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RESEARCH ARTICLE

A CLINICAL PILOT STUDY OF CHILD BEHAVIOUR BY MODIFIED FRANKLS SCALE.

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Abstract

Introduction:- An evaluation of child's cooperative potential is essential for treatment planning. No single assessment method or tool is completely accurate in predicting patient's behaviour. Behavioral rating scales have been the most commonly used indices for assessing children's responses to dentistry.

Aims:- To explore the amount of disruptive behavior for children of 3-14 yrs of age undergoing dental treatment using modified Frankls rating scale.

Methodology:- A questionnaire was prepared; composed of 15 questions. Each of the questions was provided with 3 options such as not true, somewhat true and certainly true. A score of 0, 1 and 2 was assigned to the answer. The total scores were equal to 30 and the cut of scores were 7, 15 and 23. The behaviour shift from negative towards positive side as the scores increases.

Results:- Children assessed by our modified Frankl scale, 83% showed positive behaviour and only 10 % showed negative behaviour. Children of age group 7.1 years and above showed more positive behaviour. No gender difference was noted

Conclusion:-This newer rating scale potentially provides an additional tool for behavioral assessment in dental clinics.

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Introduction:-

The child's emotional and behavioral response in the dental chair is a matter of serious concern to both practitioners and researchers in pedodontic field. A youngster's response to dental treatment may greatly facilitate or impede the course and quality of treatment provided. Even more significantly, the reactions of young children may presage emerging perceptions of and attitudes toward dental care which affect their later propensity to follow preventive routines and to accept restorative care. It is therefore appropriate that clinicians and researchers are intensifying their efforts to understand and optimize the young child's response to dental treatment.(Chambers, 1977)

Researchers are exhibiting a growing interest in evaluating techniques for managing young child's negative behavior and reducing adverse emotional responses to treatment.(Melamed,1979)

An evaluation of the child's cooperative potential is essential for treatment planning. No single assessment method or tool is completely accurate in predicting a patient's behavior, but awareness of the multiple influences on a child's response to care can aid in treatment planning. Initially, information can be gathered from the parent through

questions regarding the child's cognitive level, temperament / personality characteristics. (Rud and Kisling , 1973),(Arnup et al., 2002),(Radis et al., 1994), (Lochary et al.,1993),(Jensen and Stjernqvist 2002), anxiety and fear,(Arnup et al., 2002), (Baier et al., 2004), (Arnup et al., 2003) reaction to strangers (Arnup et al., 2003) and behavior at previous medical/dental visits, as well as how the parent anticipates the child will respond to future dental treatment.

Therefore, the development of valid and reliable child assessment techniques is a major prerequisite for refining pedodontic behavioral research and ultimately for improving the clinical management of children's dental anxiety and behaviour.

Behavioral rating scales have been the most commonly used indices of children's responses to dentistry. An example is the widely used Frankl Scale,(Frankl et al., 1962) in which the child's reaction to dental treatment is rated on a four-point scale ranging from definitely negative to definitely positive. The advantage of rating scales includes ease of administration and conceptualization.(Lytton, 1973)

The rater uses the trait as an organizing concept which allows him or her to select relevant cues and to superimpose a dimension on the subject's behavior. Thus, the overall impression afforded by a rating may bring out a quality or unity to the child's behavior that a tabulation of discrete behaviors may be unable to reveal. In assigning ratings, the rater is able to take account of individual response styles in behavior and to consider infrequent but significant behaviors. Therefore, the rating represents a high degree of abstraction from the basic observational process.

In the commonly used Frankl Scale, an effort was made to define scale points behaviorally. Nonetheless, the definitions remain sufficiently subjective that latitude exists for each rater to interpret the scale categories somewhat idiosyncratically.

To reduce the observational bias, an extended version of this Frankl's rating called modified Frankl's rating, designed by our authors was used in our study.

This was a first exploratory clinical study investigated the behavioral status in Malaysian children of different ethnic backgrounds attending paediatric dental clinics, using modified Frankl's rating.

Aims and objectives:-

The purpose of this study is to develop an objective method for assessing the amount of disruptive child behavior for children of 3-14 yrs of age undergoing dental treatment using modified Frankl's rating.

Methods and Materials:-

Subjects:-

175 children, aged 3 to 14 years, attending Pediatric dentistry clinic who met the following requirements, were selected from available sample.

Each child:-

1. Had no previous dental experience.
2. Was mentally and physically healthy.
3. At least one restoration needed.

Parental consents were obtained. Children of those parents who did not give consent were excluded.

Appointment Procedures:-

During the initial appointment an examination of hard and soft tissues were performed. Each patient was treated at the second visit approximately one week apart in the same operatory by paediatric dentist. Each appointment followed a treatment outline that incorporated the "tell-show-do" approach and a standardized dialogue. Voice control was used only when treatment progress was repeatedly hindered. Any further behavior management measures eliminated the patient from the study.

Behaviour Rating:-

Patient behavior was quantified using the modified Frankls scale by the operator, immediately after the completion of the treatment.

Methodology:-

A questionnaire was prepared. It composed of 15 questions focusing on Childs body movements, crying, parental presence, language used, reinforcement, and fear. Each of the questions was provided with the options not true, somewhat true and certainly true. A score of 0, 1 and 2 was assigned to the answer respectively. The total scores were equal to 30 and the cut of scores were 7, 15 and 23. (Table 1) The Childs behaviour, shift from negative towards positive side as the scores increases. Pretest of the questionnaire was done to check the feasibility before starting the study.

Table 1: Modified Frankls behaviour rating scores.

Score	Behaviour of child
0-7	Definitely Negative
8-15	Negative
16-23	Positive
24-30	Definitely Positive

Statistical analysis:-

Descriptive statistics were computed.

