How to Cite:
Dedgaonkar, A. K., Patel, A., Patil, S., Patil, K., Kunte, S., Lakade, L., & Jangam, V. B. (2022). Assessment of dental anxiety by using graphological scale among 8-13-aged children: An observational study. *International Journal of Health Sciences*, *6*(S8). https://doi.org/10.53730/ijhs.v6nS8.14023

Assessment of dental anxiety by using graphological scale among 8-13-aged children: An observational study

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***Abstract*---**Background: Dental anxiety is an important component of distress to patients in the dental operatory. If the dentist is aware of the level of anxiety of his patient, he is not only forewarned about the patient's behavior but can also take measures to help reduce the anxiety during the operative procedure. Patients who are highly anxious about dental treatment may react differently than do those who are less anxious. We have many anxiety scales to detect in dental operatory but none of them have objectivity about reveling anxiety.

International Journal of Health Sciences ISSN 2550-6978 E-ISSN 2550-696X © 2022.
Manuscript submitted: 09 July 2022, Manuscript revised: 27 Sept 2022, Accepted for publication: 18 Oct 2022

Patients' perceptions may change from time to time and so does their response. So we need an objective type of scale that will help to diagnose anxiety. Methodology: participants were divided into two groups 20 in each group. The children of both groups were given ACDAS scale to solve. (by patient and parent as this scale has an opinion of parents too) For detecting anxiety through graphology, Navrang Anxiety Scale (NAS), require unruled paper, writing matter, and pen was given to participants to write the essay and obtain the handwriting sample from the patient. Result: The significant association was seen between the graphological scale and the ACDAS scale. Conclusion: Navrang Anxiety Scale (NAS) can be a good alternative and is an objective type of scale to reveal anxiety.

***Keywords*---**graphology, anxiety, anxiety scale.

Introduction

Modern dentistry has made progress in providing a patient-friendly environment but despite revolutionary new dental techniques, anxiety towards dentistry has stayed relatively constant over the past decade. Dental anxiety is characterized by a fear of anything dreadful happening during dental treatment, as well as a feeling of being out of control. Unlike fear it does not come from an existing situation, but from an anticipated one. Graphology or handwriting analysis is a science to read the human subconscious mind. The individual can discover their true personality, and identify their strength, weaknesses, and also health issues. The handwriting gives clues to our health conditions such as physical, mental, neurological, psychological, psychosomatic, hormonal, and growth issues. One can identify or understand the root cause of anxiety and can be treated. By changing the handwriting in a scientific way, one can change the personality, and thinking patterns and cure many ailments. Healthy handwriting can actually help us to lead a healthy life this is called Graphotherapy. Graphotherapy combines the principles of neurology and psychology of handwriting analysis to create a powerful and effective method for changing life. If persisted the subconscious mind obliges and accepts the change for the better likewise one can reduce the level of anxiety. Graphotherapy has provided promising responses in children with autistic challenges, attention deficit hyperactivity disorder, stammering, psychosomatic diseases, addictions, phobias, trauma, fears, anxiety, guilt, etc. Understanding the level of anxiety before treatment will allow the dentist to provide better anxiety management and a more positive experience. Graphology is not only a diagnostic tool but also a therapeutic tool. The Navrang Anxiety Scale is an objective type of scale and it identifies root causes that can provide the solution. The scale does not have a standard question-answer format; therefore, the possibility of a well-rehearsed participant does not exit to cheat the test.

Methodology

The study was conducted in the Department of Pediatric and Preventive Dentistry Bharati Vidyapeeth Dental College and Hospital, Pune after obtaining ethical clearance from the institutional ethics committee. The registration file number-

EC/NEW/INST/2019/329). The procedure of the study was explained to the patient and their parents. Patient consent forms or child assent forms were filled out before the start of the study.

Development of scale

The Navrang Anxiety scale was made with the help of 5 expert graphologists and 2 psychologists. Traits were listed down by graphologist indicating anxiety in handwriting. Handwriting samples of people already detected with anxiety were also collected with their consent and they were checked for the inclusive of the traits listed on the scale. After this, the traits were finalized to 30 which were indicating anxiety.

