

PSYCHOMETRIC ASSESSMENT OF DENTAL FEAR AND ANXIETY

LECTURE BY,

Dr. SHANTANU CHOUDHARI

CHAPTER OUTLINE

- Corah's Dental Anxiety Scale
- Kleinknecht's Dental Fear Survey
- Children's Fear Survey Schedule
- Modified Dental Anxiety Scale
- Dental Anxiety Question
- State-trait Anxiety Inventory
- Venham's Picture Test
- Venham's Anxiety Scale
- Facial Image Scale
- Smiley Faces Program
- Anxiety Thermometer

INTRODUCTION

- Dental fear, anxiety and phobia create a very difficult environment for both the child and the dentist to work together.
- The behavioral sciences have become an increasingly important component of dental education and research.

- Focus on measurement techniques to assess dental fear and anxiety in particular, fear of dentists and dentistry as well as of dental pain
- There are many tests for anxiety and fear evaluation about they are primarily divided into two types:
 1. Observation of child's reaction/behavior by dentist or other person during dental treatment
 2. Reports of anxiety made by the child himself or herself or by the accompanying parent (most often the mother) using psychometric scales. Self reports are most often used for older children who can understand and comprehend the concept whereas parental reports are for young children.

Used in adults and children

•	Corah's dental anxiety scale (DAS)
•	Modified dental anxiety scale (MDAS)
•	Kleinknecht's dental fear survey (DFS)
•	Dental fear assessment scale (DFAS)
•	Gatchel's 10-Point fear scale (FS)
•	Stouthard's dental anxiety inventory (DAI)
•	Dental anxiety inventory short version (DAI-S)
•	Gale's ranking questionnaire (RQ)
•	Photo anxiety questionnaire (PAQ)
•	Hierarchical anxiety questionnaire (HAQ)
•	Fear of dental pain (FDP) questionnaire
•	Single-item measures

General scales used to measure dental anxiety

- Spielberger's state-trait anxiety inventory (STAI-S)
- Hospital anxiety and depression scale-anxiety subscale (HADS)

Child-specific dental anxiety scales

- | | |
|---|--|
| • | Children's fear survey schedule-dental subscale (CFSS-DS) |
| • | Modified child dental anxiety scale (MCDAS) |
| • | Frankl behavior rating scale (FBRS) |
| • | Venham picture scale (VPS) |
| • | Venham anxiety scale (VAS) |
| • | Facial image scale (FIS) |
| • | Smiley Faces Program (SFP) |
| • | Anxiety thermometer |
| • | Morin's adolescent's fear of dental treatment cognitive inventory (AFDTCI) |

CORAH'S DENTAL ANXIETY SCALE

- Was originally based on a single-item question that was developed to measure 'psychologic stress' (**Corah** and **Pantera**, 1969).
- The new revised version has a four-item measure, where respondents are asked about four dentally related situations and are asked to indicate which option is closest to their likely response to that situation.

- First two questions relating to anxiety generally
- Second two questions seeming to relate to anticipated fear of specific stimuli

Name _____ Date _____

Norman Corah's Dental Questionnaire

- | | |
|----|---|
| 1. | If you had to go to the dentist tomorrow for a check-up, how would you feel about it?
a. I would look forward to it as a reasonably enjoyable experience.
b. I would not care one way or the other.
c. I would be a littler uneasy about it.
d. I would be afraid that it would be unpleasant and painful.
e. I would be very frightened of what the dentist would do. |
| 2. | When you are waiting in the dentist's office for your turn in the chair, how do you feel?
a. Relaxed
b. A little uneasy
c. Tense
d. Anxious
e. So anxious that I sometimes break out in a sweat or almost feel physically sick. |
| 3. | When you are in the dentist's chair waiting while the dentist gets the drill ready to begin working on your teeth, how do you feel?
a. Relaxed
b. A little uneasy
c. Tense
d. Anxious
e. So anxious that I sometimes break out in a sweat or almost feel physically sick. |
| 4. | Imagine you are in the dentist's chair to have your teeth cleaned. While you are waiting and the dentist or hygienist is getting out the instruments which will be used to scrape your teeth around the gums, how do you feel?
a. Relaxed
b. A little uneasy
c. Tense
d. Anxious
e. So anxious that I sometimes break out in a sweat or almost feel physically sick. |

Scoring the Dental Anxiety Scale, Revised (DAS-R) (this information is not printed on the form that patients see)

a = 1, b = 2, c = 3, d = 4, e = 5

Total possible = 20

Anxiety rating:

- 9 – 12 = moderate anxiety but have specific stressors that should be discussed and managed
- 13 – 14 = high anxiety
- 15 – 20 = severe anxiety (or phobia). May be manageable with the dental concerns assessment but might require a health therapist.

