sciendo

DOI: 10.2478/aoj-2005-0007

Patients' attitudes towards compliance with retainer wear

Pamela Wong and Terry J. Freer
School of Dentistry, The University of Queensland, Australia

Objectives: The objectives of this survey were to determine patients' attitudes towards retainers and their compliance in wearing retainers.
Methods: Three hundred dental school patients were selected at random and survey questionnaires were distributed. Twelve private orthodontists were willing to participate in the survey and each was given 20 questionnaires for distribution to their patients. The questionnaire was designed to gather information regarding compliance in wearing removable retainers, perception of the comfort level of retainers and acceptance of the appearance of removable and fixed retainers.
Results: The results revealed that compliance in wearing an upper retainer was related to its comfort level and acceptance. Discomfort was the main reason given by dental school patients and forgetfulness was the major reason given by private patients for not wearing retainers. Higher proportions of patients found fixed retainers more comfortable to wear and were more willing to accept the appearance of fixed retainers. A higher proportion of private patients accepted the appearance of retainers compared with dental school patients, while a higher proportion of dental school patients found retainers less comfortable to wear than private patients.
Conclusions: There was a strong relationship between compliance and comfort level in wearing upper removable retainers. Patients found fixed retainers more acceptable than removable types because of appearance and comfort.
(Aust Orthod J 2005; 21: 45–53)

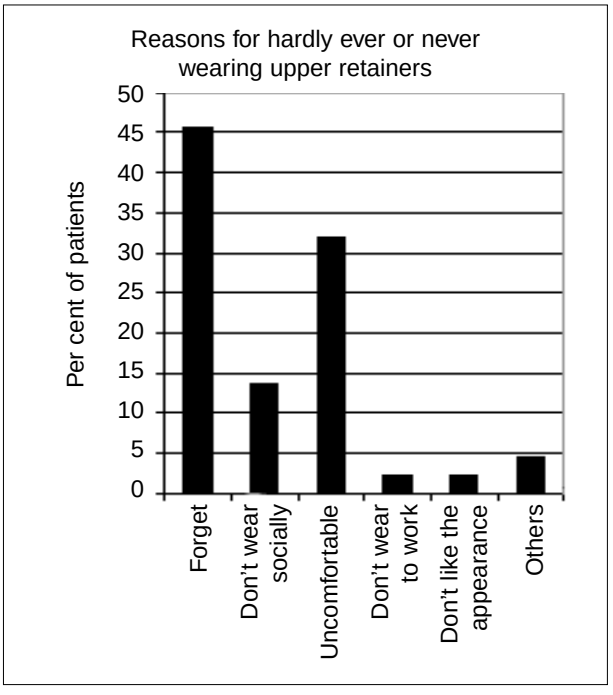
Received for publication: June 2004
Accepted: August 2004

Introduction

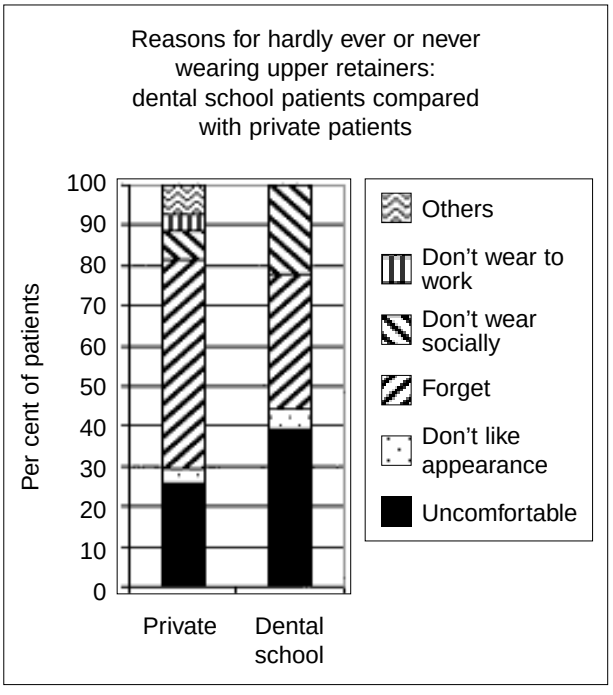
Research reports on patients' perceptions of retainers and compliance in wearing them are rare. Dahl and Zachrisson[1] reported high rates of acceptance of bonded lingual retainers, particularly in adults. However, the authors did not present any data. Axelsson and Zachrisson[2] also found that general satisfaction with bonded labial retainers was high. Sixty-nine per cent said they were 'not affected at all' by the visibility of the retainers when talking or smiling. A higher proportion of patients preferred the bonded labial retainers (49 per cent) to removable plates worn at night (28 per cent). Cerny[3] reported that patients found bonded lingual retainers comfortable and that 99 out of 100 patients reported that they were only aware of their retainers for the first two weeks or less. Nine out of 10 of those patients who had worn both removable and fixed retainers found the bonded retainers to be more comfortable. Stormann and Ehmer[4] reported a higher rate of discomfort with preformed canine-to-canine padded retainers (bonded to canines only) than canine-to-canine retainers (0.0195 inch or 0.0215 inch multistrand wire) bonded to six anterior teeth. Several patients complained of irritation of the tongue with the pads bonded to canines only. When canine-to-canine padded retainers were used, rotational relapse of incisors may occur. The lingual pads on the canines may also be aesthetically unacceptable. However, no report on compliance in wearing removable retainers could be found.

