Effect of information on dental anxiety and behaviour ratings in children

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ABSTRACT. Aim: To establish the effect of information received about dental care on the anxiety level of the child prior to receiving any form of dental treatment and on their behaviour during dental treatment. Methods: Eighty-four healthy child patients at their first dental visit, between the ages of 8 and 13 years attending a paediatric dental clinic in Nigeria participated in the study. Information on their dental anxiety level was collected using the Dental Subscale of the Child Fear Survey Schedule. The children were asked to identify their source and type of dental information received. The information given was later categorised into positive or negative for analysis purposes. The children’s behaviour during dental treatment was assessed using Venham’s clinical ratings of anxiety and cooperative behaviour. The mean dental anxiety scores, as well as the mean Venham behavioural ratings, of those that had received information on dental treatment were compared with those that had never received any information. Results: Previously received information did not appear to have any significant impact on the measures of the dental anxiety level of these children neither was there a statistically significant association between information received and behaviour of the child in the dental chair. Conclusion: Past information may play only a minor role in affecting dental anxiety levels and behaviour of the child during dental treatment.

KEYWORDS: Dental, Anxiety, Children, Information, Nigeria.

Introduction

Anxiety is an unspecific feeling of apprehension requiring no prior experience of the situation anticipated [Alwin et al., 1991]. In the case of dental anxiety, there is a feeling of apprehension of possible pain or discomfort during dental treatment even when there is not a prior experience.

In children, dental anxiety is not innate, but learned [Lautch, 1971]. Studies using the Rachman’s theory of fear acquisition have shown that children may develop an anxious response directly or indirectly. Indirect learning could be through modelling or through verbal or non-verbal communications between the child and the parent, peers, families and/or the dentist. Non-verbal communication occurs in the form of subtle passing on of anxiety from source to the child. On the other hand, verbal communication could be in the form of direct information to the child on the nature of dental treatment or through vicarious learning.

However, once information is received, an expectation is created which ultimately may affect the behaviour of the child during dental treatment. One would expect that negative information would result in dental anxiety while positive information would result otherwise.

This present study, therefore, sought to find out the effect of information received about dental care on the dental anxiety level of a subpopulation of suburban Nigerian children prior to receiving any dental treatment. It also tried to determine the effect of the type of information received on the behaviour of the child in the dental chair.

Materials and methods

The study was conducted at the Paediatric Dental Clinic of Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife, Nigeria. The clinic provides dental care needs for children within the locality. It also provides specialist paediatric dental care services for children from five other states in the country; a population of over 9.2 million of which 40-45% are children [National Populations Commissions, 1998].

Children aged 8-13 years who were visiting the child dental clinic for the first time and had had no previous
Results

The mean dental anxiety score of this group of children was 28.91±10.48. Previously received information did not appear to have any significant impact on the measures of the dental anxiety level of these children. Although those who received information on dental care had a higher dental anxiety score, when assessed using the self-report questionnaire, than those who received no information, no significant differences were found between the mean CFSS-DS scores for the two groups (Table 1). Neither were there any significant differences between the mean CFSS-DS scores of children who received positive information when compared with those who had negative information (Table 1). However, the scores of those who received positive information were lower than those who received negative information. There was also no statistically significant difference in the dental anxiety scores received between either positive or negative information when compared with the scores of those who did not receive any information (Table 1).

Also, there was no statistically significant difference in the behaviour of those who received or had not received information. Neither was there any statistically significant difference in the behaviour between those who received either positive or negative information when compared with the scores of those who did not receive any information. There were also no significant differences between the behaviour of children who received positive information when compared with those who had negative information (Table 2).

There was a significant association between the relatedness of the source of information to the child and the giving of information about dental treatment ($\chi^2 (6) =39.036; p<0.001$). Significantly more children (76%) said their parents gave them information about dental treatment. Of these, 34 (54%) received information from their mothers (Table 3). Though parents gave more positive information was received or not, was also analysed. In addition, a comparison was made between the behaviour of those children who received positive information and those who received negative information. However, to ease statistical analysis, the behaviour ratings were collapsed into 3 scores:
- 0 and 1 - good behaviour;
- 2 and 3 - fair behaviour;
- 4 and 5 - poor behaviour.

