

Acceptability of ART Relating to Dental Anxiety and Pain-A Review on Patient's Perspective

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Abstract

Dental fear is a normal emotional reaction to one or more specific threatening stimuli in a dental situation. Though modern dentistry has made progress in providing a patient-friendly environment, still dental anxiety remains one of the major problems affecting children, which diminishes the rendering of dental care leading to impaired quality of life. Atraumatic Restorative Treatment encompasses the concept of minimal intervention approach for treating carious teeth. The objective of this review from the patient's perspective is to present and discuss the evidence regarding the acceptability of ART. Information has been gathered from the available literature and aspects related to dental anxiety and pain have been emphasized. In conclusion, ART is psychologically well accepted when compared to other conventional approaches and is considered a promising management approach for cavitated carious lesions in children.

Keywords: ART; Anxiety; Pain; Phobia; Drill; COVID-19

Introduction

ART was pioneered in the mid-eighties as part of a primary oral health care programme of the Dental School in Dar es Salaam, Tanzania.[1] Twenty-five years later, this new method for treating dental caries, which involved neither drill or water nor electricity was accepted by the World Health Organization (1994) and the FDI World Dental Federation (2002). A traumatic Restorative Treatment (ART) is a procedure based on removing carious tooth tissues using hand instruments alone and restoring the cavity with adhesive restorative material. Another terminology used for ART is- Alternate Restorative Treatment.

Anguish during dental appointments is common among patients with dental anxiety, and they are less likely to comply with instructions from the dentists. [2] The discomfort associated with conventional cavity preparation makes patients avoid seeking dental care. [3] The four major sensory triggers for dental anxiety in the dental office are smells (e.g., eugenol and cut dentine), sights (e.g., needles, air turbine drills), sounds (drilling) and sensations (high frequency vibrations). The "4 S" principle involves removing these triggers to reduce dental anxiety among patients in the dental office.[4] The "atraumatic" component of the technique is further enhanced by the fact that local anaesthesia and rotary handpieces are rarely used in this approach inflicting

a very low level of trauma upon the pediatric patient. Patients are more relaxed with the ART approach.

Hence, the aim of this review is to discuss evidence regarding the acceptability of ART from patient's perspective. Aspects related to dental anxiety and pain will be emphasized in order to bring out better understanding of the literature.

Evidence of Literature on "Art" Acceptability

The earliest evidence of literature that gained attention was the Thailand Study (1992). The study comprised of 2 groups of children that were treated by ART and traditional rotary handpiece approach, respectively. At the 6th month evaluation, children treated by ART happily participated while the latter ran away seeing the operators, thinking that they needed to be treated again. Due to high level of acceptance among those treated with ART, the term ART was adopted by the WHO. "Atraumatic" not only because of its low level of pain or discomfort but also because of its minimal destruction of tooth tissues.

Reference	Comparison	Age	Operator Background	Variable Measured	Conclusion
1	ART vs Rotary instruments	6 years	Dental students & Dentists	Discomfort:-Heart rate and modified Venham index (observations)	ART caused less discomfort
2	ART vs Rotary instruments	6-16 years	Dentists	Pain:-Questions: did you feel any pain during treatment?	ART caused less pain
3	ART vs Rotary instruments	4-7 years	Pedodontist specialist	Pain: -Wong-Baker FACES Pain Rating Scale	ART caused less pain
4	ART vs Rotary instruments	Children & adults	Dentists & dental therapists	Anxiety:-Children's fear survey schedule -Corah's dental anxiety scale	Both children and adults treated with the ART were less dental-anxious
5	ART vs Rotary instruments vs ultraconservative treatment	6-7 years	Pedodontist specialist	Pain: -Wong-Baker FACES Pain Rating Scale	-No difference in levels of anxiety among treatments -Local an aesthesia was more frequent given in the rotary instrument group
6	-ART vs Rotary instruments	6-7 year	Pedodontist specialist	Anxiety: -Venham Picture Test	No difference in levels of anxiety between treatments
7	ART vs Rotary instruments vs ultraconservative treatment	6-7 year	Pedodontists specialist	Anxiety:-Facial Image Scale	-No difference in levels of anxiety among treatments