KLEINKNECHT'S DENTAL FEAR SURVEY

- Originally developed as a 27-item scale (**Kleinknecht et al. 1973**) and subsequently reduced to 20 items as a result of a later factor analytic study (**Kleinknecht et al. 1984**).
- The original 27-item scale had
 - 2 items on the avoidance of dentistry,
 - 6 items related to felt physiological arousal, - 1
 - 14 items assessing fear of specific stimuli, - 2
 - 1 item concerning overall fear and
 - 4 items on the reaction to dentistry among family and friends. - 4

- Disadvantage: the scale was not developed to produce a single fear score
- Advantage: to provide information on the variety of specific stimuli that might elicit fear or avoidance responses as well as the patient's specific and unique response to those stimuli.

1. Has fear of dental work ever caused you to put off making an appointment?				
1	2	3	4	5
never	once or twice	a few times	often	nearly every time
2. Has fear of dental work ever caused you to cancel or not appear for an appointment?				
1	2	3	4	5
never	once or twice	a few times	often	nearly every time
<i>When having dental work done:</i>				
3. My muscles become tense....				
1	2	3	4	5
never	once or twice	a few times	often	nearly every time
4. My breathing rate increases....				
1	2	3	4	5
never	once or twice	a few times	often	nearly every time
5. I perspire				
1	2	3	4	5
never	once or twice	a few times	often	nearly every time
6. I feel nauseated and sick to my stomach....				
1	2	3	4	5
never	once or twice	a few times	often	nearly every time
7. My heart beats faster....				
1	2	3	4	5
never	once or twice	a few times	often	nearly every time

	1 none of all	2 a little	3 some- what	4 much	5 very much
8. Making an appointment for dentistry....					
9. Approaching the dentist's office....					
10. Sitting in the waiting room....					
11. Being seated in the dental chair....					
12. The smell of the dentist's office....					
13. Seeing the dentist walk in....					
14. Seeing the anesthetic needle....					
15. Feeling the needle injected....					
16. Seeing the drill....					
17. Hearing the drill....					
18. Feeling the vibrations of the drill....					
19. Having your teeth cleaned....					
20. All things considered, how fearful are you of having dental work done?					

CHILDREN'S FEAR SURVEY SCHEDULE

- Children's fear survey schedule was developed by **Scherer** and **Nakamura** (1968).
- It consists of 80 items on a 5-point likert scale.
- It has been demonstrated to have high reliability and validity for measuring dental fear in children.
- The cumbersome nature of the questionnaire designed to be filled by the child patient has limited its use despite established validity report.

- The Dental subscale of children's fear survey schedule (CFSS-DS) developed by **Cuthbert** and **Melamed** consists of **15 items** and each item can be given five different scores ranging from "not afraid at all (1)" to "very much afraid (5) ."
- The CFSS-DS has a total score range of 15 to 75 and a score of 38 or more has been associated with clinical dental fear.

Items:

- ***Dentists***
- ***Doctors***
- ***Injections (shots)***
- ***Having somebody examine your mouth***
- ***Having to open your mouth***
- ***Having a stranger touch you***
- ***Having somebody look at you***
- ***The dentist drilling***
- ***The sight of the dentist drilling***
- ***The noise of the dentist drilling***
- ***Having somebody put instruments in your mouth***
- ***Choking***
- ***Having to go to the hospital***
- ***People in white uniforms***
- ***Having the nurse clean your teeth.***

MODIFIED DENTAL ANXIETY SCALE (MDAS)

- In 1995, the Corah dental anxiety scale was modified by **Humphris et al.** to overcome its shortcomings.
- Modifications:
 - Addition of 1 question
 - Modification of options – not, slightly, fairly, very and extremely anxious
 - Rephrasing the questions

Can you tell us how anxious you get, if at all, with your dental visit? Please indicate by inserting 'X' in the appropriate box

