

Assessment of Preappointment Parental Counseling on Dental Fear and Anxiety in Children in Pedodontic Dental Operator: A Randomized Controlled Trial

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ABSTRACT

Background: Dental fear and anxiety are important issues in the practice of pediatric dentistry because they interfere with both the provision and receipt of dental care in children and adolescents. Behavior guidance is a dynamic part of child management. It starts from the preappointment level, where a negative attitude of the mother will be trained to become positive for improved child behavior in the pediatric dental clinic. The use of anticipatory guidance (AG) as parental counseling, where the information on what the parents should follow before their child's dental appointment was provided to the mothers.

Aim: To assess the effect of preappointment parental counseling on dental fear and anxiety in children.

Materials and methods: The study was a randomized, parallel-group, active-controlled trial, wherein the dyad of mother and child was randomly divided into two groups: (1) the test group and (2) the control group. At baseline, fear and anxiety assessment was done using fear and anxiety assessment scales and physiological parameters in both groups. Dental fear and anxiety were assessed using the children fear survey schedule dental subscale, Venham pictorial test in children and state-trait anxiety subscale in mothers. Parental counseling instructions were given verbally, in written format and by videos only in the test group on the same day of the initial appointment. The same subjects in both groups were checked for fear and anxiety scales and physiological parameters after 6 months from the first appointment. The effectiveness of parental counseling on dental fear and anxiety was correlated at the end of the study.

Statistical analysis: The mean dental fear and anxiety scores between the test and control groups at baseline and at 6 months were compared using the Chi-squared test. Chi-squared test was used to compare the dental fear and anxiety in children and mothers in the study and control groups. Spearman's rank correlation test was used to assess the relationship between Children's Fear Survey Schedule-Dental Subscale (CFSS-DS), Venham Picture Test (VPT), state-trait anxiety inventory (STAI) scores, and clinical parameters in the study and control group of both populations.

Results: The results showed that there was a significant improvement in the dental fear and anxiety levels in the dyads of mother and child postcounseling. The control group scores did not show any significant change.

Conclusion: Preappointment parental counseling clarified and guided parents about the child's fear and anxiety and was effective in alleviating the dental fear and anxiety among parents and children attending pediatric dental clinics.

Keywords: Anticipatory guidance, Case report, Counseling, Dental anxiety, Dental fear and anxiety.

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INTRODUCTION

Fear and anxiety are common emotions exhibited by kids that challenge the parent, dentist, and child. The primitive response of any individual to protect him from any untoward danger is fear and anxiety, hazy, displeasure, or undesirable feelings alongside the feeling of an upcoming danger which is going to happen, so fear and anxiety are both common emotions exhibited by a child in a dental setup challenging the parent, child, and dentist which makes it a common deterring factor that parents and pediatric dentist need to understand.¹ If not properly channelized, fear can lead to dental phobia, where the child can completely restrain himself from dentistry to eventually transfer this anxiety to the next generation, so it becomes imperative to explore the source of initiation of fear, which could be objective or subjective. It is to be noted that factors like dislike of the dentist, long dental treatment procedures in the dental setup, prior problems with past medical experience, and fear of injections aggravate innate fear.² Anxiety and fear before dental treatment plays a major role in dental care in children avoiding dental treatment.

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Among the types of fear, subjective fear is more dangerous as it is a vivid imagination gained from descriptions that others around the child make, which will be expressed in him in an exaggerated manifold pattern and has no bounds. Sources of subjective fear could be from television, friends, or others, but the ones transmitted by the mother are very significant, influential, and deeply rooted in the child, and literature endorses that maternal anxiety plays a major role in anxiety provocation in the child.