The patient's acceptance of ART was verified by many authors, who observed that both children and adults receiving ART restorations responded very positively to the treatment ascribing it to be "patient friendly" [5-8] while some of them found no difference in levels in dental anxiety and pain [9-11]. A summary of these studies' outcomes was tabulated by Jo E. Frencken. [12]

On the basis of the studies conducted, it can be concluded that dental fear and pain related to different restorative procedures requires further investigations. Studies should include confounding factors; such as: age, gender, operator influence and cultural aspects. [5] Furthermore, methodological aspects should be given due attention, as both fear/anxiety and pain/discomfort levels may also be influenced by subjective aspects like emotional responses and social determinants [12]

Association of Anxiety and Pain with Dentistry

Dental anxiety is "a feeling of apprehension about dental treatment that is not necessarily connected to a specific external stimulus", [13] while dental fear is a normal emotional reaction to one or more specific threatening stimuli in the dental situation [14] According to Panksepp [17] (1982), the difference between fear and anxiety seems to reflect only the intensity.[15] According to Cohen et al (2000)[16], physiological impacts include fright response and feelings of exhaustion after dental appointments, while behavioral impacts include dental avoidance. It is well established that anxious individuals frequently avoid dental treatment, either by failing to appear for their dental appointments or by delaying dental visits for long periods of time.[17]

The interaction between anxiety and dental pain, as investigated by van Wijk and Hoogstraten [18] (2005), suggests that people who respond fearfully to pain are at an increased risk of ending up in a vicious cycle of anxiety (figure 1). If this cycle is not broken, a severe form of dental fear might develop.

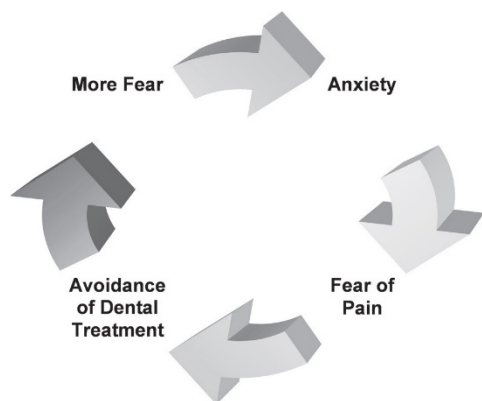


Figure 1: Vicious cycle of anxiety: modified from van Wijk and Hoogstraten²⁵ (2009)

Dental fear usually starts in childhood with a negative experience by having a painful event (Objective fear) or by having heard by others (Subjective fear). Hence, the influence of the parents is most important in child's attitude towards dentistry. It is essential; therefore, the dentist must primarily aim in prevention of dental fear by creating safe atmosphere for children in the dental environment starting from first call made to the clinic, parent education and a friendly dental team.

The patient's Outlook: ART

Dental fear distresses not only the patient but also the Dentist. Hence, with the ART approach, patients are more relaxed and this in turn reduces operator's stress. The most common fear inducing aspects of dental treatment are the procedures related to the needle and the drill while the ART approach is based on using hand instruments. [19]

Usually, carious lesions are left untreated in children of underprivileged communities of developing and underdeveloped countries mainly because of financial problems, leading to invention of ART technique. More recently, it has been increasingly accepted in developed countries because of its "atraumatic" approach in relation to the stress and pain experienced by the patients.

As reported by Mickenautsch et.al, ART costs less than conventional restorations. The annual capital cost of ART approach was 50% less than amalgam and composite resin restorative procedures in a modern dental setting. [20]

ART procedure can be completed in a short period of time, therefore requiring a shorter fallow period and reduced number of patients in waiting room, helps the patient save time. In the era of COVID-19 pandemic, ART has proved to be a lifesaving approach in terms of low-risk Aerosols Generating

Exposures (AGEs) other than its usual benefits, minimizing the chances of cross contamination between the patient, operator, dental auxiliaries and patients in waiting area.

The patient's outlook on the ART approach is that is safe, less traumatic, less painful and friendlier than the conventional restorative interventions.

Conclusion

It is fairly common to come across patients who have a deep-seated fear of discomfort caused by the conventional approach that is used by most of the dentists. In today's world, a "good" dentist is defined by their painless treatment and behavior management techniques that could assist the practitioner in identifying anxious children as early as possible causing least possible psychological negativity.

Thus, ART has served as a catalyst for a new way of thinking about oral health care. Its "atraumatic" management approach has made it the safest and the most ideal of choice of treatment.

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