Results:-

The mean age of the children in the study sample was 6.96 years with standard deviation (SD) of 2.9 years (Table 2) with gender distribution of 57% female and 43 % male .Ethnically our sample was very diverse. About 43% children were Indians, 33% Chinese race followed by Malays 25%.

Table 2: Table showing age distribution of children.

Age	No	Percentage
3.1-5yrs	31	17.8
5.1-7yrs	54	30.6
7.1-9yrs	27	15.3
9.1-11yrs	24	13.6
11.1-14yrs	40	22.7

Dental operator rated 7 % as “Definitely positive”, 83% as “positive”, 9% as “Negative” and 1% of children as falling under the “Definitely Negative” category in general population.(Table 3)

Table3: Table showing distribution of children Behaviors in dental clinic (General population).

Behavior	Number	Percentage (%)
Definitely positive	26	7
Positive	146	83
Negative	64	9
Definitely Negative	2	1

When children behaviour was compared as per age groups, 93% of children in age range of 7.1 to 9 yrs showed positive behaviour response, where in younger age groups (3.1 to 7 years) the positive response rate was only 77 to 78 %.(Table 4)

Table 4: Table showing distribution of children Behaviors based on Age.

Age (Yrs)	Definitely positive		Positive		Negative		Definitely Negative	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)
3.1-5	1	3	24	77	5	16	1	3
5.1-7	5	9	42	78	7	13	0	0
7.1-9	1	4	25	93	1	4	0	0

9.1-11	1	4	21	88	2	8	0	0
11.1-14	5	13	34	85	1	3	0	0

No significant difference on behaviour response was found between male and female child.(Table 5)

Table 5: Table showing Distribution of children Behaviors based on Gender.

Gender	Definitely Positive		Positive		Negative		Definitely Negative	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Male	6	8	64	84	5	7	1	1
Female	7	7	82	82	11	11	0	0

When comparison was made among children of three different races, the Chinese children showed more positive response (91 %) than Indian (83 %) and Malay(72 %) children.(Table 6)

Table 6: Table showing distribution of children Behaviors based on Race.

Race	Definitely positive		Positive		Negative		Definitely Negative	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Malay	5	12	31	72	6	14	1	2
Chinese	3	5	52	91	2	4	0	0
Indian	5	7	63	83	8	11	0	0

Discussion:-

Ready acceptance of the dental experience by younger age group children is difficult because of their limitation in communication and emotional instability, in addition to their still developing independence, socialization, security and language. A reaction of fear or anxiety in the presence of the unexpected and unknown is common. All of these situations may present an uncooperative patient behavior during dental care.

Although the behavior of children is more related to their mental development than to chronological age, the dental pediatrics literature relates some typical characteristics to different age groups, and more frequently so in the 3 to 12 year age group.(Klingberg et al., 1994),(Shinohara et al., 2005), (Yamada et al., 2002)

In our study, cooperative nature of children was as high as 83% to 90 % as rated by modified Frankls scale in general population (Table 5). This results are in accordance with report of department of health and human services U.S.A which estimated that 85 percent of children are generally cooperative in dental treatment settings, while the remaining 15 percent require more advanced behavior management approaches in order to provide dental care. ¹⁵ Similarly, an estimated amount of 86 % of child were cooperative for dental treatment in a study by Bankole etal (2002) in Nigeria.

While assessing the practical experiences of private practitioners, Weinstein et al (1981) revealed that about 15% of practitioners reported 20% or more of their child patients as problematic, thus concluding that a serious recurring problem exists for many practitioners while treating children.

The results of this study showed that younger the child, then negative behavior was noted more often. In general, there was no much difference in the positive behavior between males and females, although females had a little higher incidence of negative behavior than males when undergoing restorative dental procedures. This is in accordance with studies that, Girls and younger children are most often reported as more fearful than boys and older children. This fear could be exhibited as negative behaviour in the dental clinics.(Baier et al., 2004),(Ten Berge et al .,2002)

Ethnicity has been demonstrated to be associated with dental health status. However, in this study, racial differences in behavior could not be significantly proven as the sampling distribution was not of equal proportions.

Many studies have investigated emotional stress, including fear and anxiety, of children undergoing dental treatment. Frankl et al. classified child behavior into four groups according to the child's attitude and cooperation or

lack of cooperation during dental treatment.(Melamed, 1979) However, this classification, known as the Frankl Behavior Rating Scale, does not provide definite items for observation. In contrast, Kurosu et al. proposed a classification of child behaviour during dental treatment that does provide 37 detailed items for observation (Tsuchiya et al 1975). Despite this advantage, this classification, which is also well known in Japan as the Behavior Evaluation Scale (BES), does not allow for the easy observation of the 37 items in daily clinical practice.

The classification used in the present study was an adaptation made from Frankl's Behaviour Rating Scale (Frankl et al., 1962) The four-point scale of Frankl, which has been a prototype for many studies has been found reliable and is still being used. Other known measures to rate the behavior of children may not be appropriate for the evaluation of young children due to their complexity. Some of them even require the children's participation during the evaluation.(Klingberg et al., 1995)

However, none of these scales are used in the daily clinical practice of pediatric dentistry. Furthermore, the structural relationships between these items are not clearly understood.

This new questionnaire can be used to measure the cooperative behaviour of the child in the dental clinics in a more précised way. This is a new exploratory clinical study, which makes the comparison of results difficult.

Conclusion:-

This scale should be useful as a tool for research involving the behavior of children in the dental setting. It can be used to compare different treatment conditions and techniques. Varying the conditions outlined in this research should be done with caution. However, further assessment, is needed to confirm this model with children of different ages, using a larger sample size should be planned.

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