Behavior guidance is the most significant component of child management and must be started from the preappointment level. The mother's pessimistic outlook is transformed into a more optimistic one through proper counseling by training her child positively. Before treatment procedures, the pediatric dentist can customize behavior guidance and therapy strategies by understanding more about the origin of the child patient's dental fear and anxiety.^{3,4} A parent's influence on a child's behavior in the dental clinic is significant as every child behaves differently in dental clinics due to a variety of circumstances, including the parent-child relationship, the parent's prior dental experiences, parental dental anxiety, and parental attitudes and perspectives. Understanding how parental behavior impacts will assist the dentist in guiding the child's behavior during dental treatment.⁵

Preappointment parental counseling based on anticipatory guidance (AG) is a health promotion model that plays a very important role in providing information to the parents on how they can mold their child's behavior favorably to the dentist so that the child can be a good patient. The information serves as a guide for parents to foresee impending changes and assists them in taking the necessary steps to fulfill their kid's demands and maximize their potential for a better behavior outcome.⁶

Thus, the aim of this study is to evaluate the impact of preappointment parental counseling before the first dental visit on kids' dental anxiety and dental fear in a pediatric dental operatory.

Aim

To assess the effect of preappointment parental counseling on dental fear and anxiety in children.

OBJECTIVES

- To evaluate children's anticipatory dental anxiety and fear.
- To evaluate mothers' dental anxiety.
- To assess the relationship between a mother's and a child's dental anxiety and fear.
- To evaluate how preappointment parental counseling before the first dental visit affects children's dental anxiety and fear.
- To assess the distribution of children's fear and anxiety levels by age and gender.

Inclusion Criteria

- The study population includes a dyad of mothers and children aged between 4 and 9 years.
- Children who fall into negative and definitively negative categories of Frankl's behavior rating scale.
- A dyad of mother and children consenting to the informed consent.

Exclusion Criteria

- Children with mental and physical disabilities.
- Children who received a previous dental treatment.

- Children are suffering from systemic health conditions.
- Children with special health needs who require particular medical attention.
- Children who have previously obtained parental counseling.
- Children who are not accompanied by their mothers.

MATERIALS AND METHODS

- Questionnaire to record Frankl's behavior rating scale, Venham pictorial scale, Children's Fear Survey Schedule-Dental Subscale (CFSS-DS), and state-trait anxiety inventory (STAI) scale.
- Pulse oximeter to record pulse rate.
- Parental counseling instructions brochure in a native language and English. It consists of a video counseling session in the local language and a pamphlet-style visual instruction help.

Case Selection

This randomized controlled trial was done on a total of 100 dyads of mother and child aged between 4 and 9 years reporting to the outpatient department of the Department of Pedodontics and Preventive Dentistry. Children who fall in the category negative and definitely negative category of Frankl's behavior rating scale were included in the study. This study protocol was formulated following the Consolidated Standards of Reporting Trials guidelines for randomized control trials. Parents were told about the study and asked for their informed consent. The subjects included in the study were a dyad of mothers and uncooperative children coming under the negative and definitely negative category of Frankl's behavior rating chart. This study was done in a private Dental College and Hospital in Sullia, Karnataka, India, after the study protocol had been approved by the institutional ethical committee. The purpose of the study was explained to the children and their caregivers, and written informed parental consent was obtained before the study.

Methods

This study was designed to be carried out over 12 months with follow at 2 weeks, 6 months, and 12 months. A dyad of mother and child was divided into two groups, test and control, with 50 dyad subjects in each group. The study and control group consisted of a dyad of mothers and children who were also assessed for their fear and anxiety levels using scales and physiological parameters before scheduled appointments. The preappointment parental counseling was given in written format and video format in a native language (Kannada) and English by the investigator only in the study group. The control group consisted of mothers who did not obtain any intervention. The tools given were a videotape and a pamphlet containing the preappointment parental counseling instructions for the children. The dental fear and anxiety of all the mothers and children were assessed using the fear and anxiety scales.

Data Selection

At baseline, 2 weeks, 6 months, and 12 months, presence of dental fear and anxiety in the mother's children was assessed using fear and anxiety scales and physiological parameters. Preappointment parental counseling as behavior guidance was given only to mothers in the study group. The dental fear and anxiety of children were assessed using Venham pictorial test and children fear survey schedule dental subscale and using a pulse oximeter and in mother using STAI scale. All the data obtained were then statistically analyzed.

