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A review of Dental Anxiety; Influencing Factors, management and way forward.

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ABSTRACT: Dental anxiety is one of the most common conditions present amongst the masses globally. It is this fear that makes individuals avoid seeking dental treatment which results in a deteriorated Oral health-related quality of life. Differences exist in the prevalence of dental anxiety based on gender, education levels, level of deprivation of a society and its socioeconomic status. In Knowing the reasons and factors that cause dental anxiety can help dentists effectively manage and treat their patients. The aim of this paper is to combine dentistry and psychology by looking at dental anxiety and phobia within the society, exploring its key causes, establishing what impacts it has on sufferers, and examining what dentists and others can do to alleviate these problems. Key treatments and specific psychological therapies are reviewed and suggestions are made for future strategy and research.

KEYWORDS: *dental anxiety, management, way forward*

I. INTRODUCTION

Dental Anxiety is the fear of going to see a dentist and obtaining dental treatment. Sometimes this anxiety can border on dental phobia, which acts as a significant impediment to patients seeking oral healthcare and thus affects their oral health, and, subsequently, their quality of life [Sindhu *et.al,* 2020, Deogade *et.al,* 2016]. Lack of timely attention to an individual's teeth can cause issues such as carious teeth, periodontitis, and other oral health diseases that can consequently lead to the loss of natural teeth .Dental Anxiety can be caused by a traumatic dental experience, feeling of shame, loss of control in a dental chair, distrust of a dentist, or it can be a perceived fear based on anecdotal incidents [Armfield, 2010, Scandurra *et.al,* 2021]. Dental phobia is one of the most commonly seen phobias in the world, despite raised awareness and focus on improving the doctor–patient rapport [Sindhu *et.al.*2020]. Dental anxiety and phobia are seen in a vast number of people and understanding those who suffer from these phenomena can only help dentists manage their patients more effectively [Singh *et.al,* 2021, Kassem El Hajj *et.al,* 2021].Studies have shown that up to fifteen per cent of the Western population has a form of extreme dental anxiety that impedes them from accessing dental care due to their fear [Gatchel *et.al,* 1983]. As a person's dental health deteriorates their self-esteem and social confidence are negatively affected. The pattern of their subsequent avoidance sets up a 'vicious cycle' of worsening fears and declining oral health.

Fear, anxiety and phobia;

Fear is a normal response to any stimulus perceived as threatening that may involve discomfort or pain. When a fear becomes excessive, beyond the proportional response to the external threat, and interferes with the individual's ability to function, then this fear may meet the criteria for an anxiety spectrum disorder known specifically as phobia.

How are fears acquired?

The development of fear can be viewed within two frameworks, where fears are viewed as learned or naturally occurring. The first of these proposed by [Rachman, 1977] is based on Learning Theory and suggests three ways in which fear is acquired:

1. Direct Conditioning where a single exposure to cues associated with an intensely aversive event can lead to a person becoming fearful of those cues alone. For example a child observes a person being extracted a tooth by a dentist, then the child develops the phobia when he /she sees a dentist.
2. Modelling or Vicarious Learning, where a learned fear is acquired through observing another's fearful reactions to specific events or stimuli. Infants actively search for the appropriate responses to stimulants from their caregivers to gain cues as how to react to specific situations - known as 'social referencing'. For example a

toddler watches their mother scream and jump in terror upon seeing a spider, learning that spiders are dangerous.

3. Instruction /Negative information. This increases a person's negative beliefs about a proposed danger and the expectation of threat and discomfort that they will gain from it. For example a child constantly hears their parents talk about how dangerous, and fearful it is to visit a dental clinic, then the child also develops phobia to attending a dental clinic.

The second framework for the acquisition of fear reflects our nature: Biological Preparedness and Genetic Factors. Biological Preparedness was first suggested by [Seligman,1971] who stated that certain fears are innate and evolutionarily advantageous, ensuring the survival of the species. Such fears include; heights, crawling insects, or thunder and lightning. Fears of pain and injury are thought to be universal and protective, promoting healthy responses to avoid threats and danger.

Genetic Factors linked to fear acquisition are based on research from twin studies, where fears in one twin predict those in the other. There also appears to be strong correlations of intergenerational fears in families. This research is sometimes difficult to interpret and learning theorists interpret these findings differently, highlighting that twins share similar environments and parenting.

