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

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Abstract

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.

**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 RCTs, 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 |
| Drahotá 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 | | | | 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                              | Year | Location            | Study Design          | Participants                        | Treatment Modalities                                                                 |
|----------------------------------|------|---------------------|-----------------------|-------------------------------------|--------------------------------------------------------------------------------------|
| Mark et al.                      | 2009 | New York            | Review                | Anxious patients miss dental appointments thereby do not receive adequate care | Ways to increase their comfort levels needs to be focused upon                         |
| Christine et al.                | 2009 | Canada              | Review                | Breathing exercises helped such children | Evidence showed that breathing exercises along with other distraction technique reduced distress in children during immunizations |
| Michelle et al.                 | 2009 | Brazil              | Cross sectional study | Prevalence of pain was 9.1 and anxiety was 34.7% | DA was related to pain in children below 5 yrs.                                      |
| Linzette et al.                  | 2009 | Australia           | 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 et al.                   | 2009 | USA                 | Review                | Compared to the non-interactive group participant in the interactive group showed more pain reduction | Interactivity increased the analgesic effectiveness of VR                               |
| Wendy et al.                    | 2010 | Honolulu            | 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 et al.                 | 2010 | USA                 | Review                | VR exposure should only be applied by trained professionals | VR exposure is effective and efficient in treatment of patients with anxiety disorders |
| Emily et al.                    | 2010 | Baltimore           | Review                | 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 et al.                      | 2010 | Netherlands         | Review                | AR technology has huge benefits with immense potential | Collaboration of AR with other sources can improve practice management                 |
| Katherina et al.                | 2010 | Netherlands         | Review                | VRET can be augmented using cognitive enhancers | VRET would not only focus on outcome but also on the underlying process                 |
| Yuko et al.                     | 2011 | Seattle             | RCT                   | VR is an effective non pharmacological adjunctive pain reduction technique | VR with analgesic technique is effective and clinically meaningful                       |
| Trevor et al.                   | 2011 | UK                  | RCT                   | In males coping sensitivity was high and in females distraction showed superior strategy | Both coping sensitivity and distraction strategies were effective.                       |
| David et al.                    | 2012 | Romania             | Meta analysis         | VRET is better in combination therapies | VRET can be recommended as it has good stability                                         |
| Authors | Year | Country | Study Design | Research Question | Study Outcome |
|---------|------|---------|--------------|------------------|---------------|
| Kausar Sadia Fakhruddin et al. | 2016 | Turkey | 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 Maste et al. | 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 Pszkorz et al. | 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 | Turkey | Clinical study | To assess the AV distraction | AV distraction can be | |
| Donna Koller et al. | 2012 | Canada | Review | To review the use of distraction techniques for children undergoing various treatment procedures | 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 et al. | 2012 | South Korea | Review | 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 et al. | 2012 | Malaysia | Review | To assess the role of video games in improving health related outcomes | Evidence based support is existing for the use of video games in improving health related outcomes | Video gaming can be recommended as an allied adhesive |
| Orrett E et al. | 2012 | USA | Review | To assess measures of anxiety control in dental patients | 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 et al. | 2012 | Barcelona | Review | To assess if VR can influence pain related measures during cold pressor experience | VR can be used for coping with pain | VR helped to reduce pain by increasing pain threshold |
| Amber Choo | 2012 | Columbia | Review | To assess the use of VR gaming design for reduction of chronic pain intensity in clinical settings | VR can be used in clinical settings | Pain reduction is evident, therefore it is recommended in clinical settings |
| Imran A Quddus | 2016 | London | Review | To provide an overall view of psychological detection and management techniques | 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 et al. | 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 et al. | 2016 | Romania | Meta-analysis | To do a meta analytical review of VR on neuropsychiological 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 AI Khotani et al. | 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 |

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| Author(s) | Year | Country | Study Type | Findings | Conclusion |
|-----------|------|---------|------------|----------|------------|
| Fakhruddin et al. | 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 |
| 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 |
| Cristina Botella et al. | 2017 | Spain | Review | To examine the evidence about VRET’s efficacy for phobias | VRET is a useful tool |
| Yoren Galfary | 2017 | Iraq | Research article | To examine the effectiveness of VR and AR in haptic perception of stiffness | 12 participants VR and AR exert a psychological effect |
| Aminabadi Naser Asl et al. | 2017 | Iran | Review | To examine if current researches appropriately discriminate dental anxiety | Out of 1014 papers only 5 studies used different clinical measures to discriminate between fear, phobia and anxiety |
| Hisham Yehia El Batawi et al. | 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 | AV distraction proved to be effective in behavior management of children with autism disorders |
| Laura D Seligman et al. | 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 |
| Stefano Cianette et al. | 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 |
| Michelle Sophie Keller et al. | 2017 | US | Review | To assess public perceptions regarding use of VR in health care | VR technology seems to be useful |
| James Spyt et al. | 2017 | Texas | Review | To assess recent assessment approaches and psychological management in dental practice settings | Expert opinions are available for psychological management |
| Catherine Glennon et al. | 2017 | Texas | 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 |

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