Ethical Clearance

The study was initiated after obtaining approval from the Institutional Ethics Committee (Refnumber: IECKVGDCH/33/2018-19, CTRI Registry number: CTRI/2020/08/027183).

RESULTS

The demographic data showed that the children were distributed randomly age-wise of 10 numbers each and 25 males and females, gender-wise, respectively in both test and control groups (Fig. 1) based on the randomization method used in this study. Cuthbert and Melamed developed the children's fear survey dental anxiety scale, a psychometric tool to assess children's fear of dentists. Each item on the 15-item scale, which includes a range of dental treatment-related topics, was evaluated using a 5-point Likert scale, with a score of 1 denoting no fear at all and a score of 5 denoting extreme fear.

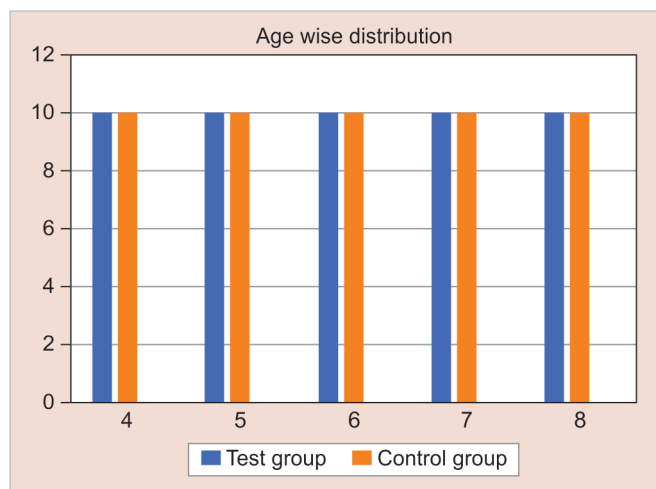


Fig. 1: Age-wise distribution of participants in the study and control group

Before beginning dental treatment, the kids will need to complete the 15-item anxiety scale. The score spans from 15 to 75, and three groups were created to classify the results: mild anxiety (0–24), moderate anxiety (25–49), and severe anxiety (50–75). The Venham pictorial test includes eight cards, each with two figures: an “anxious” and a “nonanxious” image. The children were asked to choose which figure most accurately represented their current feelings, and their answers were recorded. For determining the final score, the number of times the “anxious” figure was selected and scored. Three groups were used to categorize the scores: mild anxiety (0–2.5), moderate anxiety (2.6–5.5), and severe anxiety (5.6–8). The score goes from 0 to 8. Maternal anxiety was measured using the state-trait anxiety scale, a psychological inventory based on a 4-point Likert scale. It consists of 40 questions on a self-report questionnaire consisting of two forms, each with 20 items, the scores of which vary from 1 to 4 points. It assesses two different forms of anxiety: trait anxiety, or anxiety as a personal attribute, and state anxiety, or fear regarding an event. State trait anxiety scales have a score range of 15–80. The scores were categorized into three groups: mild anxiety, which falls between 0 and 6; moderate anxiety, which falls between 27 and 53; and severe anxiety, which falls between 54 and 80. Three groups were formed based on the scores of physiological measures, including pulse rate, which ranged from 60 to 160.

Table 1 results show that in the pretest group, children's dental fear survey schedule subscale and Venham pictorial test scores showed moderate anxiety, and in the control group, children's dental fear survey schedule subscale scores showed severe anxiety and Venham test scores showed moderate anxiety, respectively. In the posttest group, children's dental fear survey schedule subscale and Venham test scores showed mild anxiety, and in the control group, children's dental fear survey schedule subscale scores showed severe anxiety, and Venham test scores showed moderate anxiety. The child's dental fear and anxiety scores reduced significantly between the test group and control group and the scores were statistically significant.