1.	If you went to your Dentist for Treatment Tomorrow, how would you feel?				
	Not Anxious <input type="checkbox"/>	Slightly Anxious <input type="checkbox"/>	Fairly Anxious <input type="checkbox"/>	Very Anxious <input type="checkbox"/>	Extremely Anxious <input type="checkbox"/>
2.	If you were sitting in the Waiting Room (waiting for treatment), how would you feel?				
	Not Anxious <input type="checkbox"/>	Slightly Anxious <input type="checkbox"/>	Fairly Anxious <input type="checkbox"/>	Very Anxious <input type="checkbox"/>	Extremely Anxious <input type="checkbox"/>
3.	If you were about to have a Tooth Drilled, how would you feel?				
	Not Anxious <input type="checkbox"/>	Slightly Anxious <input type="checkbox"/>	Fairly Anxious <input type="checkbox"/>	Very Anxious <input type="checkbox"/>	Extremely Anxious <input type="checkbox"/>
4.	If you were about to have your Teeth Scaled And Polished, how would you feel?				
	Not Anxious <input type="checkbox"/>	Slightly Anxious <input type="checkbox"/>	Fairly Anxious <input type="checkbox"/>	Very Anxious <input type="checkbox"/>	Extremely Anxious <input type="checkbox"/>
5.	If you were about to have a Local Anesthetic Injection in your gum, above an upper back tooth, how would you feel?				
	Not Anxious <input type="checkbox"/>	Slightly Anxious <input type="checkbox"/>	Fairly Anxious <input type="checkbox"/>	Very Anxious <input type="checkbox"/>	Extremely Anxious <input type="checkbox"/>
Each item scored as follows:					
Not anxious = 1		Slightly anxious = 2		Fairly anxious = 3	
Very anxious = 4		Extremely anxious = 5			
Total score is a sum of all five items, range 5 to 25					
Cut off is 19 or above which indicates a highly dentally anxious patient, possibly dentally phobic					

DENTAL ANXIETY QUESTION

- “Are you afraid of going to the dentist?” It has four possible responses:
 - “no,”
 - “a little,”
 - “yes, quite,”
 - “yes, very.”
- The DAQ correlates well with Corah’s DAS in studies of adult and child populations

- screening people who are likely to be highly anxious about dental treatment, it is a useful and brief tool, although it has a tendency to overestimate the prevalence of severe dental anxiety

STATE-TRAIT ANXIETY INVENTORY

- In 1983, **Spielberger** developed the State-Trait Anxiety Inventory (STAI), which comprises of 40 questions divided into two sections to distinguish between two different types of anxiety.
- **State anxiety** is defined as the anxiety state we experience when something causes us to feel appropriately and temporarily anxious and this anxiety then retreats until we feel 'normal' again.
- **Trait anxiety** is defined as the 'preset' level of anxiety experienced by an individual who has a tendency to be more anxious; to react less appropriately to anxiety provoking stimuli.

- The two sections differ in the item wording, the response format, and the instructions on how to respond.
- To control the response sets, half of the questions are formulated in terms of positive emotions and the others state negative emotions.
- The scaling of the positively formulated questions is then reversed when computing the total score.
- Although the STAI was not specifically designed for use in dentistry, it is commonly used and has been proven to significant have positive correlation with CDAS.

State-trait anxiety inventory – State

How do you feel right now, at this moment?

Answers: 1 - not at all; 2 - somewhat; 3 - moderate; 4 - very much

1. I feel calm
2. I feel secure
3. I am tense
4. I feel strained
5. I feel at ease
6. I feel upset
7. I am presently worrying over misfortunes
8. I feel satisfied
9. I feel frightened
10. I feel comfortable
11. I feel self-confident
12. I feel nervous
13. I am jittery
14. I feel indecisive
15. I am relaxed
16. I feel content
17. I am worried
18. I feel confused
19. I feel steady
20. I feel pleasant

State-trait anxiety inventory – trait

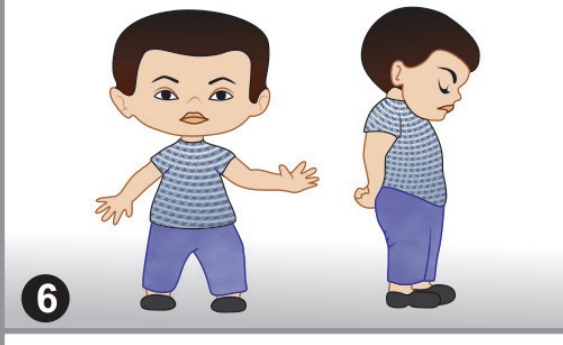
How do you generally feel?