Face validity and reliability

Face validity was done and the reliability was checked by Cronbach alpha which was 0.853 for the 30 items listed on the scale.

Application of scale

40 healthy children aged 8-13 years reporting to the Department of Paediatric and Preventive Dentistry were screened from OPD based on eligibility criteria. Informed consent was taken from the parents or guardians. The subjects were divided into two groups

i.e. Group A (1st dental visit) -20 and
Group B (previously visited dental clinic) -20

The children of both the groups were given

1. ACDAS scale to solve. (by patient and parent as this scale has an opinion of parents too)
2. Unruled paper, writing matter, and pen to write the essay to obtain the handwriting sample from the patient.

The same format and text of writing were given to every participant. The handwriting sample was given to the graphologist for marking the Navrang Anxiety scale to avoid bias. The Navrang Anxiety Scale included 30 findings that were marked by the graphologist. After obtaining readings from the ACDAS scale and Navrang Anxiety scale, the results were checked and correlated. (table 1, fig1, fig1.1, fig1.2)

Results

The (table 2, figure 2) shows the distribution of scores according to graphological scale score and ACDAS scale. Out of 2 observations with graphological scale scores between 5 to 10, 1 has an ACDAS score between 21-25, and 1 has an ACDAS score between 26-30. Out of 11 observations with graphological scale scores between 11 to 15, 2 has ACDAS score between 21-25 and 3 has ACDAS score between 26-30, 2 has ACDAS score between 31-35 and 4 has ACDAS score between 36-40.

Out of 18 observations with graphological scale scores between 11 to 15, 1 has ACDAS score between 21-25 and 2 has ACDAS score between 26-30, 6 has ACDAS score between 31-35 and 9 has an ACDAS score between 36-40. Out of 1 observation with graphological scale score between 5 to 10, has ACDAS score between 31-35. By this observation we can say that there is a significant association between both the scale.

To test the association between the Navrang Anxiety Scale and ACDAS scale, the Chi-Square test was used. From table 3, it is observed that P-Value is less than 0.05. Hence there is a significant association between the Navrang Anxiety Scale (NAS) and ACDAS Scale.

Discussion

Given the abundance of self-reported measurements available, none of them meet the assessment scale's ideal criterion to be considered the "gold standard."[1,2,3.] As a result, a new scale to quantify dental anxiety was needed, one that took into account the other dental anxiety contributing elements, such as behavioural, psychological, and social issues. Characteristics of cognitive and negative thought[4]. This is the first study to our knowledge to use graphology as a tool for evaluating anxiety. Handwriting is a difficult endeavour that necessitates the integration of several factors, including behaviour (inattention, hyperactivity), motor planning, fine motor abilities, and visual-motor perception.[5]

More than half of the participants in this study expressed high-moderate worry over dental care, showing that dental anxiety is a serious issue. In this study, various human characteristics were studied which were directly or indirectly co-relating to the anxiety. The reason for anxiety can be multiple, so various observations and the root cause of anxiety were revealed from the NAS. ACDAS scale is a valid cognitive scale to measure dental anxiety for children who are at least 6 years old. It encompasses the required criteria to be a “Gold Standard” Dental Anxiety Scale for Children and Adolescents.[6]

Anxiety is linked to negative and irrational ideas about future occurrences, according to Beck's cognitive model of emotional disorders.[7] Irrational anxiety, it is argued, is the immediate emotional result of unrealistically alarming thoughts concerning personal danger.[8] In the study, done by De Jongh, A. & Ter Horst, G. (1993) they have claimed, that the issue of self-reported scales has data dependability, the context of the interview, and the way questions are phrased can influence patients' opinions. For example, because the dentist conducted the interview, the findings' generalizability may have been hampered by the fact that certain thoughts were repressed in the report.[9] Assessing the thoughts of anxious dental patients is an interesting starting point for both research and treatment. Once dental anxiety has been established, it is clear that a comprehensive examination of the thoughts of dentally worried patients can provide us with a better understanding of the role of cognitive variables in perpetuating dental worry. In this study we get to know about the certain negative thoughts which best distinguish between low and high anxiety patients, in which anxiety of both the groups are compared. A patient who has 1st dental visit and patient already

visited the dental clinic. Also assessing patients' thoughts or thoughts related to anxiety is the first step in this study.