In Table 2, the results show that in the pretest group, the mothers showed severe state and trait anxiety scores, and in the

Table 1: Chi-squared test values of the study and control group; children's dental fear survey schedule subscale and Venham pictorial test scores in posttest were significantly reduced in comparison to the control group

Children's fear and anxiety	Test group (n = 50); mean ± standard deviation (SD)	Control group (n = 50); mean ± SD	p-value
CFSS			
Pretest	64.54 ± 2.75	64.88 ± 3.88	0.00*
Posttest	19.66 ± 1.77	64.56 ± 4.32	
Venham			
Pretest	4.46 ± 1.02	4.42 ± 1.02	0.00*
Posttest	2.50 ± 1.07	4.76 ± 1.01	

*Statistically significant $p < 0.05$

Table 2: Chi-squared test values of the study and control group; the trait anxiety scores among mothers in the posttest were significantly decreased in comparison to the control group

Mother's anxiety (STAI)	Test group (n = 50); mean ± SD	Control group (n = 50); mean ± SD	p-value
Pretest			
State anxiety	73.36 ± 2.92	73.58 ± 2.87	0.821
Trait anxiety	71.48 ± 4.04	72.86 ± 2.70	<0.002*
Posttest			
State anxiety	27.38 ± 2.44	73.60 ± 2.19	<0.001*
Trait anxiety	27.20 ± 1.59	74.58 ± 2.45	<0.001*

*Statistically significant $p < 0.05$



posttest group, the scores showed moderate state and trait anxiety in the mothers' dental anxiety scores. In the precontrol group, the scores showed severe state and trait mother's anxiety scores, and in the postcontrol group, the scores showed severe anxiety scores. There was a significant change in dental anxiety among mothers in pre- and posttest and pre- and postcontrol state and trait dental anxiety groups.

In Table 3, in the pretest group, the child's respiratory rate and pulse rate scores showed severe anxiety, and in the posttest group, the scores showed severe anxiety scores for respiratory rate and pulse rate scores. In the precontrol group, the child's respiratory rate and pulse rate scores showed severe anxiety, and in the postcontrol group, the scores showed severe anxiety. There was a significant change in the respiratory and pulse rate among children in pre- and posttest groups.

In Table 4, the scores of the Spearman's rank correlation coefficient for different variables indicate that in the test group, the results showed that a negligible correlation exists between the STAI scale and the children fear survey schedule dental subscale, Venham pictorial test, and physiological parameters respiratory and pulse rate.

DISCUSSION

In order to establish a good relationship of trust between the patient and their mothers, dentists need to recognize the child's behavior that indicates anxiety, and approaches need to be aimed at alleviating this. Scales and questionnaires are the most frequently employed instruments for measuring dental anxiety (Gorayeb and Chadwick 2008).⁷ So, in this study, we used the STAI scale, CFSS scale, and Venham Picture Test (VPT) to elicit dental fear and anxiety in children, and we provided them with prior information regarding what the first visit to the dentist will entail and treatment strategies (Chadwick 2002), thus bracing the child for the same to alleviate parental fears and eventually helping them to prepare their child for a visit to the dentist.⁸

As pediatric dentists explain dental procedures and equipment in simple, nonthreatening language, they have the skills to provide adequate oral childcare, which enhances the relationship between children and healthcare providers.⁹ Based on studies done by Savitha et al., the extent of dental anxiety in children was 24.5% among 5–10-year-old children in the Sullia population.¹⁰ Previous research revealed the prevalence of anxiety in >50% of the children (52.17%). Also, preschool children aged 3–6 years had more anxiety in the dental practice than children aged 7–12 years.¹⁰ Children aged 3–6 years are 11.8 times more likely to have dental fear and anxiety than those older than 7 years of age,¹¹ although a few studies show a positive correlation between dental anxiety and young children.^{12,13}

In the present study, we found that by providing proper parental counseling about dental health, a significant improvement

in dental health knowledge can be seen in children. As the mother is an important figure in the family and is usually considered the cornerstone of the family, we assessed the state and trait anxiety scores of the mothers. The scores were reduced significantly in the test group with severe state-trait anxiety compared to the control group post-counseling. We also found out that by providing proper counseling to mothers and found that the dental anxiety in mothers can be reduced as the levels of dental anxiety in children and their mothers predicted their behavior in dental care settings as reported in the studies done by Bankole et al.¹⁴