Answers: 1 - not at all; 2 - somewhat; 3 - moderate; 4 - very much

21. I feel pleasant
22. I feel nervous and restless
23. I feel satisfied with myself
24. I wish I could be as happy as others seem to be
25. I feel like a failure
26. I feel rested
27. I am *calm, cool and collected*
28. I feel that difficulties are piling up so that I cannot overcome them
29. I worry too much over something that really does not matter
30. I am happy
31. I have disturbing thoughts
32. I lack self-confidence
33. I feel secure
34. I make decisions easily
35. I feel inadequate
36. I am content
37. Some unimportant thought runs through my mind and bothers me
38. I take disappointments so keenly that I can not put them out of my mind
39. I am a steady person
40. I get in a state of tension or turmoil over my recent concerns and interests.

VENHAM'S PICTURE TEST

- This scale consists of a series of eight paired drawings of a child
- Each pair consists of a child in a nonfearful pose and a fearful pose (e.g. running away).
- The respondent is asked to indicate, for each pair, which picture more accurately reflects his or her feelings at the time.
- Scores are determined by summing the number of instances in which the child selects the high-fear stimulus.



VENHAM'S ANXIETY SCALE

- **Venham et al.** (1980) developed two scales to evaluate the child's response to dental treatment, an anxiety rating scale and an uncooperative behavior rating scale.
- Each is a six-point scale, with scale points anchored in objective, specific and readily-observable behavior.
- This is one of the most reliable indicators of observed anxiety and has been used predominantly in anxiety assessment protocols.

Anxiety rating scale

0.	Relaxed, smiling, willing and able to converse.
1.	Uneasy, concerned. During stressful procedure may protest briefly and quietly to indicate discomfort. Hands remain down or partially raised to signal discomfort. Child willing and able to interpret experience as requested. Tense facial expression, may have tears in eyes.
2.	Child appears scared. Tone of voice, question and answers reflect anxiety. During stressful procedure, verbal protest, (quiet) crying, hands tense and raised, (not interfering much—may touch dentist's hand or instrument, but not pull of it). Child interprets situation with reasonable accuracy and continues to work to cope with his/her anxiety.
3.	Shows reluctance to enter situation, difficulty in correctly assessing situational threat. Pronounced verbal protest, crying. Using hands to try to stop procedure. Protest out of proportion to threat. Copes with situation with great reluctance.
4.	Anxiety interferes with ability to assess situation. General crying not related to treatment. More prominent body movement. Child can be reached through verbal communication, and eventually with reluctance and great effort he or she begins the work of coping with the threat.
5.	Child out of contact with the reality of the threat. General loud crying, unable to listen to verbal communication, makes no effort to cope with threat. Actively involved in escape behavior. Physical restraint required.

Behavior rating scale

0.	Total cooperation, best possible work conditions, no crying or physical protest.
1.	Mild, soft verbal protest or (quiet) crying as a signal of discomfort, but does not obstruct progress. Appropriate behavior for procedure, i.e. slight start at injection, "ow" during drilling if hurting, etc.
2.	Protest more prominent. Both crying and hand signals. May move head around making it hard to administer treatment. Protest more distracting and troublesome. However, child still complies with request to cooperate.
3.	Protest presents real problem to dentist. Complies with demands reluctantly, requiring extra effort by dentist. Body movement.
4.	Protest disrupts procedure, requires that all of the dentist's attention be directed towards the child's behavior. Compliance eventually achieved after considerable effort by dentist, but without much actual physical restraint. (May require holding child's hands or the like to start). More prominent body movement.
5.	General protest, no compliance or cooperation. Physical restraint is required.