Studies on compliance in orthodontic treatment in general suggest that compliance could be related to age, sex, scholastic performance, the discomfort experienced and patients' acceptance of an appliance.[5–14] However, reports on patient compliance in wearing removable retainers could not be found.

The scope of this study was limited to two factors affecting compliance, namely comfort level and



Overall pattern of noncompliance



Comparison between dental school and private patient groups

Figure 1. Reasons for hardly ever or never wearing upper removable retainers.

acceptance of appearance of retainers. The aim of this study was to identify relationships between compliance and the above two factors, and to examine the differences in patients' perceptions of the comfort levels and appearance of removable and fixed retainers.

Materials and methods

The study involved a survey of both dental school patients and private patients. Three hundred dental school patients were selected at random and questionnaires were sent. Twelve private orthodontists were willing to participate in the survey and each was given 20 questionnaires for distribution to their patients.

Due to the low number of questionnaires returned, it was likely that there was a survey error resulting in a non-response bias. This is because it cannot be generally assumed that those who do not respond to a survey are similar to those who do. As such, formal statistical methods were inappropriate for data analysis and would not produce any meaningful results. Hence, graphical and cross-tabulation techniques were applied in interpreting the data.

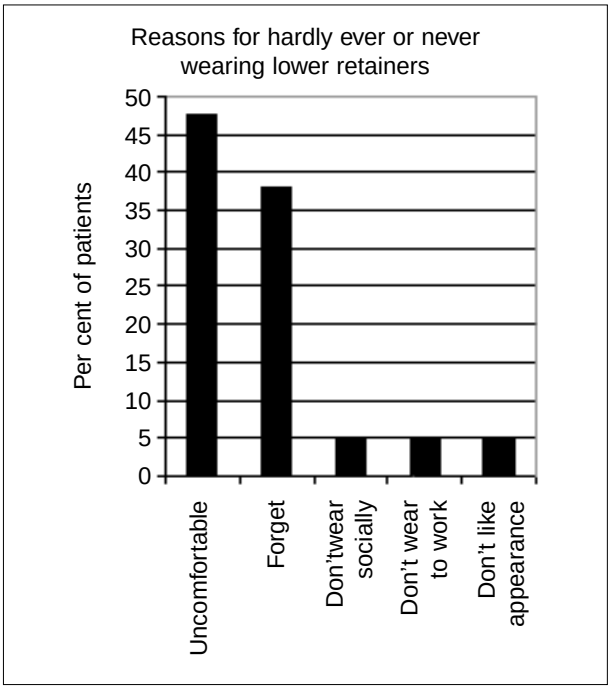
The following features were investigated:

Compliance in wearing retainers.
Comfort level in wearing retainers.
Acceptance of the appearance of retainers.
Reasons for not wearing retainers.
The relationships between compliance and other factors (comfort level, acceptance of appearance of retainers).
Comparison between removable and fixed retainers.
Comparison between dental school patients and private patients on the above issues.