In this study, the CFSS scores in the test group were reduced significantly compared to the control group in the postcounseling results. This is because providing parents with anticipatory information by counseling about what was expected and what they should tell their child before dental treatment was found to be an effective intervention in reducing the preoperative anxiety of the parents. This proves that educating the mother by providing her counseling in simple layman's terms and pictorial representations in a video about her child's treatment beforehand helps alleviate her fear levels considerably. The items in the CFSS-DS scale that were most feared by all the children were dental injections using needles, the sound of the dentist drilling teeth, and the sight of the drill, similar to results of studies done by Ten Berge et al. in the Netherlands.¹⁵

In previous research, the child or parent completed the questionnaire before receiving dental treatment. This goes opposite to the CFSS-DS design, which recommended filling out the questionnaire after treatment to prevent inaccurate results because a kid would exhibit anticipatory dental anxiety before treatment.^{16,17} So, to record the anticipatory anxiety, the questionnaire was filled before the first dental consultation, which was followed in the present study. During the initial visit of the retest, the second evaluation was completed. The retest was carried out after a 1-week break from a prior study.¹⁸ This was further supported by the recommendation that a minimum of 2–4 weeks should elapse between the first and second administrations of the questionnaire to reduce the probability that actual or accidental changes could occur if the child underwent dental treatment or experienced acquired fear from friends or family in the meanwhile.¹⁹

Table 4: Scores of the Spearman's rank correlation coefficient for different variables indicated in the test group

Anxiety	State	Trait
CFSS	-0.0131	-0.0286
Venham	-0.103	-0.075
RR	-0.153	-0.0328
Pulse	0.0471	-0.126

Table 3: Chi-squared test values of the study and control group; physiological parameter respiratory rate scores among children in the posttest were significantly reduced in comparison to the control group

Physiological parameters		Test group (n = 50); mean ± SD	Control group (n = 50); mean ± SD	p-value
Precounseling	RR	28.78 ± 2.04	27.10 ± 1.95	<0.001*
	PR	100.84 ± 5.11	98.72 ± 5.98	0.059
Postcounseling	RR	26.30 ± 1.90	28.84 ± 1.77	<0.001*
	PR	95.94 ± 4.74	99.56 ± 5.35	0.0005*

*Statistically significant $p < 0.05$

In this study, it was possible to observe that there was a statistically significant difference in the Venham pictorial scores in the test group in comparison to the control group since the dyad of the mother–child was attending the dental clinic for the first time. A child's nervousness in a dental practice is mainly caused by their mother's anxiety, which would cause the child to act aggressively. Following preparental counseling, 84.0% of children whose moms were not worried showed cooperative behavior. The preappointment parental counseling, the presence of the mother, and maternal dental anxiety mainly influences the child's behavior. Regarding the children's behavior, this study showed that, in comparison to the control group, 84.0% of the children in the study group showed cooperative behavior. In this manner, fewer anxious kids are more likely to accept the dental procedure's performance and enable the success of the treatment.

The results of this study also showed how anxious behavior during dental treatment and parental influence can reduce anticipatory dental fear and anxiety by providing counseling, because fear of dentists greatly affects children. In the present investigation, we investigated the connection between dental anxiety and fear in pediatric dentistry and showed the existence of a vicious cycle in which children who were extremely afraid were more likely to delay away obtaining treatment, which made their dental problems worse and increased their fear of the dentist. The result was consistent with research by Armfield.²⁰ So, this vicious cycle can be broken by providing preappointment parental counseling. This study proves that these situations can be avoided by providing proper counseling regarding the child's dental care.

