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Some Factors Affecting Cooperative Behavior Of Nigerian Children In An Oral Care Setting

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Abstract
Aim
This study sought to assess the influence of demographic variables on the behavior of Nigerian children in an oral care setting.
Materials and methods
Participants were 260 children aged 2-15 years, who were treated at all government dental establishments in Ibadan, south western Nigeria, over a period of 6 months. Their behaviours were determined by the Frankl's Behaviour Rating Scale.
Results
The study revealed prevalence of cooperative behavior ranging between 59.5% and 88.1%. The compliance rate was higher during the initial phases of treatment and lower during more invasive procedures, the least being during injection of the local anaesthetic agent. More cooperative behavior was exhibited with increasing age in children p<(0.05). Males appeared to be better behaved than females during treatment, even though the observed differences were not statistically significant (p>0.05). Socioeconomic status did not affect cooperative behavior.
Conclusion
The high level of cooperative behavior recorded in this community is encouraging. Efforts directed at patient management in a way that cooperative behavior will be further improved is advocated
Keywords: *Anxiety, Dental treatment, Fear, Behaviour*

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I. Introduction

The subject of anxiety as related to dental treatment has been of interest for several decades. The pain of an aching tooth as well as the anticipated pain during dental treatment usually creates fear in many patients[1]. Fear is the dread of something specific in the external environment, while anxiety is a less specific feeling of apprehension requiring no prior experience of the situation anticipated [2]. As a result of fear, many patients defer their dental treatment until they can no longer bear the pain. For the same reason, many avoid treatment completely [3]

Results of surveys carried out indicate that fear of dentistry which often results in avoidance of dental care occurs in 5% of the population and has been ranked fifth among the most common fears [4] . Studies on problems of anxiety and behavior associated with dental treatment in children have consistently revealed higher prevalence of negative attitudes and fear compared to adults [5]. In a study conducted by Alaki et al (2011) up to 34 % of the population of children were found to exhibit fear [6]. About 42 % of negative behavior was recorded by Fuks et et al (1993) [7].

A growing body of evidence support the view that negative attitudes towards dentistry have their genesis principally in childhood or adolescence[8]. A number of variables have been show to affect the attitude of children in the dental clinic. These include age[9], sex[10] and socioeconomic status[11]. Others are past medical experience[12] the experience of the child at previous dental visits [13] and parental anxiety [14]

In Nigeria, a developing nation with a relatively short history of dental care services a few studies have been carried out on the behavior of children during dental visits [15,16]. However, in Ibadan, Nigeria there have been no previous studies on this subject. The present study sought to assess the variables that determine the behavior of Nigerian children during different stages of dental procedures. Such information is essential in understanding patient's response to care or their utilization of dental services. In a society whose oral care services are still evolving, a good understanding of these influences and careful patient management accordingly should result in an environment where people are less fearful of the dental care setting.

II. Materials And Methods

The study was conducted in Ibadan, an urban settlement in south western Nigeria. The subjects for the study were children attending the three government dental clinics in the city. The study population consisted of those between ages 2 and 15 years who were seen and treated over a six months' period. Examination and treatment of the subjects was carried out by a team of dental surgeons and therapists who had been earlier instructed according to a standard format.

Personal demographic details obtained included the name, sex, and age of the children. The educational status and occupation of the parents were also recorded. The occupation of the fathers in accordance to the social class structure by Olojugba and Lenon (1985) [17] was used to determine the socioeconomic structure of the children. A slight modification of the grading system was made in this study. The upper middle class and lower middle classes were merged together as the middle class. This was to allow for ease of statistical analysis and interpretation of results.

An assessment of the behavior of the child during different stages of treatment procedures were made by the operator using the Frankl's Behaviour Rating Scale[18] . The four point scale of Frankl , a prototype for many studies, which has in addition been found to be reliable[19] was adopted in this study. The criteria for scoring were as follows.

Rating 1: **Definitely negative** – Refusal of treatment, crying forcefully, fearful or any evidence of extreme negativism.

Rating 2: **Negative** –Reluctance to accept treatment, some evidence of negative attitude but not pronounced.

Rating 3: **Positive**- Acceptance of treatment, at times cautious, willingness to comply with the dentist, at times with reservation but patiently follows cooperatively.

Rating 4: **Definitely positive** –Good rapport with the dentist, interested in the dental procedures, laughing and enjoying the situation.

