric population or;
- Lack of referral by general dentists. In a study by Pawar P *et al.*, (2017) reported that referral for Pedodontic treatment from dentists was 12.5% where as by friends or relatives were 83%.
- Cost- effectiveness. The burden of increased cost of a specialist especially among children from lower socio economic background. Bommireddy VS *et al.*, (2014) concluded in their study that lack of awareness and affordability remained a possible threat to under utilization of dental services.

With all such factors, the responsibility of treating the children thereby falls in the hands of general practitioners. Therefore it was essential to determine and assess their view on use of CS for Pediatric population. The study included 53.5% male practitioners and 46.5% female practitioners (Table 1). There was no difference in gender wise responses of the practitioners. The current study reported a good response of 74.25% (Table 1). The three factors that could be attributed to the high response are as follows:

- As described earlier, with rapid growth of internet and digitalization of technology, it is easier to respond to surveys or polls at a click of a finger. This process is not only easier, but a quick, systematic, hassle-free, paper-saving and cost effective method.
- Secondly, the majority of the respondents were between 31 to 40 years of age (29.6%), followed by 41 to 50 years (27.9%) and 25 to 30 years (18.5%). Thus the maximum response elicited was in practitioners between 25 to 50 years of age group who appear to be more active and responsive when compared to the older age group (51 years and above) which could be due to lack of time, minimal use of tech-savvy gadgets or lack of interest, etc among the older group.
- Thirdly, the increased response could be due to the inquisitiveness towards the field of conscious sedation in children. Conscious sedation is gaining tremendous support in recent years due to its safety margin and the fact that it can reduce the use of general anesthesia. Hence practitioners may incline towards the use of minimally invasive procedures such as conscious sedation especially when dealing with pediatric population.

Table 1. Demographic characteristics of the study participants (N=297)

Demographic Details		Percentage (n= 297)
Gender	Male	53.5%
	Female	46.5%
Age	25- 30 years	18.5%
	31- 40 years	29.6%
	41- 50 years	27.9%
	51- 60 years	17.8%
	61 & above	6.1%
Qualification	BDS	63%
	MDS	37%

Table 2. Questions asked to the Practitioners

Knowledge-oriented	Attitude-oriented	Practice-oriented
Source of Knowledge about CS	Whether in favor of CS?	Have you felt the need of CS in your practice?
Awareness of different routes for CS	Need for short certified courses for CS	How do you manage anxious and apprehensive children?
Need for Anesthesiologists for using CS	Why do you think CS is Helpful?	What are the hindrances you experience to use CS?
---	Preferred route for CS	---

The high response rate thus reduced the non response bias in the present study. The survey included 10 close ended questions which could be divided as described in Table 2.

### Knowledge and Attitude of the Practitioners towards Conscious Sedation

- The present study revealed that about 78.5% of the practitioners were in favor of using CS as BMT for children. A similar finding was observed in a study by Costa RS *et al.*, (2004) where 95% of the dentists were in favor for the same. The above result displays the positive attitude of the practitioners towards the use of CS.
- Our observations also revealed that despite the fact that CS is part of the curriculum and majority of the participants (80.10%) in the present survey obtained their knowledge about CS from the curriculum (Graph 1); about 69.40% practitioners still felt there is a need for a short certified course for conscious sedation practice.
- This is due to the fact that as far as institutional commitment to teaching is concerned, the amount of attention given to the topic in undergraduate level is minimal and mostly theoretical.<sup>2</sup> This finding is in accordance with the study by Costa RS *et al.*, (2004) and by Mantzourani M (2007) who found that lack of undergraduate training is the key issue for the underuse of conscious sedation techniques.
- About 90.20% of the practitioners were aware of the various routes available for administration of conscious sedation and majority (46.80%) preferred inhalation sedation technique for children (Graph 2).

It was very promising to find from the results that inhalational sedation was very popular among practitioners for Paediatric sedation. Similar findings were reported by Mantzourani M (2007) in his pilot study conducted among 141 general dentists. This could be attributed to the ease and safety margin associated with the use of inhalation sedation as compared to the other routes for conscious sedation. The use of oral sedation and parental techniques requires thorough knowledge, advanced skill and confidence. Lack of exposure and training in undergraduate training is not sufficient enough to boost the confidence of the practitioners.

