

Emperical Association of the Relationship between Parental and Child Dental Anxiety-A Structured Review

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Abstract

Review Article

The relationship between parental and child dental anxiety is explicit and has been a controversy which has been studied over many decades. Though various methodologies have been evolved and proposed through the years, it still seems to be a topic of concern. **Aim:** To provide an overall view of the published link between the explicit relationship between parental and child dental anxiety. **Study design:** A structured review. **Results:** Forty three studies were included in the review, which ranged widely between research designs, age ranges and methodologies. The relationship is more evident in children below 8 years. **Conclusion:** The narrative synthesis demonstrates a significant relationship between parental and child dental anxiety with more evidence in the younger age group.

Keywords: Parental, child, dental anxiety, methodologies.

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INTRODUCTION

Poor dental health can have deleterious effects on the child's development with regards to psychological, social, emotional and functional aspects. This can have ill effects on overall quality of life. The prevalence of dental anxiety is 6-15 % globally. Dentally anxious children pose a great challenge to the Pediatric dentist which paved the way to investigate the perils of this relationship.

To date, the research literature provides conflicting evidence about parents' effect on their child's dental anxiety status. Some of the evidences clearly indicate that anxious parents struggle to develop a positive dental attitude for their children. Other evidences indicate that parental attitudes have no significant effect on their children's anxiety status. Various reasons have been advocated for these inconsistencies. Anxiety is a complex phenomenon due to the influx of various factors at the cognitive and behavioral levels.

The aim of this study is to provide an overall overview of the available evidence –based attitudes and opinions (in) this aspect.

METHODOLOGY

A series of different literature searches were performed to obtain a classical view on dental anxiety

perspectives between parents and children. The literature search followed a structured pattern of search. The search was limited to publications in the English language alone. The following databases were searched namely OVID, CINAHL, EMBASE, MEDLINE, PsycINFO and Cochrane/DARE EBM. The search revealed 977 publications, the abstracts of which were searched by three author's. Out of these fifty articles met the inclusion criteria. The full text versions of these fifty articles were screened, retrieved and studied for relevance. Checking the reference list revealed another 26 relevant articles which totaled up to 76 from which 43 was short listed articles to assess the relationship between children and parents with relation to dental anxiety.

RESULTS

Study pool characteristics

Of the 43 articles reviewed 27 were reviews, 3 were RCT, 3 were Meta-analysis, 5 were Research articles, 1 was a clinical study and the rest 4 articles did not mention the study design.

Participant characteristics

The age ranges varied between 2-19 years. Among the 43 studies some studies used different age ranges, whereas in some studies the age ranges were not revealed.

Assessment measures used

Of the 43 studies reviewed some used self-styled tools and some used established measures.

Evidence on the link between parental and child dental anxiety

Forty three studies were identified, which reported the link between parental and child dental anxiety status. Across all 43 studies some used self-report measures using existing scales differentiating the studies according to the quality and types of measures used revealed a heterogenous picture. The strength of association between parental and child dental anxiety measures used appears to be affected by the assessment methods used.

Empirical evidences for age ranges

Most of the studies included the Pediatric age group, while some studies used the adult population. Various rating scales have been used for assessment namely MCDAS, Corah Corah, s DAS, VPT, CFSS-DS, FIS.

Empirical evidence by way of context

The review revealed varying degrees of associations between parental and child dental anxiety depending on the content of dental visit and the types of measures used. Studies using surveys reported a significant relationship between parents and children with regards to dental anxiety, whereas in the dental clinics it showed more ambivalent results. A small percentage of the studies did not show a significant association between children and parents on dental anxiety.

Evidences with regards to reasons for dental visits

The survey group revealed a significant association with regards to reasons for dental visit, whereas other studies did not show a significant association.

DISCUSSION

Dental anxiety has the potential to play an important and significant role in the child's future

dental and general health as well as the child's overall emotional and social wellbeing. In this context, considerable effort has been invested in understanding the etiology, development and treatment of children with dental anxiety. As a part of these study progress parental inputs has also studied as it has aroused the interests of clinicians and researchers globally.

