ORIGINAL ARTICLE

Level of Recall between Verbal and Written Information about Orthodontic Treatment

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ABSTRAK

Satu kajian keratan rentas telah dilakukan untuk membandingkan tahap kemampuan pesakit mengingat kembali maklumat lisan dan bertulis tentang rawatan ortodontik. Para peserta merupakan pesakit dan ibu bapa yang menghadiri klinik penyaringan ortodontik, Universiti Kebangsaan Malaysia (UKM). Penyertaan adalah secara sukarela. Peserta dibahagikan kepada dua kumpulan. Kumpulan pertama diberi maklumat bertulis sahaja dalam bentuk risalah, manakala kumpulan yang kedua diberi maklumat lisan sahaja. Isi kandungan maklumat merangkumi 13 item berdasarkan Risalah Maklumat Pesakit yang diterbit oleh *The British Orthodontic Society*. Kedua-dua kumpulan menerima isi kandungan maklumat yang sama dalam bahasa pilihan mereka. Soal selidik soalan bertutup yang diisi sendiri diberi kepada subjek selepas 15 minit untuk menilai tahap ingat kembali. Jawapan yang diberi oleh kedua-dua kumpulan peserta dibandingkan. Data yang dikumpul dianalisis dengan SPSS versi 15.0. Ujian chi-square (p=0.05) dijalankan untuk menentukan kesan kaedah pemberian maklumat terhadap peratusan ingat kembali. Seramai 79 subjek menyertai secara sukarela. Terdapat lebih ramai perempuan berbanding lelaki. Majoriti didapati mencapai tahap pengajian sekolah menengah. Perbandingan untuk setiap item soalan mendapati tiada perbezaan signifikan antara mereka yang diberi maklumat lisan atau bertulis. Kedua-dua kumpulan menunjukkan peratusan respons betul yang tinggi. Sebagai kesimpulan, tiada perbezaan dalam tahap ingat kembali pesakit, sama ada pesakit diberi maklumat lisan atau bertulis.

Kata kunci: tahap ingat kembali, maklumat ortodontik, maklumat lisan, maklumat bertulis

ABSTRACT

A cross-sectional study was undertaken to compare patients' level of recall on verbal and written information about orthodontic treatment. Participants were the patients and parents attending the orthodontic screening clinic, Universiti Kebangsaan Malaysia (UKM). Participation was voluntary. Participants were placed into two groups. One group was given only written information in the form of an information leaflet, while another group

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was given only verbal information. The information content comprising of 13 items was based on the Patient Information Leaflet published by the British Orthodontic Society. Both groups received similar content of information in their preferred languages. Self administered close-ended questionnaire forms were given to the subjects after 15 minutes to assess the level of recall. The answers from both groups were compared. Data collected was analyzed using SPSS version 15.0. Chi-square test (p=0.05) was conducted to determine the effect of the method of information on the percentage of recall. A total of 79 subjects volunteered to participate in the study. There were more females than males. The majority were found to have achieved secondary level formal education. Comparison of each question item showed no significant difference between those who were provided with verbal or written information. Both groups showed a high proportion of correct responses. In conclusion, there was no difference in the patients' level of recall whether the orthodontic patient was given verbal or written information.

Key words: level of recall, orthodontic information, verbal information, written information

INTRODUCTION

Prior to this study, information about orthodontic treatment was usually described verbally to patients during screening and treatment in the UKM Dental Clinic. The purpose of the screening was to identify patients who were suitable to undergo orthodontic treatment. Initial consultation was also carried out to facilitate the patients in making informed decisions.

The patients who attended the screening were commonly teenagers and young adults of various ethnicity. Sometimes, adult patients attended the screening because they require adjunctive treatment for periodontal disease or for restorative purposes.

Orthodontic screening was carried out by fifth year dental students, who were taught to convey important information regarding orthodontic treatment to the patients. Nevertheless, there was no clear guideline on what and how messages should be conveyed to the patient. Hence, the amount of information given was dependent on the individual clinician. This contributed to varying levels of retention among patients.