- However, majority of the practitioners (66.30%) perceived the use of conscious sedation as a good alternative to manage anxious children, while few felt it is a marketing gimmick to make monetary benefit (11.40%) or as a quality care enhancement (11.40%). It was appreciable that majority practitioners found CS as a beneficiary tool (Graph 3).
- Upon asking about their thoughts on the need of anesthesiologists for performing CS in practice, about 49.50% thought there is a need; while 25.50% felt otherwise and rest 24.50% were not aware. Their perception shows that about half of the practitioners were in consensus for the need of anesthesiologists. This confirms that most practitioners were uncertain or apprehensive regarding the use of CS in their practice.

These observations reveal that there is a certain degree of skepticism about this topic and the knowledge about which seems superficial. However, most practitioners seemed to have a positive attitude and motivated to learn or use CS.

### Practice of the Practitioners towards Conscious Sedation

- The obtained results revealed that though all the practitioners are aware and in favor of the use of CS techniques as a Behavior management technique (BMT) in children, their level of knowledge and skill is not sufficient enough to practice the same. Most children usually seek dental care when in pain or discomfort and treating a child at this stage requires child's cooperation which can be achieved by a good behaviour management technique either non pharmacological or pharmacological methods. Most often a practitioner may fail to provide the same, due to lack of knowledge or skill. According to GZ Wright (1975), the goal of behavior management in a child is to perform a treatment effectively and efficiently, thereby instilling a positive dental attitude in the young child who would later be a responsible and motivated young adult. This entails the need to master the knowledge and skill of practicing BMT at day today basis. The use of conscious sedation can be of great help when one encounters an anxious or apprehensive, uncooperative child. In the present survey, 79.10% of the dentists felt the need of CS as a BMT for children in their practice, yet 40.40% of dentists managed such cases using other aversive techniques (Graph 4) due to lack of knowledge and experience for practicing conscious sedation methods. This often may result in a negative experience / feeling among the children as well as the dentists towards the dental treatment. Costa RS *et al.*, (2004) stated the use of physical restraints or HOME (hand-over-mouth exercise) for children has to do with ethical or legalities in certain parts of the world. Also such procedures make the dentists a necessary evil, a punishment and association with sensations of stress and anxiety in the eyes of the children. Moreover, such techniques may not always be fruitful thereby resulting in the need of general anesthesia to manage such children. This indicates that lack of skill and knowledge to perform CS may convert a negative child into a definitely negative child. In addition, parental acceptance to such techniques for behavior management is very limited. Similar findings were observed by Boka V *et al.*, (2014), where the authors reported the techniques least accepted by parents were passive restraints, general anesthesia, oral sedation and HOME (hand-over-mouth exercise).
- The present study revealed that the major hindrance to the use of conscious sedation among practitioners was lack of training (54.20%) followed by fear of adverse reactions (16.50%) (Graph 5). Similar observations were reported by Scally KJ *et al.*, (2015). The study was carried out among dental students and reported hands-

on clinical experience and knowledgeable supervising staff are the most important factors for dental students in their clinical training. Inadequate clinical exposure and lack of professional training makes the practitioner less confident and self-doubting to use the procedures. It was observed that graduates generally felt inadequately prepared in sedation. Davis MJ (1988) stated that other factors responsible for underuse of sedative agents could be the increased cost of professional liability insurance and concerns maintaining currently accepted protocols for the administration of these agents. This could also be applicable in our present scenario as well. Though professional skill and knowledge remain the determining factors, the goal should be to encourage and promote practitioners to practice safe sedation especially in pediatric population

### Limitations

- The current study was limited to the state of Gujarat with only four cities as representatives.
- A nationwide survey with larger sample should be undertaken to determine the thoughts and perceptions of practitioners nationwide regarding the use of conscious sedation for children.
- This study targeted the practitioners in general and was not exclusive to pediatric dentist. Studies focusing on pediatric dentist of India would elicit the perceptions and status of actual use of conscious sedation among children.

### Recommendations

- Education of dentists for the use of conscious sedation is undertaken at both undergraduate and postgraduate levels. However postgraduate training is mandatory in some countries to practice sedation. The basis for postgraduate sedation education and training begins at the undergraduate level. Thus implementing new protocols and reforming the current curriculum pattern regarding use of conscious sedation in dental colleges of India will prove fruitful and beneficial.
- Appropriate referral of pediatric cases to specialist should be encouraged among practitioners who are not very confident in managing the pediatric population.
- Especially in India, the deliberations continue whether conscious sedation can be practiced in a dental office setting and whether general anesthesia is safe. There are no official guidelines by either Indian Dental Association or Indian Society of Pedodontics and Preventive Dentistry (ISPPD) on the argument. (Siddiqui, 2017). Fear of adverse reactions and the skill required to manage medical emergencies associated with the use of conscious sedation can be improved by reinforcing protocols or guidelines that mandate the specialized training and courses for basic and advanced life support for all practitioners who desire to practice conscious sedation.