The 43 studies included in this review have reported a range of outcomes regarding the outcomes. A certain proportion revealed a significant association between parental and child dental anxiety forums. This is still questionable when considering studies with self-report measures. Moreover this is further evident in studies using existing scales. Studies which have used parents as proxy for young children is another area of great concern.

The fact that different types of studies using different types of measures are still a controversy which raises methodological concerns. This is coupled with studies using validity measures both internal and external, would raise a validity issue. Similar is the case with studies using reliability issues with regards to both test-retest reliability and reproducibility which is again an area of concern. The same may apply to behavioral and observational measures also. Another approach would be exploring the trends between behavioral and observational measures of dental anxiety. Similar trend can be conceptualized by identifying the constructs.

CONCLUSION

Concerns such as the above mentioned reveal the need for further research into the custom made methodologies and measurements of dental anxiety status among parents and children on further grounds, though the present survey reveals a significant association.

LIMITATIONS

Emphasis has to be laid on the use of state of art management scales and validity measures as outcome parameters.

Table 1: Details of 43 papers identified from the literature review and reasons for exclusion

Author	Yr of pub	Place of study	Study objective	Study type	Study population	Measurement scales	Results	Outcome
Mark B.Powers &Paul Emmelkamp	2007	Netherlands-Amsterdam	To assess virtual reality exposure therapy for anxiety disorders	Meta-analysis	397 participants	VRET	There was a trend for dose related response with more VRET sessions	Showed an overall positive response
Drahota et al.	2008	Portsmouth	To assess AV – distraction on pain and anxiety during minor surgery	RCT	N=152	Bedscapes before and after LA	Patients with high anxiety experienced more pain on injection	Pain on injection is closely associated with pre-op anxiety
Bruce Peltier	2009	California	To assess methods to alleviate dental fear	Review			To focus on breathing, imagery, hypnosis and operatory language	The method can be employed in patients with cognitive impairments
Alessandra Gorini and Giuseppe	2008	Italy	To assess VR exposure in anxious patients	Review			VR allows grading such that the patient can move simple to complex	VRET is effective in anxiety disorders

Riva							treatment modalities	
Mark Slovin & June Falagario Wassermann	2009	Newyork	To assess if fearful dental patients receive less oral health care	Review			Anxious patients miss dental appointments thereby do not receive adequate care	Ways to increase their comfort levels needs to be focused upon
Christine <i>et al</i>	2009	Canada	To assess the various psychological strategies to reduce pain during immunization	Review			Breathing exercises helped such children	Evidence showed that breathing exercises along with other distraction technique reduced distress in children during immunizations
Michelle Maria <i>et al</i>	2009	Brazil	To assess anxiety and pain in children under 5 years	Cross sectional study	N=2735 children		Prevalence of pain was 9.1 and anxiety was 34.7%	DA was related to pain in children below 5 yrs.
Linzette Deidre <i>et al.</i>	2009	Australia	To review the evidence for the effectiveness of VR in conjunction with pharmacological analgesia	Review			There is equivocal evidence of the effect of VR in conjunction with pharmacological analgesics to relieve pain	Further research on the effects of VR in reducing pain needs to be done
Regina Wender <i>et al.</i>	2009	USA	To review the effect of VR against the effect of interactivity of analgesia	Review			Compared to the non-interactive group participant in the interactive group showed more pain reduction	Interactivity increased the analgesic effectiveness of VR