Therefore, concern was raised regarding the relationship of the mode of delivery to the retention of information about orthodontic treatment. Since it was important for patients to understand the various aspects of orthodontic treatment before they make their commitment towards it, it was crucial to evaluate the methods of communication which aid in the patients' ability to recall essential information about orthodontic treatment.

The aim of the study was to compare patients' level of recall on verbal and written information. To achieve that, it was necessary to validate translation of the information leaflet, develop and test the questionnaire, as well as evaluate the patients' ability to recall the information.

Locker (1989) stated effective communication facilitates diagnosis making and treatment planning, and has a huge influence on the result of the treatment. Greater patient satisfaction with less patient litigation was reported. Sufficient understanding of the treatment process eased decision making and consent (Cannavina et al. 2000). Furthermore, effective communication and good understanding of the information given were important to achieve compliance and co-

operation (Anderson & Freer 2005). Whether or not a patient was satisfied with the clinician was influenced by the information and consultation given and understood (Ley 1988).

In particular, patients and parents sometimes faced difficulty in fully realizing the consequences and requirements of orthodontic treatment (Pratelli et al. 1996). Insufficient information about orthodontic treatment and lack of communication can cause lack of patient cooperation and premature termination of orthodontic treatment (Brattstrom et al. 1991).

Unfortunately, the amount of information received by the patients is generally perceived unsatisfactory (Newton 1995), even though information giving is noted as an important communication skill relevant to dentists. Successful communication often involved the patient's exposure to the messages, drawing attention to personal benefits, understanding the messages, accepting and retaining the messages (Ashford & Blinkhorn 1999).

The most common form of imparting dental knowledge is by verbal provision of information. Nevertheless, physical barriers and noise of handpieces in the clinic hinder effective verbal communication (Humphris & Ling 2000).

Additionally, in a multicultural society, communication difficulties frequently exist when the patients have limited understanding of the language use by the dentists (Williams et al. 1995). To overcome the language barrier, the use of interpreters is recommended. Non-verbal adjuncts such as dental health publications may be used to enhance information communication, provided the patients can read (Goldsmith et al. 2005).

A German study (Chatziandroni-Frey et al. 2000) found that briefing media such as demonstration models and leaflets were used primarily in the orthodontists' waiting room and surgery. Space taking media (video-films, computers) and books were rarely used. The advantages of information leaflets are non-intrusive, inexpensive and time neutral (Humphris & Field 2003). However, its effectiveness is dependent on its readability (Albert & Chadwick 1992; Roger 2000).

Also, a study found that patients who were motivated to read the leaflets showed significant improvement in knowledge when compared to patients who were passively given the leaflets (O'Neill et al. 1996). Hence, it appeared that the provision of a leaflet alone gave limited benefits. Often it must be combined with verbal information.

Humphris & Ling (2000) suggested factors such as patient education level is not strongly related to the degree of recall. However, studies focusing on retention of orthodontic information had shown varying results. 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 would recall (Baird & Kiyak 2003).

In one study, written, verbal and visual methods were tested but little difference was found (Thomson et al. 2001). Nevertheless, the study suggested verbal information should always be supplemented by written and/ or visual information.

In contrast, another study found that the participants who were given information leaflets about orthodontic treatment performed poorer in recalling the information, when compared to participants who were given mind maps or acronyms (Newton & Thickett 2006).

Similarly, when a group of patients receiving computer-based visual information was compared to another group receiving information leaflets, the computer-based visual information was superior to information leaflets (Patel et al 2008).

MATERIALS AND METHODS

A questionnaire based study was carried out at the Faculty of Dentistry, Universiti Kebangsaan Malaysia (UKM). Ethics approval was obtained from the UKM Research and Ethics Committee.

The subjects were recruited from the Orthodontic Screening Clinic at UKM Dental Polyclinic, over a period of 13 weeks. All patients aged 12 years and above were invited to participate in the study, regardless of gender or ethnicity.