Dental phobia versus dental anxiety

Dental anxiety is the normal psychological response to a dental stimulus that has been interpreted as harmful or dangerous to the individual. This can be experienced as a level of uneasiness around dental appointments or specific dental procedures. Dental phobia however, according to the *Diagnostic and Statistical Manual of Mental Disorders fifth edition* is described as a, "Marked and persistent fear that is excessive or unreasonable". Phobic patients are invariably avoiders of dental care and therefore have more severe consequences that those with dental anxiety. Dental anxiety is much more common as it is essentially a fear of the unknown throughout a dental experience. This phenomenon is felt by many people regardless of country, culture and living conditions [Armfield *et.al*, 2006]. Weiner and Sheehan, 1990 proposed that there are two types of dental anxiety, exogenous (due to a traumatic experience) and endogenous (deriving from other anxiety disorders). However, the University of Washington has categorized dental fear into four different groups; Fear of Specific Stimuli, Distrust of Dental Personnel, Generalized Anxiety, and Fear of a Medical Catastrophe. All of which can still be classified into either the exogenous form of dental anxiety or the endogenous [Locker *et.al*, 1999].

Measuring dental anxiety;

The level of dental anxiety varies greatly from person to person and can be assessed using various different scales;

Kuppuswamy Status Scale; This is the most widely used scale to measure the socioeconomic status of urban families in South Asia, taking three parameters into account, namely education, occupation, and income of the individual.

Modified Dental Anxiety Scale (MDAS)

This is most commonly used scale to measure dental anxiety in individuals. It considers 5 parameters; receiving treatment the next day, sitting in the waiting room, having a tooth drilled, receiving scaling and polishing, and receiving an anesthetic via injection.

1. Influencing factors of dental anxiety/phobia;

Eighty percent of dental phobia is believed to be acquired exogenously, through negative experiences [[www.dentalfearcentral.org/fears/dental-phobia/]. Traumatic experiences in childhood can lead to a lifetime of severe dental anxiety and phobia. Often this can be the hardest to treat as the memories can sometimes have been forgotten, making the phobia seem more irrational. The stereotypes of dentists being cold and controlling in character can have a huge psychological impact on phobic people, exacerbating their fear. Pain caused by a dentist during procedures, who is perceived as caring is much less likely to result in psychological trauma [Oosterink *et al*, 2008]. These perceived images of professional dentists predict the avoidance behaviors in phobic people, as the negative images discourage a person further from jumping the first hurdle to make an appointment to see the dentist and gain the beneficial effects of dental care. A study by [Oosterink *et.al*, 2008] found that the most fear provoking stimuli was associated with invasive stimuli such as surgical work, compared with the least anxiety provoking stimuli which was noninvasive for instance, meeting the dentists themselves. This shows that the phobia can be subjective and underpinned by specific items which can generalize, such that the whole event collectively induces fear and anxiety. Dental anxiety can also be vicariously learned through exposure to the phobia. This is learning that is derived through indirect sources such as observing other's behavior. This can be experienced through relatives, close friends or the experience of strangers that react negatively to dental stimuli, but it may also be catalyzed through a common negative image of dental phobia/anxiety portrayed within society and the media. However, some interesting research from [Townsend

et.al, 2000] revealed that this factor of vicarious learning though significant in some people, is generally only of minor importance and is not a major cause of dental anxiety. Other causes of dental anxiety and phobia can be as simple as an incompatibility between patient and service provider that undermines confidence, increases a feeling of not being in control and creates an expectation of discomfort or pain [Pohjola *et.al*, 2011]. Often specific dentists caring for a patient in childhood continue to be blamed by the same patients in adulthood for their on-going anxiety. This highlights the importance of successful and reassuring early contacts with a dentist as a key factor in minimizing dental anxiety.

The susceptible group to dental anxiety/ fear

The UK 2009 NHS Adult Dental Health Survey [White *et.al*, 2009] indicated that women exhibit significantly greater dental anxiety than men, with 17% of women scoring above 19 on the MDAS – a score indicating extreme dental anxiety. This finding is further supported within a study done by [Heft *et.al*, 2007], showing that only 8% of men report that they are dentally anxious. However, these data can be questioned as [Buchanan and Coulson, 2007] found no significant differences between men and women in their level of dental anxiety, or their independent efforts to overcome their fear. The other critical issue in the interpretation of these data is whether men and women are equally willing to admit they have a phobia of the dentist? The theory of men having a harder time admitting to certain fears is backed up by the widely observed pressure of societal norms to be tough, and strong – and not being afraid of things like the dentist. Whereas the average woman does not face the same conventions from society, so is perhaps more willing to admit her fears? Another result from the UK NHS Adult Dental Health Survey [White *et.al*, 2012], showed that those from a lower socio-economic background have a higher MDAS score across all questions within the scale. This could be due to poorer understanding of the processes involved in dentistry or lower attendance of a dental practice. The costs of dentistry are subsidized with the NHS though this cost can still be a barrier. Those with more money can pay more for private dental treatment where there is often more time to build a relationship with the dentist and address any anxiety the patient may have. Young children especially are susceptible to being fearful of the dentist. The clinical environment in which dentistry is practiced is often experienced as strange and foreboding. The feelings of being constrained during the examination and procedures, the smells, poking and prodding from fearsome instruments, and the harsh noises are all likely to induce fear, even before any discomfort from the procedures. These fearful experiences are able to incubate in the minds of the young and can thereby grow between consultations. The fears are often carried through and beyond childhood, and those initial perceptions and experiences whether these are positive or negative will likely underpin dental anxiety in the future. Dental anxiety is also shown to be more common in those who have endured sexual abuse in the past [*www.dentalfearcentral.org/fears/dental-phobia/*]. Visits to the dentist can leave victims with flashback's or dissociative episodes, dazed, lack or response, or unexplained sudden crying. The link between dental anxiety and a history of abuse is put down to the mirrored experiences sufferers would face in a dental appointment. These can include being told what to do, lack of control laying in the dentist's chair, with all power given to the dentist, an inability to move, trust issues and objects focused around the mouth**.**