Analysis was done using the SPSS for Windows version 6. The t-test was used for the comparison of means while the $\chi^2$ test was used to test for association between relevant variables.

dental experience participated in the study. Patients recruited into the study had no physical or mental disability. This was to ensure proper comprehension and completion of the self-reporting questionnaires. Also, the accompanying parent gave consent for the participation of the child in the study after being explained the objective of the study. A note on this was also contained in the introductory part of the questionnaire wherein the objective of the study was explained and instructions as to how to fill the schedule were outlined.

The child’s dental anxiety was assessed using the Dental Subscale of the Child Fear Survey Schedule (CFSS-DS). The CFSS-DS described by Cuthbert and Melamed [1982] is a 5-point Likert scale with scores ranging from 1 (not afraid) to 5 (very afraid) for each of the 15 items, covering different aspects of the dental situation. Total scores ranged from 15 to 75. Acceptable test-retest reliability estimates for this schedule have been demonstrated across varying intervals of time and elevated scores on the schedule have been shown to be associated with heightened levels of dental anxiety. The questionnaire was administered to each child while in the waiting room.

The children were also asked to indicate whether they had any prior information about dental care procedures. If yes, they were then asked to state the information given. Lastly, the children were to identify the source(s) of this information from a given list. The information received by the children was later categorized into positive or negative for ease of analysis.

The children’s behaviour during dental treatment was assessed using Venham’s clinical ratings of anxiety and cooperative behaviour [Venham et al., 1979]. It is a 6-point scale with scores from 0 to 5. A child is scored 0 when he/she is relaxed, smiling and is able to converse and display behaviour desired by dentist spontaneously. At the other end of the scale, a child scores 5 when he/she cries hard and loud, is unable to listen to verbal communication, acts out of contact with the reality of the threat, is involved in escape behaviour and may need physical restraint. The principal investigator, who was familiar with the content and use of the scale, assessed the children during their management.

The mean dental anxiety scores of those who had received information on dental treatment were compared with those who had never received any information. Likewise, the mean dental anxiety scores for those who received positive information were compared with those who received negative information. Comparison was also made between the mean scores of those who received positive or negative information and those who received no information.

The behaviour of the child, based on whether
information than other relatives, there was no significant association between who gave the information and the type of information given ($\chi^2 (5) =1.521; p=0.911$).

None of the 67 children appeared to have received specific information about the nature of pain management during dental treatment. The information received was all non-specific in nature, such as “dental treatment is painful” or “dental treatment would not pain you”.

<table>
<thead>
<tr>
<th>Information</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>t</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CFSS-DS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information received</td>
<td>67</td>
<td>30.82</td>
<td>10.31</td>
<td></td>
<td>0.249</td>
</tr>
<tr>
<td>Information not received</td>
<td>15</td>
<td>27.00</td>
<td>10.64</td>
<td>1.161</td>
<td></td>
</tr>
<tr>
<td>Positive information received</td>
<td>44</td>
<td>30.59</td>
<td>11.28</td>
<td></td>
<td>0.370</td>
</tr>
<tr>
<td>Negative information received</td>
<td>23</td>
<td>31.043</td>
<td>9.34</td>
<td>0.816</td>
<td></td>
</tr>
<tr>
<td>Positive information received</td>
<td>44</td>
<td>30.59</td>
<td>11.28</td>
<td></td>
<td>0.261</td>
</tr>
<tr>
<td>No information received</td>
<td>15</td>
<td>27.00</td>
<td>10.64</td>
<td>1.11</td>
<td></td>
</tr>
<tr>
<td>Negative information received</td>
<td>23</td>
<td>31.05</td>
<td>9.34</td>
<td>0.374</td>
<td>0.517</td>
</tr>
</tbody>
</table>