Wendy Landier <i>et al.</i>	2010	Honolulu	To review the evidences in four databases regarding the effectiveness of complimentary and alternative medical interventions	Review			Distraction, hypnosis and imagery were the 3 modalities studied for mind-body management of pain and anxiety	Such self regulatory skills could help in overall symptom management
Maryrose Gerardi <i>et al.</i>	2010	USA	To review evidence on the application of VR exposure therapy to the treatment of specific phobias	Review			VR exposure should only be applied by trained professionals	VR exposure is effective and efficient in treatment of patients with anxiety disorders
Emily F Law <i>et al.</i>	2010	Baltimore	To examine if increasing the demand for central cognitive processing –VR involved in a distraction task would increase children's pain tolerance in children experiencing cold pressor pain				Children demonstrated significant improvement in pain tolerance during distraction relative to baseline	The effects of distraction on children's cold pressor pain tolerance are significantly enhanced when the distraction task includes greater demands for central cognitive processing
Van Krevelen and Poelman	2010	Netherlands	To assess the effects of AR –Augmented Reality with various applications	Review			AR technology has huge benefits with immense potential	Collaboration of AR with other sources can improve practice management
Katherina Meyerbroeker & Paul Emmelkemp	2010	Netherlands	To review the use of VRET- Virtual Reality Exposure Therapy in patients with anxiety disorders	Review			VRET can be augmented using cognitive enhancers	VRET would not only focus on outcome but also on the underlying process
Yuko S. Schmitt <i>et al.</i>	2011	Seattle	To examine the effects of VR as an adjunctive analgesic technique for burn patients	RCT	54 children		VR is an effective non pharmacological adjunctive pain reduction technique	VR with analgesic technique is effective and clinically meaningful
Trevor Thompson <i>et al.</i>	2011	UK	To examine if the influence of dental anxiety sensitivity on coping effectiveness differs among genders		76 participants		In males coping sensitivity was high and in females distraction showed superior strategy	Both coping sensitivity and distraction strategies were effective.
David Opris <i>et al.</i>	2012	Romania	To evaluate the efficacy of VRET with evidence based treatments	Meta analysis			VRET is better in combination therapies	VRET can be recommended as it has good stability

Albert Rizzo	2012	USA	To review the rationale of VRET when applied to anxiety disorders	Review	VRET is found to be useful either alone or in combination with other treatment modalities	VRET can be used as an adjunctive with various other combinations	
Donna Koller <i>et al.</i>	2012	Canada	To review the use of distraction techniques for children undergoing various treatment procedures	Review	Evidence based literature is evident in relation to the use of distraction techniques	Recommendations will include greater attention to child preferences and temperament as a means of optimizing outcomes	
Jeongwoo Lee <i>et al.</i>	2012	South Korea	To determine the effects of cartoon viewing and playing with favorite toy before anesthesia induction		The effects of cartoon viewing and playing with favorite toy before anesthesia induction proved to be effective	The method seems to be inexpensive, easy to administer and comprehensive way for anxiety reduction	
Brian A. Primack <i>et al.</i>	2012	Malaysia	To assess the role of video games in improving health related outcomes	Review	Evidence based support is existing for the use of video games in improving health related outcomes	Video gaming can be recommended as an allied adjunctive	
Orrett E <i>et al.</i>	2012	USA	To assess measures of anxiety control in dental patients	Review	Minimal sedation would help patients to alleviate dental anxiety	Minimal sedation can help patients overcome the fear of anxiety and hence can be recommended	
Jose Gutierrez-Maldonado <i>et al.</i>	2012	Barcelona	To assess if VR can influence pain related measures during cold pressor experience	Review	VR can be used for coping with pain	VR helped to reduce pain by increasing pain threshold	
Amber Choo	2012	Columbia	To assess the use of VR gaming design for reduction of chronic pain intensity in clinical settings	Review	VR can be used in clinical settings	Pain reduction is evident, therefore it is recommended in clinical settings	
Imran A Quddus	2016	London	To provide an overall view of psychological detection and management techniques	Review	Psychological detection and management techniques support the patients' treatment needs in the long run	Patient management can be enhanced by employing the right techniques at the right time	
Ted Jones <i>et al.</i>	2016	USA	Research article	To assess the impact of VR application for chronic pain	Visual Analog Scale	VR reduced pain significantly	VR can be a non-opioid alternative for chronic pain
Alexandra Negut <i>et al.</i>	2016	Romania	Meta-analysis	To do a meta analytical review of VR on neurophysiological assessment		Based on random effect model, there was large effect size in favour of healthy controls	VR measures for neuropsychological assessment can be recommended
Amal Al Khotani <i>et al.</i>	2016	Saudi Arabia	RCT	To assess the use of video taped cartoons using an eye glass system-I – theatre as an AV distraction technique on behavior and anxiety in children undergoing restoration		AV group showed reduced scores with reduction in pulse rate also in comparison with the control group	AV distraction seems to be a useful tool
Kausar Sadia Fakhruddin <i>et al.</i>	2016	Turkiye	Randomized cross over clinical study	To assess the effectiveness of behavior modification techniques in combination with visual distraction with or without eye wear using computerized delivery system during LA administration		The technique proved to be useful	Can be recommended as a routine practice
C. Lopez Maitte <i>et al.</i>	2016	Belgium	Review	To examine the current tools and the relevancy of VR		VR contributes irrespective of the underlying cognitive impairments	VR and traditional tests are complimentary to each other therefore can be recommended
Joanna Piskorz <i>et al.</i>	2017	Poland	Research article	To assess the effectiveness of VR in reducing pain due to venepuncture		VR seemed to be effective in reducing pain due to venepuncture	The technique can be recommended for clinical practice
Kausar Sadia	2017	Turkiye	Clinical study	To assess the		AV distraction	AV distraction can be

