Abstract
Aim: The purpose of this study is to find the opinion, attitude, beliefs, and the existing knowledge of parents of Himachal Pradesh suburban city about conscious sedation. Objective: To know the effect of education of parent and prior sedation experience of the child on opinion, attitude, and knowledge of parent about conscious sedation. Methodology: A questionnaire in Hindi/English was provided to parents who accompanied their child for the treatment in the Paedodontics Department of HPGDC College Shimla. Information regarding demography, existing knowledge gained through television, the internet, opinion about the safety of the procedure, knowledge of nothing by mouth guidelines, restraints usage, and knowing their preferences of staying with the child during treatment was explored. Questions were straight yes or no type and multiple choice type. Some questions were statements and wanted the respondents to strongly agree, agree, disagree, or strongly disagree. Results and Conclusion: A total of 350 questionnaires were collected. Parents feel sedation is safe in the dental office as an adjunct to dental treatment. Education played a role in existing knowledge about sedation and perception about the safety of conscious sedation.

Keywords: Conscious sedation, parental perception, pediatric population

Introduction
One of the various reasons for not seeking dental treatment is anxiety related to anticipation of pain by children. Malamed\(^1\) claims that fear, anxiety, and pain have been associated with the practice of dentistry since time immemorial although he acclaims that dentist should not be considered as an instrument of pain. Pain is an unpleasant emotional experience usually initiated by a noxious stimulus, mediated over a specialized neural network of cortical and subcortical centers where it is interpreted as such.\(^2\)

Anxiety related to dental treatment can be managed either by nonpharmacological methods such as tell-show-do technique, desensitization, or by pharmacological means such as conscious sedation techniques using inhalation sedation (nitrous oxide/oxygen mixture), oral or intranasal sedation (midazolam), intravenous sedation (midazolam), and general anesthesia. The purpose of conscious sedation is to alleviate fear and anxiety to facilitate treatment, it is not a replacement of behavior-shaping techniques, and it serves only as an adjunct to it.

Oueis et al. assessed different behavior management techniques over hand over mouth technique that were acceptable by dentists. He concluded that dentists preferred voice control as the first alternative, followed by minimum/moderate sedation.\(^3\) There is growth in acceptance and knowledge for conscious sedation among dentist. However, no sedation regimen is 100% effective. An issue of concern for pediatric dental community is a hesitation of parents in accepting conscious sedation.

Access to news 24 h a day and the accessibility of the internet allow parents to know when and where an adverse event occurs, many times without a geographic constraint.

Hence, a dynamic change in the society and their knowledge which is based on internet and media coverage has led to the negative perception, widely held false belief, and incomplete knowledge about conscious sedation.\(^4\)

Many studies have looked at the popularity and acceptance by parents of oral conscious sedation compared to other methods on

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the behavior guidance continuum. Murphy et al. found the least acceptable methods to be passive restraint, oral sedation, and general anesthesia, and Lawrence et al. found similar results. However, a more recent study by Eaton et al. showed an increased acceptability for oral sedation and general anesthesia. The authors proposed that an increased exposure to surgical general anesthesia on television, along with an increased familiarity with outpatient general anesthesia, could be contributing to the increase in acceptability.

Parenting styles have also changed significantly over the past few decades, with an increase in permissive parenting observed. This has led to a change in perception of what constitutes an acceptable experience for a child at a dental visit. Aligned with this change in parenting styles is the increased presence of the parent in the operatory. Several studies have reported an increase in parental presence during invasive procedures.

The purposes of this study were (1) to find the opinion, attitude, beliefs, and existing knowledge of parents about conscious sedation and (2) to know the effect of education of parent and prior sedation experience of a child on knowledge of parent about conscious sedation.

Methodology

A quantitative research methodology was used to collect information regarding demography, existing knowledge gained through media, opinion about the safety of the procedure, knowledge of nothing by mouth guidelines, and knowing their preferences of staying with the child during treatment.

The participants were the parents, guardians, and children aged between 2 and 5 years who reported for dental treatment in the Department of Paedodontics, Government Dental College, and Hospital, Shimla, India. The study population lived in both rural and urban communities. This study was cross sectional in design and was approved by the institutional committee for ethical considerations for research work.

