

## ORAL PRESENTATION

## The influence of behavior management on the salivary cortisol levels of patients with variation of dental fear and anxiety

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**Introduction:** Despite the many advances made to dental science in the 20th and 21st century, avoidance of dental treatment due to fear is still an important problem (Gaffar et al., 2014). Dental anxiety has been, and will continue to be, one vital barrier for many patients to take oral health services (Gaffar et al., 2014, Armfield, 2013b, Armfield, 2013a). Research has consistently demonstrated that dental fear not only results in reduced dental visiting (Gaffar et al., 2014, Armfield, 2013b, Armfield et al., 2007, Pohjola et al., 2007) but is also related to oral health problems (Schuller et al., 2003, Armfield et al., 2009, Armfield et al., 2007).

**Review of Literature:** The most recent literature places the prevalence of dental fear among patients in Saudi Arabia at 27% (Gaffar et al., 2014). Overall it has been estimated one in six adults throughout the world suffering more severe forms of dental fear and anxiety (Hmud R, 2009).

Specific phobia defined in Diagnostic and Statistical Manual for mental disorders (DSM- V) as fearful or anxious about or avoidant of circumscribed objects or situation (APA, 2013). The DSM- V classifies dental phobias as a subtype of a specific phobia termed as blood-injection-injury BII (APA, 2013). Dental phobia is one highly prevalent type of phobia, however there remains difficulty in accurately diagnosing dental phobia and differentiating it from anxiety and fear (Oosterink et al., 2009).

Salivary cortisol levels provide an accurate, reliable and non-invasive measure of stress in both adults and children (Jessop and Turner-Cobb, 2008). Cortisol is a hormone secreted by the hypothalamus-pituitary-adrenal axis (HPAA) and has been used as an accurate biomarker in stress research for over half a century (Hellhammer et al., 2009). In dentistry salivary cortisol has been used to measure the role of stress in the anxiety of dental treatment (Blomqvist et al., 2007, Kanegane et al., 2009). There is evidence to show that while salivary cortisol is limited as an indicator of short term fear it is a good indicator of long term stress (Pani et al., 2014).

**Aim of the Study:** The aims of this study are

- 1) To evaluate salivary cortisol and alpha amylase levels in patients who are not afraid of the dentist, patients who have overcome their fear of the dentist through behavior management and patients who cannot be managed by non-pharmacological behavior management.
- 2) To study the patterns of dental fear as recorded both subjectively and objectively in different age groups.
- 3) To evaluate the salivary cortisol and alpha amylase levels in patients before and after behavior management and to correlate these readings to the outcome of the behavior management

**Methodology:** Patients who are reporting to the dental clinics for any dental treatment will be screened and administered the dental fear survey questionnaire. Only patients who have fewer than three decayed teeth will be included in the final sample in order to remove the presence of rampant caries as a confounding factor (Rai et al., 2010).

A sample power calculation showed that to run the paired t test and the one-way ANOVA we would need a minimum of 20 individuals in each group for an alpha of 0.05 at 95% CI. Given that this study would involve four different age groups and measure fear in control and test groups of individuals the total sample size of the population required would be  $n=160(20 \times 4 \times 2)$ .

**Result:** Salivary cortisol levels provide an accurate, reliable and non-invasive measure of stress in both adults and children (Jessop and Turner-Cobb, 2008). Cortisol is a hormone secreted by the hypothalamus-pituitary-adrenal axis (HPAA) and has been used as an accurate biomarker in stress research for over half a century (Hellhammer et al., 2009). In dentistry salivary cortisol has been used to measure the role of stress in the anxiety of dental treatment (Blomqvist et al., 2007, Kanegane et al., 2009). There is evidence to show that while salivary cortisol is limited as an indicator of short term fear it is a good indicator of long term stress (Pani et al., 2014).

**Summary:** There is a definite relationship between dental fear and assays of salivary cortisol and salivary amylase, and salivary cortisol can serve as an assay of dental fear.

### Biography

Dr. Majed Almuammar, BDS, MS, ABPD, FAAPD, FICD is a Consultant in Pediatric Dentistry at King Abdulaziz Medical City, National Guard, Riyadh, and an Associate Professor at King Saud bin Abdulaziz University. He completed his Certificate in Pediatric Dentistry (1996) and Master's in Dental

Materials (1997) at New York University, followed by certification from the American Board of Pediatric Dentistry in 2000. He became a Fellow of the American Academy of Pediatric Dentistry in 2001 and the International College of Dentists in 2007. Dr. Almuammar directed the Residency Program at the National Guard, Central Region, from 2000 to 2011 and has served as Divisional Head of Pediatric Dentistry and Orthodontics, actively contributing to academic, clinical, and administrative leadership. With seven publications in peer-reviewed journals and frequent invitations as a speaker at international symposia, he is widely recognized for his dedication to advancing pediatric dental education, clinical excellence, and professional development on both national and international platforms.