The ACDAS comprises 13 self-reported questions in a logical order that inquired about the child's feelings when confronted with dental encounters. Each question is unique. As a response set, used three faces. The first face represents the Feeling of a "happy" person who is relaxed and not afraid. The second face reflected the feeling of being "OK" in a neutral/fairway. The number three face indicated the nervous sensation of being "scared." The child was instructed to look under the best part of his or her face. he or she expressed his or her response to the question, Accordingly, a number (1, 2, or 3) was assigned.

For NAS the child just had to write the matter which was given on the paper. They didn't have any questions to answer. NAS gives you a clear outline of the patient's thought process. In the NAS, there are various pointers to look at, which affect anxiety because of the thought process or the nature of the individual. The factors which highly impacted anxiety were low confidence, stress, giving up attitude, eagerness or impatient, tenacity, excessive worry or over-thinker, lack of harmony in thoughts and actions, poor concentration, being tense in any situation, always carrying a challenging attitude. Factors that moderately affected anxiety were temperament, shallow thinker, overprotective nature, punishing self, guilt, fatigue, introverted. Factors that mildly affected anxiety were over-controlling nature, low confidence, and being extra responsible.

Conclusion

Based on this study following conclusions can be made. NAS is an objective type of scale that can be used to measure dental anxiety. ACDAS and NAS showed to have a significant association with each other

Importance of this paper to Pediatric Dentists

- NAS is the objective type of scale that will give an accurate level of anxiety of children even before the actual meeting of the child by just seeing their handwriting.
- What kind of behaviour modification need to be given for the various level of severity of anxiety can be decided beforehand by the Pediatric dentist.
- No standard question-answer format so no well-rehearsed participants to cheat the test.

Declaration of interests

There are no conflicts of interest

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Table 1 frequency and percentage of NAS

Assessment	Frequency	Percentage
Anxious	20	62.5
Low confidence	20	62.5
Stress	24	75
over control	6	18.75
Giving up / resigning attitude	24	75
Temperament	10	31.25
Eager	22	68.75
Tenacity	20	62.5
No depth	10	31.25
Low confidence	6	18.75
Extra confidence	16	50
Low intensity	16	50
Varying strength	20	62.5
Excessive worry	28	87.5
Excessive worry	20	62.5
Excessive worry	8	25
Lack of harmony	30	93.75
Poor concentration	26	81.25
Over protective	12	37.5
Tense	20	62.5
Over anxious	10	31.25
Challenging attitude	24	75
Extra responsibility	2	6.25
Recovery agent	2	6.25
Vanity	18	56.25
Punishing to self	12	37.5

Guilt	14	43.75
Variety with poor concentration	30	93.75
Fatigue	14	43.75
Introvert	18	56.25

Table 2

			Navrang Anxiety Scale Score				Total
			5 to 10	11 to 15	16 to 20	21-25	
ABEER Scale	21-25	Count	1	2	1	0	4
		%	50.0%	18.2%	5.6%	.0%	12.5%
	26-30	Count	1	3	2	0	6
		%	50.0%	27.3%	11.1%	.0%	18.8%
	31-35	Count	0	2	6	1	9
		%	.0%	18.2%	33.3%	100.0%	28.1%
	36-40	Count	0	4	9	0	13
		%	.0%	36.4%	50.0%	.0%	40.6%
Total		Count	2	11	18	1	32
		%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 3