The Tell Show Do Method [20] was used in communicating with the children. Treatment to be carried out was explained to the children in a vocabulary suited to their ages. Demonstration of the exact procedure to be carried out was similarly conducted.

The study was carried out in strict compliance with the Helsinki Declaration of the 1975, as revised in 1983 involving human subjects in which no harm was caused and each of the participants were fairly treated. Permission to carry out the study was obtained and written informed consent from parents .

After ensuring that all forms had been properly completed, Frankl's ratings 1 and 2 were categorized as negative and ratings 3 and 4 as positive. The data were entered into an IBM compatible PC using the software EPINFO. Frequency tables were generated and cross tabulations made where necessary. Chi-square test was employed to determine association between variables.

III. Results

A total of 260 children aged 2-15 years, drawn from the three centers, participated in the study. Their age-sex distribution is shown in Table 1. Frequency of distribution of socioeconomic status indicates that 91(35.0%) belonged to the upper class. One hundred and sixteen (44.6%) were in the middle class and 53(20.4%) in the lower class.

Table 1 : Age –Sex Distribution Of Participating Children

Age (Years)	Male	Female	Total
2-5	23(39.7)	35(60.3)	58(22.3)
6-8	43(45.3)	52(54.7)	95(36.6)
9-11	22(34.9)	41(65.1)	63(24.2)
12-15	21(47.7)	23(52.9)	44(16.9)
Total	109(41.9)	151(58.1)	260(100)

An overall assessment of the children's behavior during treatment is that for virtually all procedures, they were found to be cooperative. Prevalence of positive behavior among this group of children ranged between 49.5% - 88.1%, depending on the phase or type of procedure carried out.

On entering the operatory, 226(86.9%) of the children displayed positive behavior. When invited to sit on the chair, 224 (86.2%) of them complied and on sighting the operator, 229(88.1%) of the children responded positively. An equally high proportion of the children were cooperative during examination (Table 2).

Table 2: Behaviour during the initial stages of treatment by the age of the children

Age group (years)	Number of participants	Enter operatory	Get into chair	Appearance of operator	Examination
Positive Behaviour					
2-5	58(22.3)	42(72.4)	39(67.2)	43(74.1)	33(56.9)
6-8	95(36.6)	83(87.4)	83(87.4)	85(89.5)	81(85.3)
9-11	63(24.2)	60(95.2)	60(95.2)	59 (93.7)	54(85.7)
12-15	44(16.9)	41(93.2)	42(95.5)	42(95.5)	40(90.9)
Total	260				
X^2	16.11	$X^2$25.06	X^2 15.05	X^2 25.55	
p<0.05		p<0.05	p<0.05	p<0.05	

Compliance rates during the treatment phase were as follows. Radiograph- 87.5%, dental prophylaxis-84.7%, restoration-82.1% and tooth extraction-61.1%. However, fewer children were found to exhibit positive behaviour during administration of local anaesthesia only 49.5% were cooperative.(Table 3)

Table 3: Behavior during treatment procedures by the age of the children.

Age group (years)	Radiography n=24	Local Anaesthesia n=95	Restoration n=28	Extraction n=72
Positive Behaviour				
2-5	3(60.0)	1(14.3)	3(75.0)	0(0.0)
6-8	11(91.7)	17(44.7)	8(80.0)	15(51.7)
9-11	2(100.0)	20(57.1)	7(87.5)	20 (66.7)
12-15	5(100.0)	9(60.0)	5(83.3)	6(60.0)
Total	21(87.5)	47(49.5)	23 (82.1)	41(61.1)
X^2=5.3	X^2= 0.04	X^2=1.37		
p>0.05	p>0.05	p>0.05		

Among children in this study group, positive behavior appeared to increase with increasing age during the pre-treatment stages as during treatment (Tables 2 and 3). There also appears to be a higher compliance rate among male children than the females during the initial stages of treatment. These observed difference were however not statistically significant (p>0.05). During the process of taking radiographs, there was absolute compliance among the males, while a lower proportion of the females (72.7%) showed cooperative behavior. Similar observations were made during prophylaxis, local anaesthesia, restoration and tooth extraction.

At the early stages of treatment, social class did not seem to influence the behavior of the children (p>0.05). Similarly, there does not appear to be an association between social class and behavior of the children during the more advanced treatment procedures except in the process of tooth extraction where children in the higher social class exhibited better disposition.