FACIAL IMAGE SCALE



5



4



3



2



1

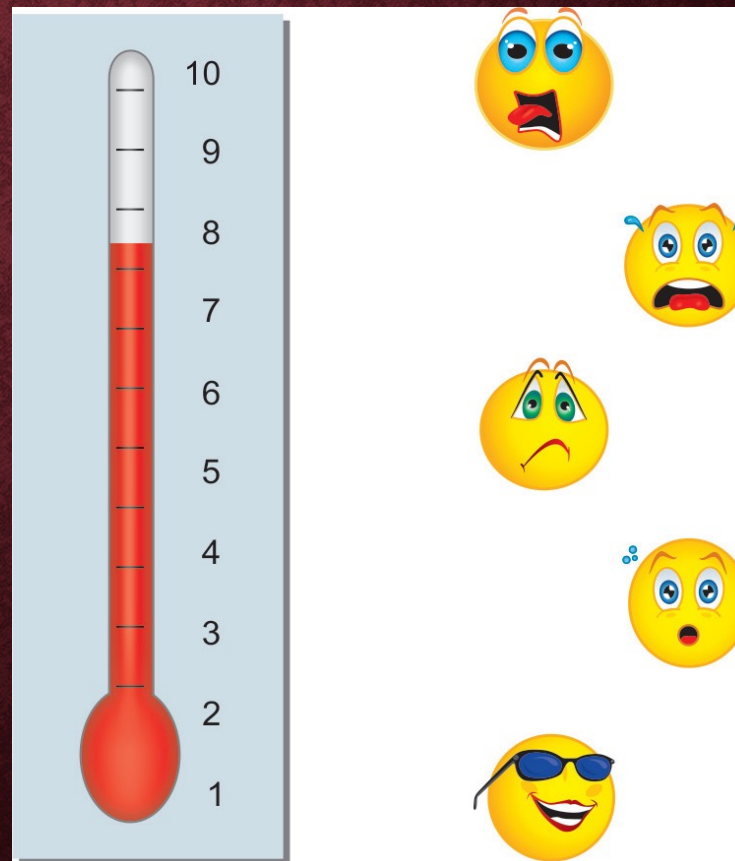
SMILEY FACES PROGRAM

- **Buchanan**, using multimedia tool book, developed an interactive computerized version of the Facial Image Scale and this windows program was entitled Smiley Faces.
- It is based on the MDAS and consists of five questions relevant to a child's experience in the dental practice environment

- The questions appear on the computer screen for a matter of seconds and then the child is asked to replace the neutral face with one of seven faces which describes how they feel about the dental item
- The SFP has the psychometric properties as well as the potential to engage dentally anxious children in a novel and innovative way while assessing their dental anxiety.

ANXIETY THERMOMETER

- This is an image of a thermometer where the respondent selects a point on the thermometer to rate anxiety, where 0 = no anxiety, and 10 = extreme anxiety



FRANKL'S CLASSIFICATION

- Frankl in 1962 introduced a behavior-rating scale, which is one of the most reliable tools developed for behavior measurement
- This consists of a ratings of determination numbered from 1 to 4, each defining a specific behavior.
- Wright in 1975, suggested that a symbol be added to this rating scale, permitting the dentist to record a behavior base at the inception of dental treatment and to keep a progressive record of the child's behavior
- They also gave a right sided arrow mark (→) indicating the change in behavior in the dental operatory (due to fear or behavior guidance).

<i>Behavior</i>	<i>Rating</i>	<i>Symbol</i>	<i>Features</i>
Definitely negative	Rating no.1	(-)	<ul style="list-style-type: none"> • <i>Refuses treatment:</i> <ul style="list-style-type: none"> – <i>Immature behavior:</i> Cannot reason or cope with the situation, e.g. toddler, special child – <i>Uncontrolled behavior:</i> Temper tantrum suggestive of extreme anxiety, e.g. preschooler – <i>Defiant behavior:</i> Exhibits resistance, e.g. spoiled, stubborn child, middle school years • <i>Cries forcefully:</i> Uncontrollable behavior, e.g. late preschooler or middle years child • <i>Extreme negative behavior associated with fear:</i> <ul style="list-style-type: none"> – <i>Uncontrollable behavior:</i> Exhibited in the older children possessing deep-rooted emotional problems – <i>Defiant behavior:</i> Includes passive resistance in the individual approaching adolescence
Negative	Rating no. 2	(-)	<ul style="list-style-type: none"> • <i>Reluctant to accept treatment:</i> <ul style="list-style-type: none"> – <i>Immature behavior:</i> Toddlers or preschooler – <i>Timid behavior:</i> Seen in children, who are overprotected, exposed to few people or dominated by strange environment – <i>Influenced behavior:</i> Includes family and peer pressure • <i>Displays evidence of slight negativism:</i> <ul style="list-style-type: none"> – Timid behavior – Whining behavior
Positive	Rating no. 3	(+)	<p><i>Accepts treatment:</i></p> <ul style="list-style-type: none"> • <i>Tense cooperative behavior:</i> Observed in all stages, follows dentists' directions but may be resistant and cautious • <i>Conservative behavior:</i> Responds harmoniously • <i>Timid behavior:</i> Follows dentist direction in a shy, quiet manner. Can become uncooperative due to any bad experience during treatment
Definitely positive	Rating no. 4	(++)	<p><i>Unique behavior:</i> Looks forward to understand the importance of good preventive care and establishes a good rapport</p>

•THANK YOU.....