	Value	df	P-Value
Pearson Chi-Square	18.142	9	0.034
N of Valid Cases	32		

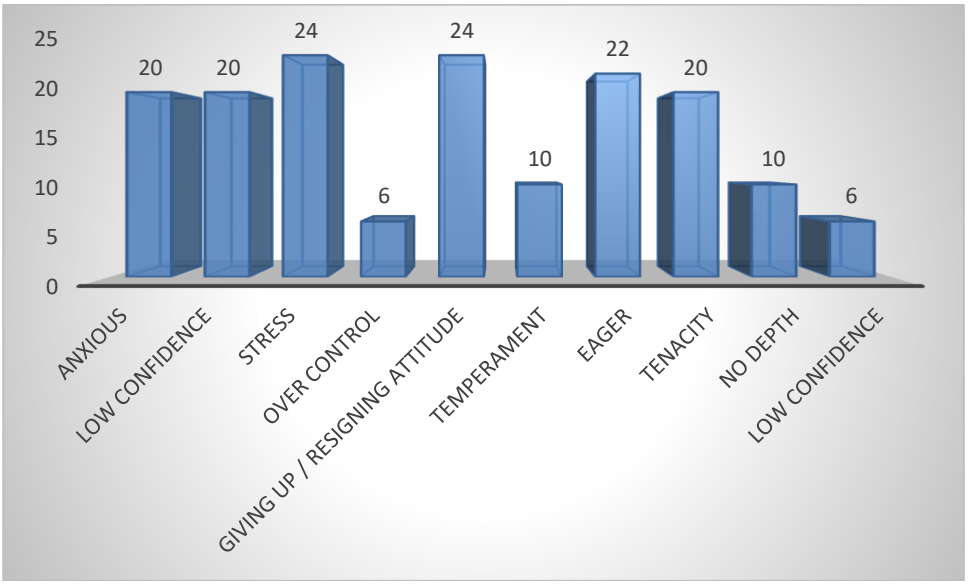

Figure 1: frequency of NAS

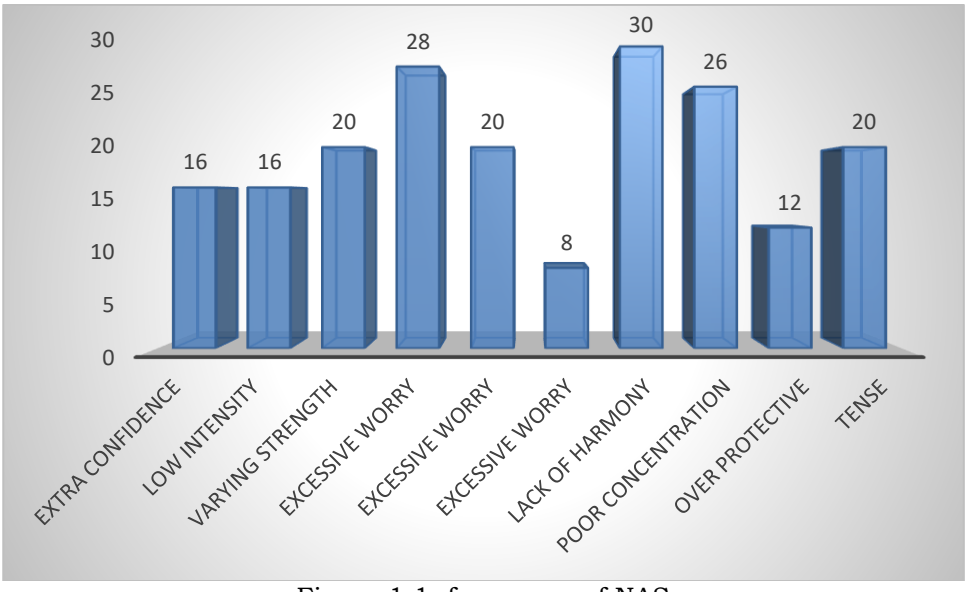

Figure 1.1: frequency of NAS

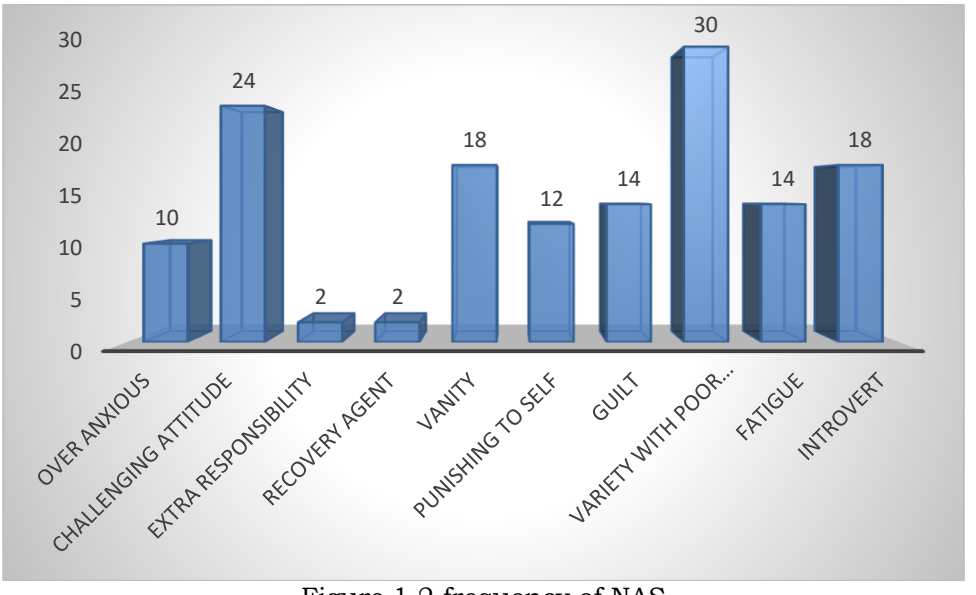

