The uninformed orthodontic patient and parent: Treatment outcomes

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In both medical and dental settings, researchers have found that patients do not always adequately comprehend the information given during informed consent discussions. The objective of this study was to evaluate patient and parent understanding of the child’s orthodontic treatment in a dental school population, compare this with information in patients’ charts, and assess the effects of vocabulary and educational level on patients’ and parents’ comprehension. Interviews were conducted with 21 children, ages 7 to 12 years, undergoing early orthodontic treatment at a dental school and 1 parent or guardian per child. Open-ended questions were asked regarding reasons for treatment, risks, and patient and parent responsibilities. Children had been in treatment for 1 to 24 months (mean = 7.84 ± 9.42). Patient and parent responses were compared with information in the children’s charts. On average, parents recalled only 2.1 reasons for treatment and children recalled only 1.24; the charts listed an average of 4.1 diagnoses. Children could recall only 0.67 risks and parents 0.60 risks, yet many patients had already experienced problems with their treatment on average. The vocabulary levels of the children and their parents were low; parents’ vocabulary and educational levels were correlated with their comprehension of this material. Further research should be aimed at improving methods of preparing child patients and their parents for major dental procedures, especially in a publicly funded clinic. (Am J Orthod Dentofacial Orthop 2003;124:212-5)

The doctrine of informed consent states that “before a physician may administer any treatment, the patient must be adequately informed about the proposed therapy and its effects, and must freely consent to being treated.” Informed consent is a process of communication in which the health care provider educates the patient as to the nature of the condition and the possible solutions to the problem. Although the use of an informed consent document has become common practice in both the medical and dental professions, the process of educating patients so that they are informed has not. As a result, many patients who sign a consent form are not truly informed. In Salgo v Leland Stanford Jr University Board of Trustees, the court held that formal and documented consent is legally ineffective if the patient lacks an understanding of material information about the treatment that is being authorized.

Wu and Pearlman found that concordance between physician and patient was only 20% for recall of risks and only 25% for treatment alternatives. In dentistry, a study of 49 adolescents and young adults undergoing third-molar extractions showed that the patients had little understanding regarding the reasons, benefits, risks, and alternatives associated with such extractions, even within 1 hour of hearing the oral surgeon present the information. Indeed, 10% could not recall any risks, and 21% could not recall any alternatives to extractions. The best predictors of patient comprehension and recall were educational level and scores on the vocabulary component of the Wechsler Adult Intelligence Scale (WAIS) and the state anxiety component of Spielberger’s state-trait anxiety scale.

Informed patients are better consumers of dental services, with more reasonable expectations of treatment outcomes. In orthodontic treatment, patient understanding is especially important, because the treatment often requires long-term compliance. This becomes even more critical with child patients, because parents must play a larger role in ensuring their child’s compliance. In a study of the effectiveness of early treatment for Class II malocclusion, Wheeler et al found that compliance was significantly correlated with treatment success. In another study, compliance variables accounted for 47% of the variance in length of treatment.
The present study was designed to characterize the nature and the extent of the informed consent problem in orthodontics by evaluating both children’s and parents’ understanding of the nature and purpose of the child’s treatment, possible associated risks, and their roles in the orthodontic treatment process. This study also assessed the effects of educational levels and verbal intelligence quotients on the children’s and the parents’ understanding of informed consent.

MATERIAL AND METHODS

The sample consisted of 21 children (ages 7-12 years) receiving early orthodontic treatment at the University of Washington Pediatric Clinic, Seattle, and a parent or guardian for each child. This clinic offers orthodontic treatment at the mixed dentition stage for a lower fee than private practice, with approximately half of the cases covered by Medicaid. At the time of the interview, children had been receiving orthodontic treatment for an average of 7.84 months (standard deviation [SD] = 9.43, range 1-24).

Interviews were conducted separately with each child and parent before the child’s monthly orthodontic appointment at the university. Independent variables reported here are (1) demographic data, determined by a background questionnaire for the parent or guardian, and (2) vocabulary, determined in children with the vocabulary section from the Wechsler Intelligences Scale for Children (WISC) and in adults with the vocabulary section from the WAIS.

Two dependent variables are of interest in this report. The first is understanding of informed consent. This was determined with an instrument that was adapted from previous studies of orthodontic and orthognathic surgery patients by Kiyak et al. In an open-ended format, patients and parents were asked to describe reasons for the child’s treatment and the risks associated with treatment.

The second dependent variable is information obtained from the patient’s chart. The child’s diagnosis, treatment plan, problems, and progress in treatment were summarized from the child’s dental chart after separate face-to-face interviews with parents and children. The dental charts contained a standard informed consent form indicating agreeing to treatment at that clinic and notes regarding a specific “treatment presentation” given to each patient. In addition, problems observed by the orthodontist during monthly visits to the clinic (including missed appointments) were recorded in these charts. Subjects’ responses regarding their diagnosis and treatment were compared with the information obtained from the chart notes.

Parents and children were interviewed separately by the authors or a trained research assistant. If respondents did not appear to understand the questions, they were prompted with alternative questions (e.g., “What problems did the orthodontist tell you might happen with treatment?” and “What bad things could happen to your teeth if you have braces on them?”). Interviewers also administered the vocabulary tests to the parent (WAIS) and the child (WISC). The child was paid $5 and allowed to choose a prize from a box of toys for participating in the study. The vocabulary tests were scored according to scoring keys and criteria on these standardized tests. Children’s scores were adjusted for age norms on the WISC.

Subjects’ responses regarding their reasons for treatment were compared with diagnoses recorded by the orthodontist in each child’s chart. Their responses regarding risks of orthodontic treatment were compared with the problems recorded in the patient’s chart.