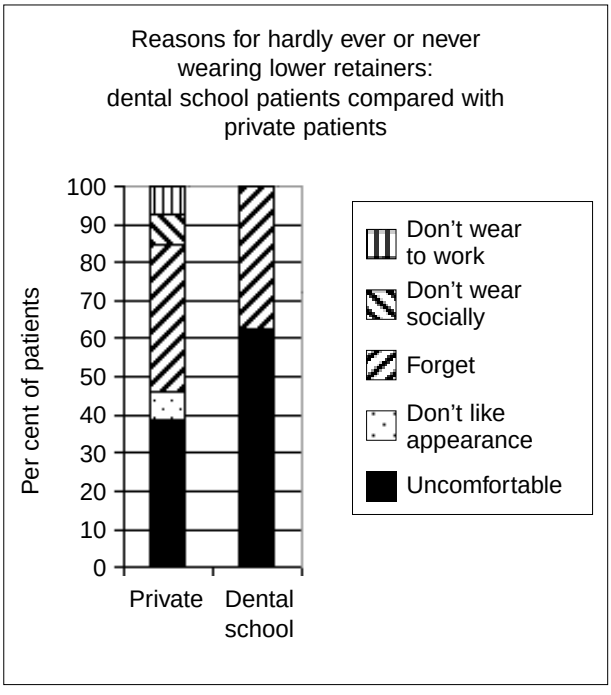
Results

A total of 52 completed questionnaires was received from 300 selected dental school patients, representing a response rate of 17 per cent. Twenty five questionnaires (approximately 10 per cent) were undelivered because of a change in address. One hundred and eighteen questionnaires were received from 240 private patients, representing a response rate of approximately 49 per cent. The overall response rate was 31 per cent.

Altogether, approximately 42 per cent stated they wore their upper removable retainers exactly as instructed. The common reasons for hardly ever or not wearing upper retainers were forgetfulness and discomfort. Dental school patients and private



Overall pattern of reasons for not wearing lower retainers



Comparison between dental school and private patient groups

Figure 2. Reasons for hardly ever or never wearing lower removable retainers.

patients differed in their main reasons for non-compliance. Dental school patients did not have any predominant reasons for not wearing upper retainers whereas about half of the private patients claimed they forgot to wear their upper retainers (Figure 1).

Compliance in wearing lower removable retainers was similar to that for upper removable retainers. The common reasons for not wearing lower retainers were discomfort and forgetfulness. Over 60 per cent of dental school patients claimed discomfort as their main reason for not wearing lower retainers. On the other hand, private patients did not have any predominant reasons for noncompliance (Figure 2).

About 16 per cent of respondents found their upper retainers very comfortable to wear. About 32 per cent of patients felt very comfortable while wearing lower retainers. By grouping retainers into two main types, fixed and removable, the results showed that a higher percentage of patients who were wearing or had worn fixed retainers (77 per cent upper and 85 per cent lower) found their retainers very comfortable or comfortable to wear compared with removable retainers (48 per cent upper and 48 per cent lower) (Figure 3).

There were differences between dental school patients and private patients in the perceived comfort level of wearing retainers. More private patients found their retainers very comfortable to wear (20 per cent upper and 38 per cent lower) compared with dental school patients (5 per cent upper and 21 per cent lower). This indicated that, in general, private patients found their retainers more comfortable to wear than dental school patients (Figure 4).

The graphical results showed a positive relationship between compliance in wearing upper retainers and a patient's perceived comfort level. A higher proportion (78 per cent) of those who felt very comfortable with their retainers wore their upper retainers exactly as instructed. On the other hand, none of those respondents who felt very uncomfortable with their upper retainers wore their retainers exactly as instructed; about 60 per cent of these respondents (those who felt very uncomfortable with retainers) wore upper retainers more or less as instructed and the remainder hardly ever or never wore their upper retainers (Figure 5). With regard to lower retainers, it was difficult to identify the relationship between compliance and a patient's perceived comfort level.