Patients younger than 12 years old were not included due to their limited capability to comprehend the information. Instead, one parent for each young patient would take part in the research.

When the patients (or parents of young patients) arrived, they were given information sheets about this research. The patients (or parents of young patients) were informed on the benefits, risks, confidentiality involved and participation required. After that, those who agreed to participate would have to complete and return the consent form. Those who declined would be interviewed briefly to find out the reason for not doing so.

Those who had worn braces before would be excluded because their baseline knowledge was more than the average population. Hence, this group of subjects tended to recall not only information given during the study, but also based on their experience and prior knowledge.

Initially, the study was intended to be a randomised control trial. However, during the pre-test, difficulty of randomisation was encountered. Even though patients could be selected randomly using a series of random numbers, overspill of information occurred due to close proximity of dental chairs. Therefore, convenient sampling was chosen in the end, in order to prevent overspill of information which would affect the final result. Patients would be called into one of the two rooms by the Dental Surgical Assistant, without any knowledge of this study. Hence, convenient sampling was done accordingly.

The orthodontic information leaflet was originally produced by the British Orthodontic Society. It contained pictorial and textual information, presented under headings designed in a 'Question and Answer' format on a multicoloured, six section, double-sided A4 sheet. Information included introduction, type of braces, procedure involved, effects, risks and precautions, emergency appointments, retainers, and success rates. In the Malaysian context, changes were done to the pictures, to portray Asian faces in order to maintain patients' acceptability. A questionnaire was developed according to the 'Question and Answer' in the leaflet.

The leaflet and the questionnaire were translated into Malay and Chinese languages. The translations were done by the researchers and validated by two qualified translators who had experience translating medical or dental publication materials. Then, validation was repeated by two Orthodontists who were native speakers of Malay and Chinese, respectively.

The questionnaires were pre-tested on 20 screening patients in the beginning of this study. There were no major adjustments apart from the layout and omission of redundant words. Both researchers were able to converse fluently in English, Malay and Chinese.

The content of both verbal and written information was exactly the same. The difference was solely the mode of communication. Each participant would be exposed to only ONE type of information, either verbally or in written form, according to their language preference. There were 39 participants in the Verbal group and 40 participants in the Written group.

Participants were exposed to the information; either verbally or in writing for 10 minutes. Participants were not allowed to ask additional questions. Clinicians and accompanying family or friends of the sub-

jects were instructed not to provide help. Those who were given written information were prohibited from keeping the information leaflet after the exposure time. This was followed by a 15 minutes interval.

Self-administered questionnaires were distributed after the 15 minutes interval to assess subject's short-term recall of the information presented. The questionnaire (Appendix 1) was divided into three parts: Part A was on sociodemographic data of the subject. Part B and C were closed questions to assess the subject's level of recall.

Part B (Question 1 to 12) covered topics such as indications of orthodontic treatment, types of braces, duration of treatment, pain experience, frequency of appointments, risks and precautions, emergency appointment, retainer, and success rate. Each question was followed by three choices, with only one correct answer. The subject was instructed to circle only one answer.

For Part C (Question 13), the subject could choose more than one answer. Such an arrangement was done because it was about the consequences of not taking care of the braces. This information was of great importance, yet frequently ignored by the patients undergoing orthodontic treatment.

Statistical analysis was conducted using Statistical Package for the Social Sciences (SPSS) version 15.0. Chi-square test was used to compare the proportion of correct responses for both verbal and written for each question.

RESULTS

A total of 89 subjects were approached for this study. However, eight of them refused to participate in this study. The commonest reason given was they did not have the time. Two subjects were excluded because they had orthodontic treatment before. The final numbers of subject were 79 in total.

The sociodemographic characteristics of the study sample were analysed (Table 1). The mean age for the verbal group was 20.67, and 21.60 for the written group.