RESULTS

The 21 children in this study ranged in age from 7 to 12 years (mean = 9.62). Most (71.4%) were girls, and the largest ethnic group was white (47.6%), with 2 each of 3 ethnic minority populations and 5 who reported mixed ethnicity. Most of the participating parents (71.4%) were mothers. Both the children and their parents or guardians generally scored low on the vocabulary tests. Parents’ mean score on the WAIS (maximum possible score, 70) was 46.10 (SD = 4.52). Children’s standardized scores could range up to 19, but the mean score for this group was 8.38 (SD = 4.52).

Table I illustrates the most commonly cited reasons for orthodontic treatment as reported by children and their parents and as recorded in the charts. General malocclusion or crowding were the primary reasons.

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Chart</th>
<th>Parent</th>
<th>Child</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crooked teeth or crowding</td>
<td>13*</td>
<td>12* (9)*</td>
<td>12* (7)</td>
</tr>
<tr>
<td>Crossbite</td>
<td>12</td>
<td>2 (2)</td>
<td>1 (1)</td>
</tr>
<tr>
<td>Class II malocclusion</td>
<td>9</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Overbite</td>
<td>7</td>
<td>7 (3)</td>
<td>4 (3)</td>
</tr>
<tr>
<td>Overjet</td>
<td>7</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Upper and lower fit</td>
<td>4</td>
<td>4 (1)</td>
<td>0</td>
</tr>
<tr>
<td>Oral habits</td>
<td>4</td>
<td>1 (0)</td>
<td>1 (0)</td>
</tr>
<tr>
<td>Diastema</td>
<td>2</td>
<td>1 (0)</td>
<td>1 (0)</td>
</tr>
<tr>
<td>Don’t know or no response</td>
<td>0</td>
<td>3</td>
<td>10</td>
</tr>
</tbody>
</table>

n = 21 parent–child pairs.
*Total can be >21 because multiple responses allowed.
Numbers in parentheses represent concurrence between chart and parent or chart and child responses.
listed in the chart, followed by crossbite (12), Class II malocclusion (9), overbite (7), and overjet (7). Overall, parents and children knew very little about the child’s specific diagnosis, most often citing “crooked teeth” or “crowding” as the diagnosis (12 parents and 12 children), but only 75% of the parents and 58% of children who were given this diagnosis by the orthodontist remembered it at the interview. Even when the parent and the child reported specific diagnoses, the reasons were often not the same as given by the orthodontist. The second most common response by children to this question was “don’t know” (10 of 21 children). On average, the chart listed 4.1 (±1.25) reasons, but parents could only recall an average of 2.1 (±.89) and children only 1 (mean = 1.2 ± .62).

Regarding parents’ and children’s recall of risks associated with treatment compared with actual problems as noted in patient charts, a discrepancy emerged (Table II). Even though 15 of the 21 children had already had at least 1 problem during their treatment, 12 children and 7 parents stated that there were no risks associated with orthodontic treatment. Another 5 children and 5 parents could not recall any risks. As a result, concordance between recall by parents or children and chart information was very low. For example, of the 6 children who had broken a wire or a bracket, only 1 child and 1 parent recalled the problem. Six of the children had experienced gingivitis during the treatment, but no children and only 2 parents mentioned this as a risk. Even the 2 children who had fallen and injured their lips and mouths did not list this as a risk. On the other hand, staining and decalcification of teeth during treatment was listed as a risk by 2 children and 1 parent, but not by the child who had actually experienced this problem or by his parent.

Pearson product-moment correlation tests were used to test the association between education and vocabulary level, and the number of reasons and risks reported by parents and children, as well as the number of diagnoses, procedures, and actual problems reported in the chart. Parents’ recall of risks was correlated with their child’s satisfaction with the information received from the orthodontist (r = .62, P < .005). Parents’ educational level was marginally correlated with the number of risks they recalled (r = .41, P = .06), and scores on the WAIS vocabulary test were correlated with the number of reasons they recalled for their child’s treatment (r = .51, P < .02).

**DISCUSSION**

The most striking finding in this study was the low level of responses to open-ended questions regarding treatment and associated risks. Even when responses were given by children and parents, their veracity was doubtful because they were not concordant with the diagnoses and problems actually experienced during treatment, as recorded in each chart. Parents’ educational level was marginally associated with their recall of risks, but their vocabulary level was significantly correlated with the number of reasons for treatment that they could recall.

A major confounding factor in this study was the subjects’ ability to recall the information they had received during their initial orthodontic consultation. Patient-parent pairs had gone through the informed consent process from 6 to 36 months before their interview for this study. This created inconsistencies in recency of their initial consultation date, but long-term patients also had the advantage of regular contact with the orthodontist to reinforce this information. Another unwanted source of variability arose because this clinic includes several graduate dental students with diverse backgrounds. In future studies, the same orthodontist should conduct the initial consultations with all child patients and their parents.

Almost all children in this study experienced a problem, or the duration of their treatment extended well beyond the predicted date. In many cases, problems could have been avoided by simple compliance. Patients’ noncompliance is often due to their lack of understanding or not remembering the clinician’s verbal instructions, or to not being literate enough to read the written materials they received about their procedures. The problem of inadequate informed consent is extensive in dentistry, at least in orthodontics, as demonstrated by this study and others.
CONCLUSIONS

When questioned about their orthodontic problems and the risks of treatment, children at a dental school orthodontic clinic and their parents exhibited poor recall of the reasons for treatment or the associated risks. Additional research is needed to improve methods of preparing children and their parents for major dental procedures in publicly funded clinics.

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REFERENCES