**Table 1 - Effect of information on child dental anxiety level on a group of Nigerian children.**

<table>
<thead>
<tr>
<th>Information</th>
<th>N</th>
<th>Good behaviour (0&amp;1)</th>
<th>Fair behaviour (2&amp;3)</th>
<th>Poor behaviour (4&amp;5)</th>
<th>*$x^2$</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Venham scale</td>
<td>Yes</td>
<td>67</td>
<td>58</td>
<td>8</td>
<td>1</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>15</td>
<td>13</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Venham scale</td>
<td>Positive</td>
<td>44</td>
<td>38</td>
<td>6</td>
<td>-</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>Negative</td>
<td>23</td>
<td>19</td>
<td>3</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Venham scale</td>
<td>Positive</td>
<td>44</td>
<td>38</td>
<td>6</td>
<td>-</td>
<td>0.11</td>
</tr>
<tr>
<td></td>
<td>None</td>
<td>15</td>
<td>13</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Venham scale</td>
<td>Negative</td>
<td>23</td>
<td>19</td>
<td>3</td>
<td>1</td>
<td>0.17</td>
</tr>
<tr>
<td></td>
<td>None</td>
<td>15</td>
<td>13</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

*The Fisher’s test was used for calculation. Also, $x^2$ was calculated on a 2x2 table comparing good behaviour with fair and poor behaviour.

**Table 2 - Ratings of the behaviour in the dental chair of a group of Nigerian children.**

<table>
<thead>
<tr>
<th>Type of information</th>
<th>Mother</th>
<th>Father</th>
<th>Siblings</th>
<th>Relatives</th>
<th>Both parents</th>
<th>Others</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>19</td>
<td>12</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>44</td>
</tr>
<tr>
<td>Negative</td>
<td>9</td>
<td>5</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>23</td>
</tr>
</tbody>
</table>

**Table 3 - Source of information recorded by children in a group of Nigerian children.**
Discussion

Parents appear to be the chief source of information on dental treatment procedure for the Nigerian children studied here. Of the two parents, especially the mothers. This may not be surprising as the mothers often relate closely with children of this age group. They also tend to accompany the child more often to the hospital or dental setting [Folayan et al., 2002], so they try to pass on information to the children probably hoping that this would enable them to behave better in the dental chair during treatment.

Paradoxically, information does not appear to play a significant role in the dental anxiety level of these children neither does it affect their behaviour. This finding corroborates that of Townend et al. [2000], who found no evidence that dental anxiety developed through the informational pathway. A study by Flury et al. [2001], however, showed that though on the one hand an association existed between severe anxiety and lack of knowledge, on the other hand, those who had information still had very high anxiety. Russell’s study [1999] tried to explain how this was possible. He showed that the nature of communication was most important. Poor communication of information causes anxiety. This hypothesis was supported by the study of Zondervan et al. [2001].

Information needs to be specific in nature for it to produce positive results [Auerbach et al., 1983]. It often entails giving details that some clinicians might regard as anxiety provoking [Ley, 1988]. Jackson and Lindsay [1995] showed that dental anxiety would decrease significantly only when specific information on pain control was given. Such information not only results in decreased anxiety levels, but also empowers patients to become involved in decisions about their care [Flury et al., 2001]. It also results in compliant behaviour and satisfaction with treatment [Siegel and Peterson, 1980; Ridley-Johnson and Melamed, 1986; Thornton et al., 1995; Carson and Freeman, 1998].

In this present study, the information given to the children was non-specific. Also, the information had been received prior to the day of dental treatment. This may account for some of the differences noticed in the study results obtained.

To validate the result of this study, a control study would be needed where patients who received specific information on dental anxiety were compared with a control group that did not receive dental information. However, cognition would need to be taken of the ethical issues involved in such a study design. Despite this, there is a need to design more appropriate studies to look into effect of supplying information to children so as to prepare them preoperatively and test the influence of these parameters on the child’s dental anxiety level.

Conclusion

In this group of Nigerian children, past information received about dental care played no significant role in the level of dental anxiety or their behaviour in the dental chair.

References