A questionnaire in Hindi/English was provided to parents who accompanied their child for the treatment. The inclusion criterion was that the participant had to be a primary caregiver for a patient who had presented to the office that day for treatment. Caregivers who met the criteria were invited to participate in the study, and informed consent was obtained. One researcher recruited participants and administered a questionnaire to each primary caregiver; the researcher collected questionnaires for multiple days at each location. The term parent in this article applies to any primary caregiver who completed the questionnaire.

The questionnaire was developed by the authors and consisted of 21 questions or statements with multiple choice-type responses. The questionnaire was prepared in accordance with previous studies. The questionnaire was pretested to ensure that respondents could understand the questions and respond in a consistent manner. Basic demographic information (age and education level) was collected along with past sedation experience with categorical response types.

Only complete questionnaires were used. Data were entered into a spreadsheet and statistics was generated using SPSS 21.0 for MAC (SPSS Inc. Chicago, IL.USA). Percentage statistics was generated for all categorical variables. Crosstabulations and independent Chi-square statistics were used to examine relationships between categorical variables in the questionnaire. $P < 0.05$ was considered statistically significant.

Results

A total of 350 questionnaires were collected. Among these, 30 were incomplete or incorrectly marked, resulting in a total number of 320 questionnaires. The characteristics and demographics of the survey study group are shown in Table 1. The majors of these patients were accompanied by their mother and were in their third or fourth decade of life (93.75%). Among this, 40.62% of parents were graduates, and astonishingly, 28.13% of parents did not complete high school. Previously sedated children were very few making only 6.25% of total patients.

Majority of parents found conscious sedation safe; among them, 76% were graduate and postgraduate parents. Most of the parents who had completed high school opted for not sure as a response.

Nearly over 47% of respondents indicated they had not seen news coverage about dental sedation through any type of media (television and internet) and that news exposure did not influence the likelihood of choosing sedation as a treatment modality.

Knowledge about nothing by mouth guidelines is not present; overall, only 22% parents have an idea about it, irrespective of their education.

| Table 1: Characteristics of the survey group (n=320) |
|-----------------------------------------------|-----------|
| Characteristics                  | Percentage of respondents |
| Education                        |            |
| High school                      | 6.25      |
| Graduate                         | 40.62     |
| Postgraduate                     | 25.00     |
| Not completed high school        | 28.13     |
| Age                             |            |
| Below 25                        | 3.10      |
| 25-50                           | 93.75     |
| 50-75                           | 0         |
| Above 75                        | 3.10      |
| Previously sedated              |            |
| Yes                             | 6.25      |
| No                              | 93.75     |
About 60% of parents chose the next day would be appropriate for a child to return to school if he/she has been sedated in the morning; among them, 86% are graduates and postgraduate parents.

Overall 43.75% parents think that conscious sedation is done so that all the teeth can be fixed in one appointment of which majority were who have not completed higher secondary education. Nearly, 78% of parents expressed a desire to stay with their child during sedation.

The idea about passive restraints is not present; 41% of parents are not sure if restraints are needed. Least educated parents were more likely to select “not sure” as a response. Nearly 47% of parents were in favor of conscious sedation depending on their prior knowledge [Chart 1].

40% parents agreed and 53% parents disagreed that one reason for sedation is to put the child to sleep during treatment [Chart 2].

70% of parents think that child will need an injection to numb the teeth if he/she is sedated [Chart 3].

When the child is sedated, 50% of parents accepted treatment scenario that child is awake but sleepy and 40.62% of parents accepted second treatment scenario that child cries and moves slightly, but the dentist is able to fix the teeth.

**Discussion**

The relationship between the child–parent–dentist triangles is dynamic. Parents have autonomy over treatment decisions such as the treatment options and the methods of delivering it; likewise, child’s expectations and attitudes toward oral health can be shaped by parents’ words and actions. Hence, it is critical to recognize that which of the various treatment techniques are acceptable to the parent and also to determine factors that have an impact on approval or disapproval of that particular technique.