### Conclusion

The present survey was conducted in order to establish a baseline data regarding the perceptions of dentists regarding the use of CS in children of Gujarat, India. Within the limitation of the survey, it can be concluded that that Dentists

of Gujarat prefer the use conscious sedation techniques in their routine pediatric practice. Although a number of Dentists had not received sedation training as part of their curriculum, these individuals had generally received training from other sources. However, attention needs to be given to the subject at undergraduate level with more hands on experience under supervised well trained professionals along with the implementation of short certified courses as a part of continuing dental education thus enabling the dentists to acquire, learn and practice the techniques with confidence. Additional research should be carried out to identify barriers to using conscious sedation among children in India.

### REFERENCES

- Agrawal, ST. and Agrawal, K. 2017. Current Scenario of Pediatric Dentistry in India. *Int J Oral Health Med Res*, 4(2):41-43.
- Alkandari, SA., Almousa, F., Abdulwahab, M. and Boynes, SG. 2016. Dentists' and Parents' Attitude Toward Nitrous Oxide Use in Kuwait. *Anesth Prog.*, 63(1):816.
- Boka, V., Arapostathis, K., Vretos, N. and Kotsanos, N. 2014. Parental acceptance of behaviour-management techniques used in paediatric dentistry and its relation to parental dental anxiety and experience. *European Archives of Paediatric Dentistry*, Oct 1;15(5):333-9.
- Bommireddy, VS., Pachava, S., Ravoori, S., Sanikommu, S., Talluri, D. and Vinnakota, NR. 2014. Socio-economic status, needs, and utilization of dental services among rural adults in a primary health center area in Southern India. *Journal of international oral health, JIOH*. Nov; 6(6):56.
- Costa, LR., Dias, AD., Pinheiro, LS., Chaves, ME., Ferreira, RA., Almeida, RB. and Lima, AR. 2004. Perceptions of Dentists, Dentistry Undergraduate Students, And The Lay Public About Dental Sedation. *J Appl Oral Sci.*, 12(3): 182-8.
- Davis, MJ. 1998. Conscious sedation practices in pediatric dentistry: a survey of members of the American Board of Pediatric Dentistry College of Diplomates. *Pediatr Dent.*, Dec;10(4):328B329.
- Hohwü, L., Lyshol, H., Gissler, M., Jonsson, SH., Petzold, M. and Obel, C. 2013. Web-based versus traditional paper questionnaires: a mixed-mode survey with a Nordic perspective. *Journal of medical Internet research*, Aug;15(8).
- Johnson, C., Weber-Gasparoni, K., Slayton, RL. and Qian, F. 2012. Conscious sedation attitudes and perceptions: a survey of American Academy of Pediatric Dentistry members. *Pediatric dentistry*, Mar 15;34(2):132-7.
- Krishna, PV., Gaur, D., Ganesh, M. and Kumar, SC. 2016. Conscious Sedation in Pediatric Dentistry: A Review. *IJCMR*, 3 (6) :1577
- Leitch, JA. and Girdler, NM. 2000. A survey of the teaching of conscious sedation in dental schools of the United Kingdom and Ireland. *British Dental Journal*, 188(4):211-216.
- Mantzourani, M. 2007. Conscious sedation for children: a pilot study exploring dentists' attitudes, thoughts and beliefs. *SAAD digest*, Jan;23:10-7.
- Pawar, P., Das, NK. and Iyer, TK. 2017. Parental Attitude Towards Pedodontic Treatment of their Children in Dental College of Bhilai City, Chhattisgarh. *J Res Adv Dent.*, 7:1:14-19
- Scally, KJ., Wilson, KE. and Girdler, NM. 2015. A study of dental students' clinical knowledge acquisition and

- experiences in conscious sedation. *British Dental Journal*, 218(6):351-354.
- Vilanova-Saingery, C., Bailleul-Forestier, I., Vaysse, F., Vergnes, JN. and Marty, M. 2017. Use and perception of nitrous oxide sedation by French dentists in private practice: a national survey. *European Archives of Paediatric Dentistry*, Dec 1;18(6):385-91.
- Siddiqui, FS. 2017. Anesthesia-related mortality in pediatric patients in dental office setting. *J Indian Soc Pedod Prev Dent.*, 35:184-5.
- Wright, GZ. and Kupietzky, A. 2014. Behavior management in dentistry for children. John Wiley & Sons.

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