IV. Discussion

Even though some degree of uncooperative behavior was encountered, children in this study exhibited in general a positive attitude towards dental treatment. Observation at the initial stages of treatment showed that 80% of the children enjoyed those aspects of the dental appointment as they were markedly cooperative. This finding is similar to those demonstrated in a previous study where over 85% of children complied at the initial stages, during prophylaxis and restorative treatments [21]. Holst and Crossner (1987) [9] demonstrated an even higher degree of cooperation by children at the early stages than in the present study as over 95% of the children were found to comply. The fact that children in their research were selected from a population in Sweden where dental treatment is routinely given, perhaps accounts for this high rate of positive behavior. Naturally, the children in the process of such frequent encounters become quite accustomed to the dental environment and hence better relaxed during treatment. By contrast, most of the children in this study population were visiting the dentist for the first time. This may explain to a large extent, the difference in the level of compliance.

It has been revealed that majority of the children enjoyed taking radiographs as evidenced by compliance rate of 87.5%.This observation agrees with those of Konigsberg and Johnson where compliance during radiographs was 89% [21.] The degree of compliance in this study was found to be higher than those of Sote and Sote[15] where 70% rated positively.

Less positive trends were however noticed in the attitude of the children during local anaesthesia and tooth extractions. It was observed that the degree to which the children accepted the administration of local anaesthesia in the study is lower than those of some previous studies [9], despite the inclusion of older children in

this study group. This is probably due to the fact that topical anaesthetic agent was not routinely administered before injection of the anaesthetic agent as compared to dental practices of previous authors where such was the norm. The use of topical anaesthesia decreases the amount of discomfort during penetration of the mucosa, thus a greater degree of tolerance is exhibited.

The children's demonstration of lower compliance reflecting more negative attitudes towards the administration of local anaesthesia and extractions as compared to their attitude at the initial stages of treatment can be best explained by the fact that the differences in degree of compliance by patients have been shown with invasive and non invasive hospital procedures. It has been observed that non- invasive tests produce less discomfort and distress to patients compared to invasive tests[22]. Injections in particular have been identified as a primary focus of anxiety [23]. The increase in the degree of anxiety and fear in children before administration of local anaesthesia may further lower the threshold of pain.

One of the salient characteristics of the distribution of specific fears in children is their changing nature with age and maturity [24]. Many fears start to decline with increasing age, maturity and presumably experience [25]. A tendency to improved behavior with increasing age was noticed in the children in this study even though in some of the procedures , statistical significance were not obtained. The results compare favorably with those of Klingberg et al. (1994b)[5] Holst and Crossner (1987)[9].

In an early study which evaluated the behavior of children up to teenage life, relatively few sex difference between boys and girls were observed in their specific fears [26]. In contrast Essau et al (2000)[27] reported more intense fears in females than males .Some authors have noted that generally females express greater intensity of fears than males from adolescence onwards [24]. Findings in this research demonstrate no statistical significance between the gender and attitudes and behavior of children, even though males seemed to behave better. These results are in congruency with those of Locker et al., (2001c)[28], and Majstorovic et al., (2003)[29].

The likelihood of stress is generally assumed to be greater in the homes of the poor than those of the more privileged[30]. It had previously been suggested that children from the lower socioeconomic families are tougher and more enduring when they come in contact with events which create discomfort because their life experience would have exposed them to a lot of hardship. This he further stressed makes them hardened[30]. On the other hand, Armfield et al.,(2006)[31], identified an inverse relationship between socioeconomic status and dental fear. Pinkham[30] documented that the social consequences surrounding the environment of children from poor homes and the manner in which some of these children are brought up may lead to greater misbehavior during dental appointments than in children from higher socioeconomic class. In this study, a significant relationship between socioeconomic status of the children and their attitude during dental treatment was not established. This findings support the works of Folayan (2003)[32] and Majstorovic et al., (2004)[29] who found no association between social class and behavior of children during dental appointments. Their observations however run contrary to those of Gustaffson et al., (2007)[33] who noted that improved behavior with improving social class.

In conclusion, the relatively high level of cooperative behavior found in this study is encouraging. One may safely infer that given the right conditions of development in the society, the Nigerian populace should not have fear as a hindrance to seeking oral health care. . However since attitudes are not static, and can be easily influenced by everyday experiences, it is pertinent that care is taken so that the individual encounter with the oral care system does not tilt the balance in the negative direction. It is therefore necessary that further be made into the factors that could enhance and reinforce the observed positive behavior in the dental setting.

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