Impacts of dental fear

Through various research a significant correlation has been found between dental anxiety and avoidance of dental care in the general population [Hakeberg and Berggren, 1992, Hakeberg et.al, 1996], indicating that avoidance behaviors are prevalent in those with dental anxiety. It has also been shown that the higher the level of a person's dental anxiety, the longer is the avoidance period, leading to a higher risk of decay and dental problems, inevitably leading to overall worsening oral health. In a study by [Hakeberg et.al, 1993] they measured difference in oral health between those with dental phobias compared with a control group of non-phobic dental patients. The two groups were matched by age, marital status, and housing standard. Overall, the results showed phobic patients had a fewer number of teeth, higher number of caries, and a worse condition of their gums, but overall fewer restored, filled teeth surfaces. This shows clearly that despite their significantly poorer oral health, phobic patients were much less inclined to hold regular dental appointments, thereby exacerbating the deterioration in their teeth and gums. The impact of dental phobia on a patient is also often evident within their daily routines. Disturbing intrusive thoughts can prevent sufferers from even watching television programs that include scenes of dentists within them, as it triggers too much anxiety [Cohen *et.al*, 2000]. Due to poor oral health based on ongoing issues that are not treated as a result of a phobic patient's avoidant behaviors, their diet may be impacted, being unable to eat hard or chewy foods at very cold or hot temperatures, due to discomfort. Further research shows that high levels of dental anxiety are also linked with increased substance abuse, increased alcohol and drug use, poorer diet, low self-confidence, increased emotional volatility, and greater absence from work and avoidance of human contact, leading to loneliness and isolation. Nonetheless, all of these negative effects have been found to be reversible following successful psychological and oral treatment [Berggren *et.al*, 1986, Hakeberg and Berggren, 1988].However, there is other interesting research that demonstrates that the impact of dental anxiety can vary greatly and not all patient with dental fears

who avoid treatment will experience poor oral health. In another research the impacts of anxiety on daily life of patients with an average MDAS score of 21.5 were assessed, through in-depth interviews, some patients explained that their dental anxiety motivated them to practice high standards of oral health, making sure to brush twice a day, using floss and mouthwash, in order to enable them to reduce or avoid the need for any dental interactions [Cohen *et.al,* 2000].

II. Management of dental fear

Dentists' behaviors and responsibilities

The dentist has the primary role in minimizing the emergence of dental anxiety, and preventing low dental anxiety from snowballing into dental phobia. Research shows that this is achieved by establishing rapport and trust with patients to build up and maintain a friendly and trusting working relationship. The Four Habits Model illustrates how this may be done. This model developed by Frankel and Stein, 2001, stresses the importance of four key behaviors as a guide for optimal medical appointments. This also appears to be a very good template to follow for dentists meeting new patients.

1. Invest in the beginning: This stage can often be ignored in a busy dental practice with limited time. However, the initial moments to establish a kind, trusting relationship and giving verbal and nonverbal reassurance are invaluable. The actions of meeting the patient in the waiting room with a warm smile and clear introduction can be key in setting the tone for a successful therapeutic relationship to follow.
2. Extract the patient's perspective: Asking the patient how anxious they are about coming to the dentist and if necessary, to rate their feelings on a 10point scale, provides important insight from the beginning, allowing a dentist to adjust their professional manner accordingly.
3. Demonstrate empathy: If the patient's response indicates higher levels of anxiety, the dentist should firstly try to normalize dental anxiety and explain how common this response is. They can then ask what might be done to make the patient feel less anxious. Giving the patient choice and handing over some control is often helpful in reducing their fear.
4. Invest in the end: When a patient has faced their fears and coped as well as they could with the appointment it is very important to offer abundant praise. Walking out of the consultation with a positive mind-set will greatly reduce the chances of any avoidance behaviors or anxiety developing in the patient between meetings.