Figure 1.2 frequency of NAS

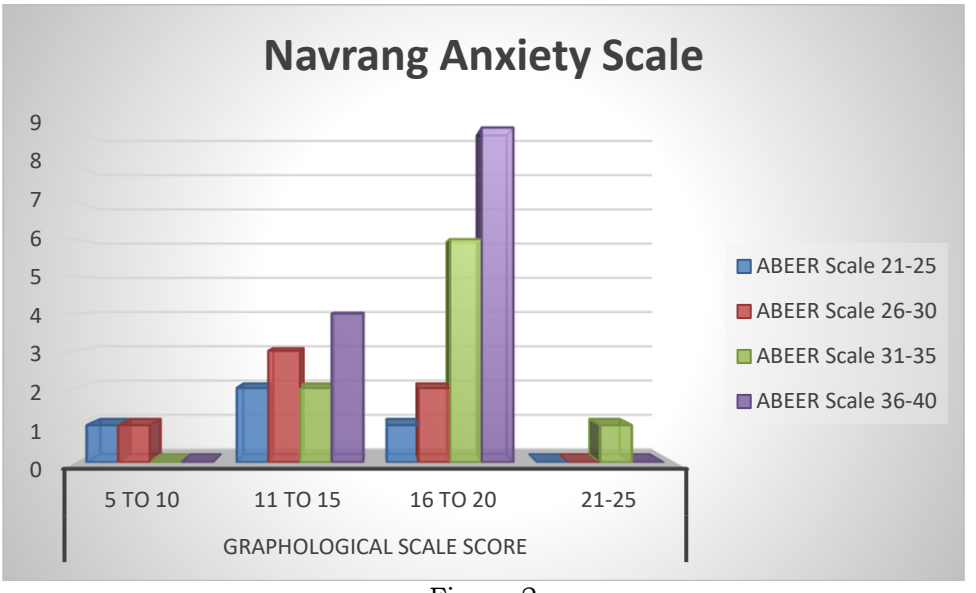
Navrang Anxiety Scale
9
8
7
6
5
4
3
2
1
0
5 TO 10
11 TO 15
16 TO 20
21-25
GRAPHOLOGICAL SCALE SCORE
ABEER Scale 21-25
ABEER Scale 26-30
ABEER Scale 31-35
ABEER Scale 36-40

Figure 2