In a study by Eaton et al.,[7] the third most acceptable technique by parents was general anesthesia. Modern parents are willing to abdicate disciplinary actions and opt for pharmacological techniques.[8]

Even though there is an impressive increase in parental acceptance for pharmacological behavior management techniques in the United States, studies conducted in different parts of the world did not accordingly follow the trend. In Jordan, tell-show-do technique, positive reinforcement, and distraction were profoundly approved by parents, and hand over mouth, nitrous oxide, conscious sedation, and general anesthesia were least approved.[9]

A study conducted in Kuwait concluded that most school children parents favored nonpharmacological techniques on the pharmacological technique. Indeed, Kuwait parents least accepted conscious sedation as a behavior management technique.[10]

Parental attitudes toward behavior management techniques are not constant and should be perceived again and again over time. In past years, behavior management techniques have evolved from the rise in availability of pharmacological means, corporate style practice attitudes, heightened media exposure of dental treatments, and a progressively diversified patient population.[11-14]

When adapting different behavioral management method, it should be considered in mind the constantly changing dynamics of parent–dentist–child relationship. Physical restraint techniques such as passive restraint and handover mouth have grown progressively unpopular. In contrary, acceptability for advanced pharmacological techniques such as conscious sedation and general anesthesia has increased for managing behavior during dental treatment.[7]
Education played a role in existing knowledge about sedation and perception about the safety of conscious sedation in our study [Table 2]. Majority of parents found conscious sedation safe; among them, 76% are graduate and postgraduate. There is an increase in knowledge about conscious sedation among educated people in Shimla, Himachal Pradesh. In this city, middle or higher income group parents report to government college for treatment, and as conscious sedation is used for many dental procedures in Paedodontics Department of Government College since last 6 years, this may be the reason for an increased knowledge about conscious sedation among parents living in Shimla, a small urban city.

A similar result was obtained by Alkandari et al.,[15] in their study in Kuwait where parental education had a significant association with their acceptance of nitrous oxide sedation technique; the higher the education level, the more they accepted nitrous oxide sedation procedure.

This also can be justified by a study of Naganandini et al.,[16] which showed a significantly higher number of patients with higher educational background used the internet for health knowledge acquisition.

If one searches for the keywords “dental injection,” “child,” and “shot,” it gives nearly 18,000 related videos on the YouTube® website. This number continues to grow as the internet becomes progressively universal for gathering information by the general public. This possesses a big problem for the dentist as there is a large variety of information regarding dental procedures which can be accessed very easily and especially when reliability is very less. Nonetheless, media also influences parental views on dental care as does internet.[17]

Eaton et al.[7] proposed that an increased exposure to surgical general anesthesia on television could be contributing to the increase in acceptability toward general anesthesia and conscious sedation.

In the present study, knowledge about nothing by mouth guidelines is not present; merely, 22% parents have an idea about it, irrespective of their education. In contrary to the study by White et al.,[18] in Tennessee, the USA, where 74% chose a solid food a night before, would be appropriate.

Another finding where 78.13% of parents expressed a desire to stay with their child during sedation. This affirms the studies of White et al., Shroff et al., Marcum et al., and Wells et al.; they postulated that it could be due to an increase in the prevalence of family-centered care.[18-21]

Parents of children who were sedated before had excellent knowledge about nothing by mouth guidelines and also about returning to school; 85% of parents knew that conscious sedation is not meant to fix all teeth in one appointment [Table 2]. These findings are in contrast with the study of White et al.,[18] where previous sedation...
experience was not correlated with increased knowledge about many of the aspects of sedation.

**Conclusion**

1. During sedation appointment, majority of parents want to stay with their child
2. Parents have a not-so-good understanding of NPO (nothing by mouth) guidelines but have a fair knowledge about returning to school
3. Parents are generally unaware of news coverage pertaining to dental sedation
4. Parents feel sedation is safe in the dental office
5. Education played a role in existing knowledge about sedation and perception about the safety of conscious sedation
6. Knowledge is better about conscious sedation among previously sedated child’s parent than those whose child has never been sedated before.

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**Conflicts of interest**

There are no conflicts of interest.

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