Pharmacological intervention

This intervention is first explained and agreed with the patient and can commonly be used to allow work within a person's mouth that would normally be difficult or impossible without sedation. There are different types of sedation, ranging from simple nitrous oxide, which is commonly used within a medical setting to calm a person down to a level where they could cope with treatment; to intravenous sedation taking effect more quickly and allowing a more precise effect from a specific dosage of the drug. This method can be used in combination with nasal spray to sedate a person initially at a lower level, so as to make the experience of injection easier. The more extreme version of sedation is a general anesthetic, where a person is made fully unconscious and treatment becomes straightforward and free of any awareness or overt anxiety. However, this method is only used when it can be ethically balanced out with the usual risks that come with a general anesthetic. The most common criticism of the use of general anesthetic is that this merely allows for treatment to improve a person's dental status, without solving the problem at heart – an individual's phobia. This conclusion is supported by a study carried out by [Hakeberg *et.al,* 1993]

Cognitive behavior therapy (CBT)

Cognitive Behavior Therapy is based on the theory that events themselves do not cause us distress but instead the thoughts, images and beliefs that we have about these events predict our emotional reactions and behavior [Beck, 1976]. The key to CBT is to help a person to identify the key thoughts and images that are causing them to be anxious in a particular situation and learn to gradually challenge and change these into a more adaptive and helpful pattern of thinking. The evidence for CBT treating specific phobias is substantial. A study within a community based clinic for fearful patients in Sweden showed that attendance was significantly higher in those who had received a simple cognitive-behavioral therapy treatment, in comparison to those who had just had more exposure to a dental setting [Berggren,1986]. The dentist can help re-educate the patient's thinking where misconceptions arise, and seek to involve, inform and instruct the patient throughout the intended procedures. The widely quoted NHS motto, 'No decision about me, without me' is a key component of the clinician and patient partnership associated with effective CBT. Cognitive Behavior Therapy has the most clinical evidence to support its use in treating fear. However, if a patient is not intent in overcoming their phobias then the therapy is unlikely to work. High levels of motivation from the patient are invariably the best predictor of response to any psychological interventions.

Professional psychological therapy for dental phobia

Professional NHS therapy for Dental Phobia in the UK is now becoming widely available within 'Talking Therapies' – the government initiative to make CBT accessible to those suffering with anxiety and depression. This gives many more people access to try and overcome their fears. For more complex dental phobias, clinical psychologists will provide therapy within secondary care mental health services.

III. The way forward;

Prevention must be a focal point and primary goal for future programs of research that want to understand the acquisition and reduction of dental anxiety and phobia. The effects of phobia that causes poor oral hygiene and the negative physical, psychological and social consequences that ensue must be tackled early on. Putting in place programs of oral education within nursery and primary schools allows for early introduction and familiarity to dentists and their procedures. Simple rewards for completing procedures, such as through using stickers and goodie bags, can strongly reinforces a child's positive experience of the dentist. Future studies should continue to compare different types of child friendly environments in which dentists operate. Researching change to the stark clinical rooms of a usual dental practice and creating additional fun distractions for children and adults that decrease their anxiety are needed. In this way optimal clinical environments can become widespread. Children with fears must be coaxed back to confidence and we need to understand what behaviors, rewards and skills are best suited to this task. For adults with severe dental anxiety we must first find those who have continued to display avoidance behaviors due to fear. Public education programs need to be put in place to reiterate the importance of good dental hygiene and provide advice, support and interventions for those who avoid. Specialist clinics with multidisciplinary teams including clinical psychologists are being set up in Norway to cater for this avoidant group of dentally phobic patients and this practice should become more widespread. Dentistry is also required to continue refining its approach and methods to be less frightening. Although the profession has changed immensely over the past 50 years, some current procedures still undermine the sense of control for a patient, create pain and feel too invasive. New technology, i.e. the use of lasers rather than drills in dental practices, despite still being a novelty, offers the opportunity for better patient experience with less need for anesthesia and therefore no needles, no harsh sounds, and less overall anxiety. Experimental trials to demonstrate these and other benefits are needed urgently.

IV. CONCLUSION

Dental Anxiety, or in its severe form, dental phobia, acts as a massive barrier to seeking out dental care. Lack of proper dental care results in a poor quality of oral health and ultimately a deteriorated quality of life. Dentists need to understand the factors that aggravate feelings of dental anxiety in their patients in order to treat them effectively. It is also necessary to raise awareness about these factors because dentists themselves can perpetuate these circumstances, which are detrimental to the overall treatment of patients. New ways of engaging the avoidant phobic groups must be found, so that we can prevent the next generation from developing fears and risking their oral health by avoidance of the dentist. With increased new technologies to improve the patient experience, it is hoped that dental anxiety and phobia amongst the population will decrease and with public education program on oral health and the need to visit the dentist regularly, we can begin to look forward to improved oral health for everyone.

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