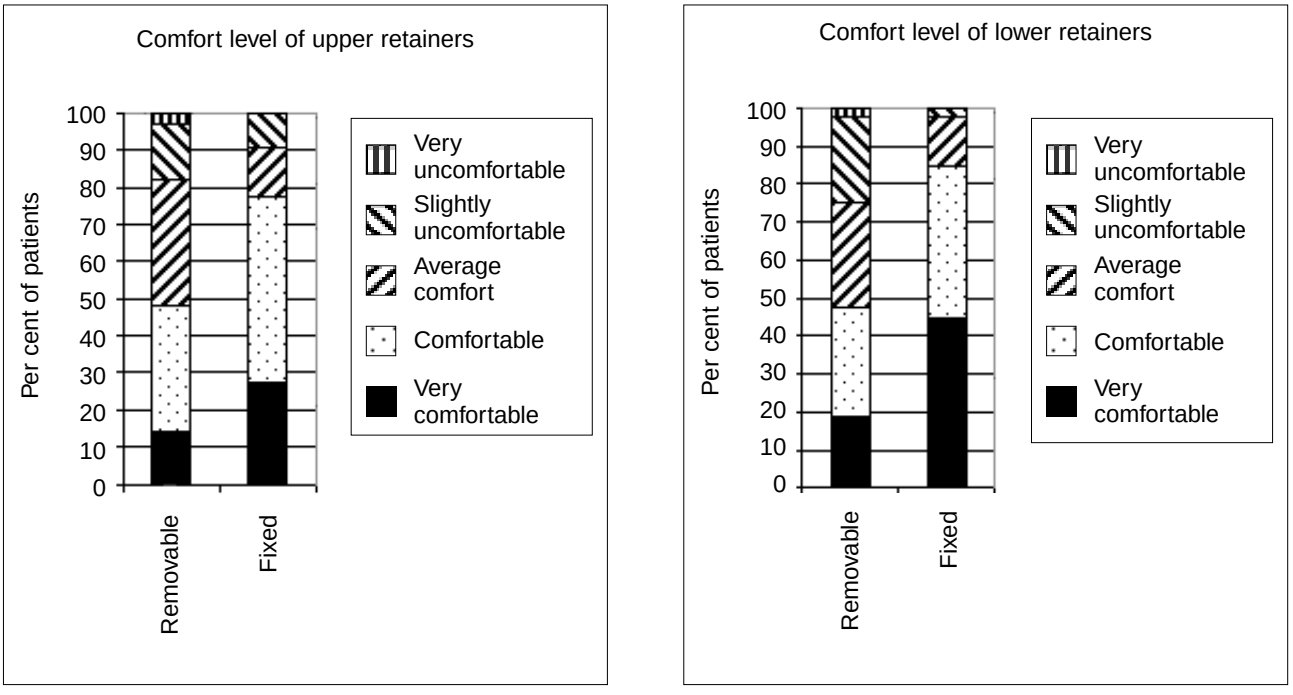


Figure 3. Comparison of comfort level between fixed and removable retainer types.

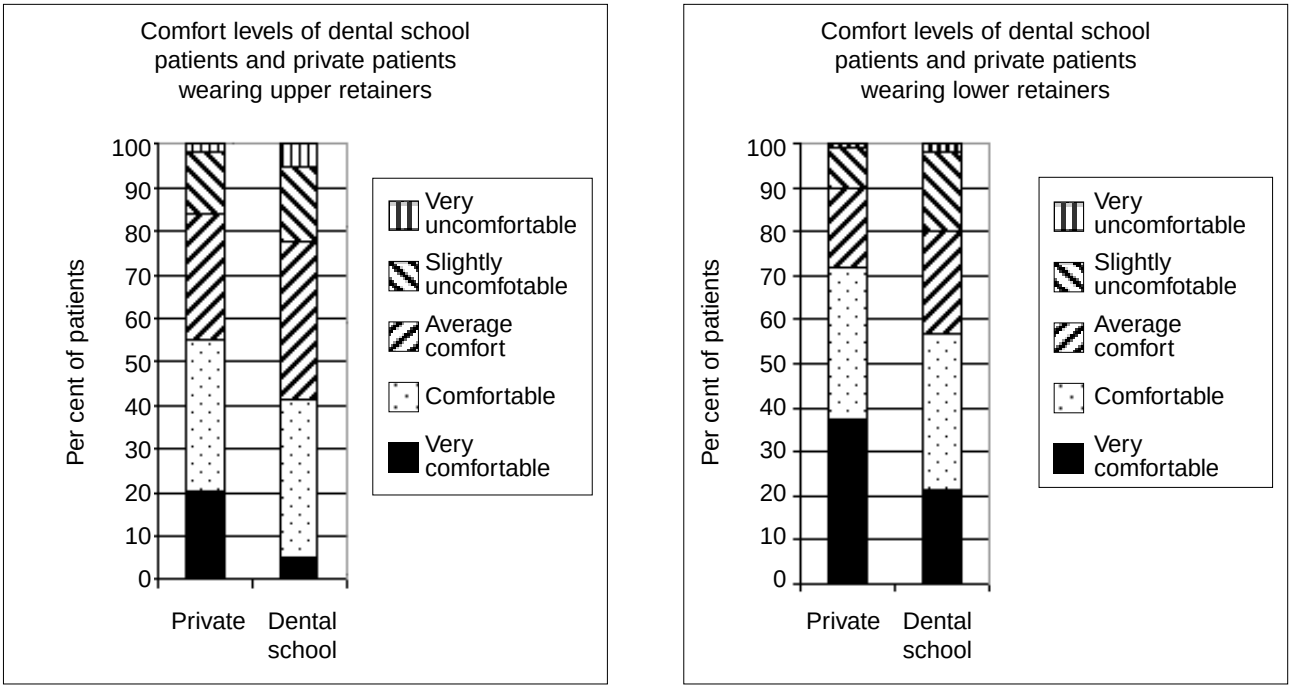
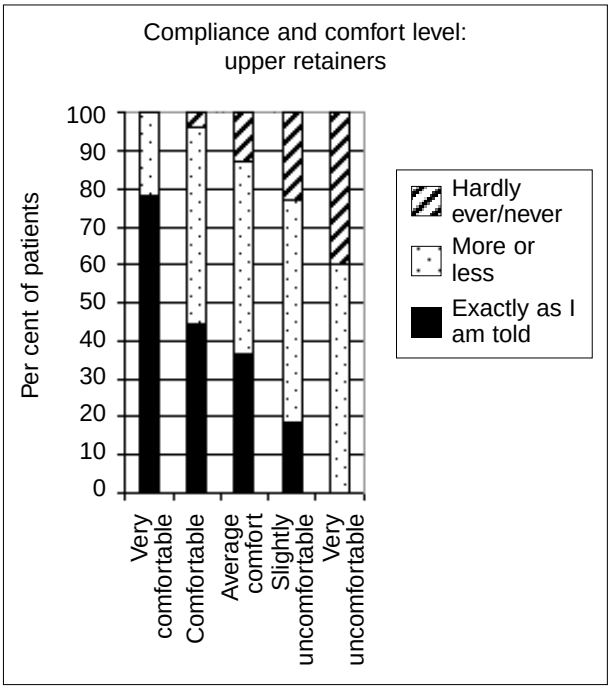