A high level of correct responses was received. There were no significant differences among both groups for all the questions (Table 2 & Table 3).

Table 4 showed the information given in Malay, English and Chinese in both verbal and written forms.

In order to ascertain there was no influence of the language on the results, analysis was done and results showed no significant differences. Therefore, the confounding factor of language used was insignificant (Table 5 & Table 6).

DISCUSSION

There were more females recruited in this study, as there were more females seeking orthodontic treatment. This is in accordance with a study which stated that girls were more concerned about their smiles and requested orthodontic treatment more often than boys (Christopherson et al. 2009). The samples comprised mostly of Malays, followed by Chinese and Indians.

Table 1: Sociodemographic characteristics of study sample.

	Verbal (%, n=39)	Written (%, n=40)
Gender		
Male	9 (23.1%)	13 (32.5%)
Female	30 (76.9%)	27 (67.5%)
Ethnicity		
Malay	30 (76.9%)	24 (60.0%)
Chinese	7 (17.9%)	15 (37.5%)
Indian	2 (5.1%)	0 (0.0%)
Others	0 (0.0%)	1 (2.5%)
Educational Level		
UPSR	6 (15.4%)	6 (15.0%)
PMR	4 (10.3%)	3 (7.5%)
SPM	23 (59.0%)	21 (52.5%)
University	6 (15.4%)	10 (25.0%)

Most of the subjects had *Sijil Pelajaran Malaysia* (SPM) qualification, followed by university graduates. The subjects with *Ujian Penilaian Sekolah Rendah* (UPSR) qualification came in third, and finally those with *Penilaian Menengah Rendah* (PMR) qualification.

All questions received a high proportion of correct answers. Thomson et al. (2001) suggested such findings could be due to the extra attentiveness of the subjects who were aware that they were taking part in a study.

Exception was observed for question 4, which asked whether orthodontic treatment is painful. Four subjects of the Verbal group and one subject of the Written group gave wrong answers, while two subjects of Written group failed to give any answer. In other words, 7 subjects (8.86%) failed to give the correct answer. This was due to the complexity of the question, which required subjects to think critically.

Question 10 received all correct answers from both groups. It was a question about what action to be taken if the orthodontic brace broke during treatment. The question and the correct answer were almost similar to the information given to the subjects. Less thinking was required and all subjects performed well in this question.

There were no significant differences between the Verbal and Written groups in all the questions. This finding confirmed the results of previous study (Thomson et al. 2001).

The subject could choose more than one answer in Question 13. The question was about the risks of orthodontic treatment. There were a total of three correct answers. Most of the Verbal group (48.7%) gave three correct answers, but most of the Written group (52.5%) only managed to get two correct answers. This could probably be explained by the arrangement of information. Although the sequence of information given was similar for both groups, the written information had shown more clear-cut partition of information in different paragraphs. The subjects could recall answers from the last paragraph in order to answer this question. However, the risk of 'permanent scarring' could only be found in the earlier paragraph. Such arrangement could

Table 2: Proportion of subjects giving correct responses (Question 1-12)

	Verbal (n=39) (%)	Written (n=40) (%)	Chi-square P-value
Question 1			
Correct	39(100.0%)	38(95.0%)	0.157
Incorrect	0(0.0%)	2(5.0%)	
Question 2			
Correct	38(97.4%)	38(95.0%)	0.571
Incorrect	1(2.6%)	2(5.0%)	
Question 3			
Correct	36(92.3%)	40(100.0%)	0.074
Incorrect	3(7.7%)	0(0.0%)	
Question 4[a]			
Correct	35(89.7%)	37(97.4%)	0.175
Incorrect	4(10.3%)	1(2.6%)	
Question 5			
Correct	36(92.3%)	38(95.0%)	0.623
Incorrect	3(7.7%)	2(5.0%)	
Question 6			
Correct	39(100.0%)	39(97.5%)	0.320
Incorrect	0(0.0%)	1(2.5%)	
Question 7			
Correct	37(94.9%)	38(95.0%)	0.979
Incorrect	2(5.1%)	2(5.0%)	
Question 8			
Correct	38(97.4%)	38(95.0%)	0.571
Incorrect	1(2.6%)	2(5.0%)	
Question 9			
Correct	38(97.4%)	40(100.0%)	0.308
Incorrect	1(2.6%)	0(0.0%)	
Question 10			
Correct	39(100%)	40(100.0%)	-
Incorrect	0(0.0%)	0(0.0%)	
Question 11			
Correct	37(94.9%)	37(92.5%)	0.665
Incorrect	2(5.1%)	3(7.5%)	
Question 12			
Correct	38(97.4%)	39(97.5%)	0.986
Incorrect	1(2.6%)	1(2.5%)	