Fakhruddin <i>et al.</i>				effectiveness of AV distraction with computerized delivery of anesthesia during stainless steel crown placement in children with Down's syndrome		was effective in computerized delivery of anesthesia during stainless steel crown placement in children with Down's syndrome	recommended as a routine in clinical practice
Zhen Wang <i>et al.</i>	2017	US	Review	To evaluate the effectiveness and safety of treatments for children with anxiety disorders using CBT		CBT is effective in reducing anxiety symptoms and improving functions	Future research is needed to evaluate components of CBT
Justin Dunn	2017	USA	Review	To assess the effectiveness of Virtual and augmented reality in the treatment of phantom limb pain		Virtual augmented reality proved to be useful	Virtual augmented reality can be recommended as a routine clinical practice

Cristina Botella <i>et al.</i>	2017	Spain	Review	To examine the evidence about VRET's efficacy for phobias		VRET is a useful tool	VRET can be recommended for treatment of phobias
Yoren Gaffary	2017		Research article	To examine the effectiveness of VR and AR in haptic perception of stiffness	12 participants	VR and AR exert a psychological effect	VR and AR can be recommended as a routine
Aminabadi Naser Asl <i>et al.</i>	2017	Iran	Review	To examine if current researches appropriately discriminate dental anxiety		Out of 104 papers only 5 studies used different clinical measures to discriminate between fear, phobia and anxiety	Discrimination was not evident between fear, phobia and anxiety thereby they could be used interchangeably
Hisham Yehia El Batawi <i>et al.</i>	2017	Sharjah	Research article	To evaluate the effectiveness of AV distraction in behavior modification during dental caries assessment and sealant placement in children with autism spectrum disorder	N=28 children	Av distraction proved to be effective in behavior management of children with autism disorders	AV distraction can be recommended as an effective tool
Laura D Seligman <i>et al.</i>	2017	Texas	Review	To review the literature on dental anxiety and phobia, including its prevalence and sequelae		A multidisciplinary approach is needed for dental anxiety management	The recommendation is to group, classify and treat phobias in clinical practice
Stefano Cianette <i>et al.</i>	2017	Italy	Review	To assess the evidence of pharmacological and non pharmacological interventions for the management of dental fear		The findings indicate the potential to inform and influence clinical decision making and guidance development	The interventions can be recommended though significant heterogeneity may arise.
Michelle Sophie Keller <i>et al.</i>	2017	US	Review	To assess public perceptions regarding use of VR in health care		VR technology seems to be useful	VR technology can be recommended
James Spyt <i>et al.</i>	2016		Review	To assess recent assessment approaches and psychological management in dental practice settings		Expert opinions are available for psychological management	Psychological management can be recommended
Catherine Glennon <i>et al.</i>	2018		Research article	To determine the effects of a virtual reality intervention on pain and anxiety in patients undergoing bone marrow aspiration and biopsy		Participants in the experimental and control group showed a decrease in pain and anxiety but those wore VR goggles did not show significant pain reduction	VR technology to be revisited to benefit the patients, though it is a non-interventional alternative to traditional pharmacological methods

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