Differences seen in the present investigation of dental fear and anxiety about the mean age are obvious because younger children are more immature, apprehensive, more fearful of the unknown, and more prone to developing fear and anxiety than older children. However, adolescents could be more capable of controlling their fear and anxiety and control these feelings. It is crucial to take into account that older kids might have also experienced painful dental or related events. Anxiety is common in any unfamiliar circumstance, like the first dentist consultation, which can be either subjective or objective. In addition, higher anxiety ratings were seen on the Venham scale, children's fear subscale, and physiological indicators at the first dental appointment. These findings were consistent with research conducted by Rantavuori et al.²¹

Here in this study, in the pretest group, the child's respiratory rate and pulse rate scores were higher and in the posttest group, the scores were lower. There was a statistically significant change in the respiratory rate and pulse rate among children in the test group in comparison to the control group. The pulse rate scores in the posttest group were similar to the results of studies done by Rayen et al.²²

According to the study's findings, dental treatment-related anxiety and fear of the dentist are not innate in youngsters. Young children are as prone to dental anxiety as adults are, as a result of the socialization process, wherein sharing of maternal negative experiences by the mother or previous dental experiences by peer group. All of this influences the clinical and behavioral outcome of the child because children's understanding differs. Thus, it is the need of the hour to understand and go beyond encouraging regular dental checkups and focus with a high priority on preappointment parental counseling to modify children's behavior. There is still a thought that adults' anxiety during dental treatment may have been ingrained in their childhood fears, which means that future pediatric dentists must treat children with utmost care, wherein the fear and anxiety are considered and alleviated while receiving

dental treatment with more caring dental services that highlights significant emotional support and comprehensive care.²³

In this study, a counseling session was given, which provided new information about what he/she can inform their child before their child's dental treatment and were motivated to follow it by gaining the confidence of the patient to establish rapport before giving advice and help to the child patient and parent. Parental counseling is a relationship in which a professional or trained individual offers to support another in recognizing, identifying, and managing dental fear and anxiety-related psychological issues. In this study, the preappointment parental counseling was done in a special room with a comfortable atmosphere equipped with audiovisuals. Counseling should not be done in a dental operatory as it increases subconscious fear of the dental equipment, etc., in parents' minds. It should not be done in front of other patients as discussion of dental fear and anxiety is a very personal matter. Professionally qualified persons with impressive personalities and good knowledge of the subject are successful counselors, preferably should do the counseling and he or she is professional authority and has the prestige and status the patient respects. His or her advice will have greater significance and importance for the child. Personality qualification is also very important for the counselor. Counselors should be sincere, honest, and sympathetic and should have the ability to put patients at ease with his or her friendly manners. From the findings of this study, preappointment parental counseling clarified and guided parents about the child's fear and anxiety before dental treatment, and the AG provided by proactive counseling influenced the feelings about their child's well-being. Preappointment counseling is strongly recommended by pediatric dentists who work closely with children and observe their behavior during dental appointments. This is because the counseling experience has a positive outcome on the kids' and parents' perspectives of dentistry.²⁴

The smaller sample size of parents and children considered for the study and the behavioral outcome of the child evaluated only during the initial visit without performing more invasive procedures, could influence the behavior of the child, constitute two limitations of the present research. However, if the investigation is conducted on a larger population, it may be possible to obtain a clearer picture of the impact of maternal anxiety as mothers were additionally having trouble understanding the terms in the questionnaire.

Future research can concentrate on the use of acupuncture, yoga, and relaxation sessions with playful activities to reduce fear and anxiety as an alternative to make the treatment less tense and more acceptable.²⁵ The present research demonstrated an immediate positive relationship between the child's behavior and the level of dental fear and anxiety. Additionally, an association was found between children's behavior, maternal anxiety, and children's dental fear and anxiety, indicating that those who were more apprehensive expressed more negative behavior when receiving dental care. To better understand the behavioral and psychological relationships of children who undergo their first dental visit, more studies can be performed in this area on the factors that cause dental anxiety, including objective and subjective fear.

CONCLUSION

According to this research findings, preappointment parent counseling before the first dental visit encourages and creates a positive and supportive environment and reduces dental fear

and anxiety in both the patient and the parent. It establishes a foundation for positive dental experiences, encourages preventive care, and enhances the overall oral health of children. It also helps in establishing a dental home and ensuring a holistic approach to dental well-being.

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