All P-values are non-significant unless marked with an asterisk(s).

[a] two subjects of the Written group failed to answer the question, therefore they were excluded.

confuse the subjects with Written information, but not for the subjects with Verbal information. The continuity of the information, and therefore subsequent understanding and recall were in one-piece rather than in partition form. Hence, the succession of one thought to another would not be interrupted.

One of the differences between this study and earlier studies was the use of three languages in this study, whereas previous studies only used English (Anderson & Freer 2005; Newton & Thickett 2006; Patel et al. 2008). Therefore, it was mandatory to ascertain that the language used had minimal influence on the results obtained. No significant difference was found between groups given information in different languages. This, compounded with the fact that all translated leaflets were validated by qualified interpreters and orthodontists, excluded the possibility of the language used resulting in bias in this study.

When age, gender, ethnicity, method of information provision and other factors were analysed, Patel et al. (2008) found that only the method of information provision was significant. However, this study showed no significant difference in all the factors listed, even the method of information provision. Few limitations were recognized during the course of the study, which included sampling method and interval for recall. In order to prevent

Table 3: Number of correct responses for Question 13.

	Verbal (%, n=39)	**Written (%, n=40)**	**Chi-square P-value**
1 correct answer	5(12.8%)	6(15.0 %)	
2 correct answers	15(38.5%)	21(52.5%)	0.332
3 correct answers	19(48.7%)	13(32.5%)	

All P-values are non-significant unless marked with an asterisk(s).

Table 4: Information given in 3 languages.

	Verbal (n=39) (%)	**Written (n=40) (%)**
Malay	20(51.3%)	13(32.5%)
English	13(33.3%)	16(40.0%)
Chinese	6(15.4%)	11(27.5%)

Table 5: Number of correct answers for Questions 1-12.

	Malay (n=33) (%)	**English (n=29) (%)**	**Chinese (n=17) (%)**	**Chi- square P- value**
1 missing	1 (3.0%)	1 (3.4%)	0 (0.0%)	
All correct	21 (63.6%)	16 (55.2%)	11 (64.7%)	
1 incorrect	10 (30.3%)	10 (34.5%)	5 (29.4%)	0.810
2 incorrect	0 (0.0%)	2 (6.9%)	1 (5.9%)	
3 incorrect	1 (3.0%)	0 (0.0%)	0 (0.0%)	

Table 6: Number of correct answers for Questions 13.

	Malay (n=33) (%)	**English (n=29) (%)**	**Chinese (n=17) (%)**	**Chi- square P- value**
1 correct answer	5 (15.2%)	3 (10.3%)	3 (17.6%)	
2 correct answers	15 (45.5%)	13 (44.8%)	8 (47.1%)	0.946
3 correct answers	13 (39.4%)	13 (44.8%)	6 (35.3%)	

overspill of information, convenient sampling was selected, but this compromised randomisation of the study. Most of the previous studies compare both short- and long-term recall in order to reflect the memory of the subjects as time went by. However, the time limit of this study did not allow the long-term recall rate to be studied.

CONCLUSION

Most of the subjects were able to recall correctly the information that was given. However, no significant difference was found when comparing the level of recall between verbal and written information about orthodontic treatment.

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