Figure 4. Comparison between dental school and private patient groups – comfort levels.



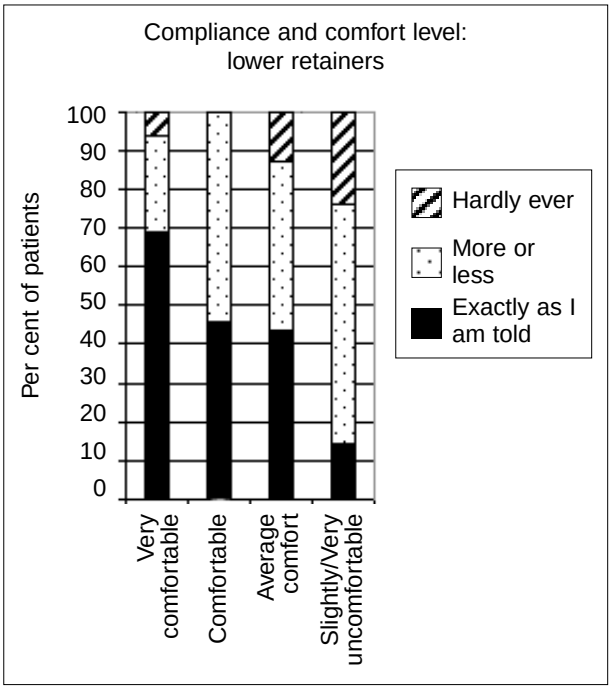
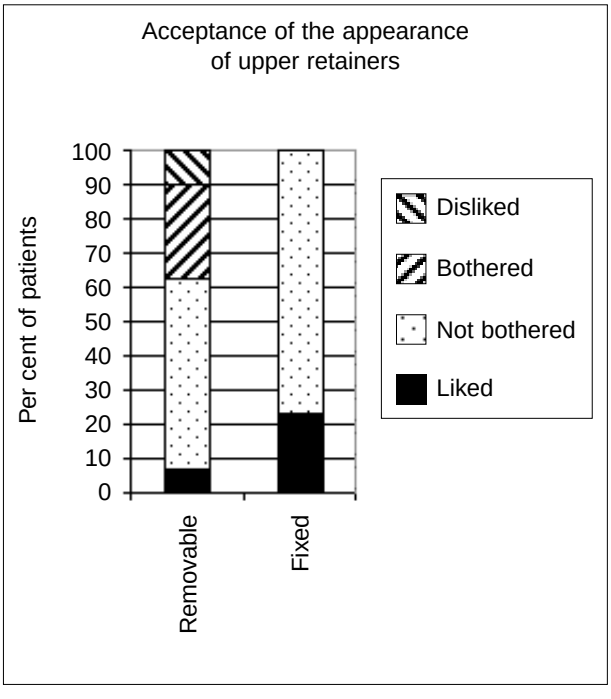


Figure 5. Relationship between compliance and comfort level.



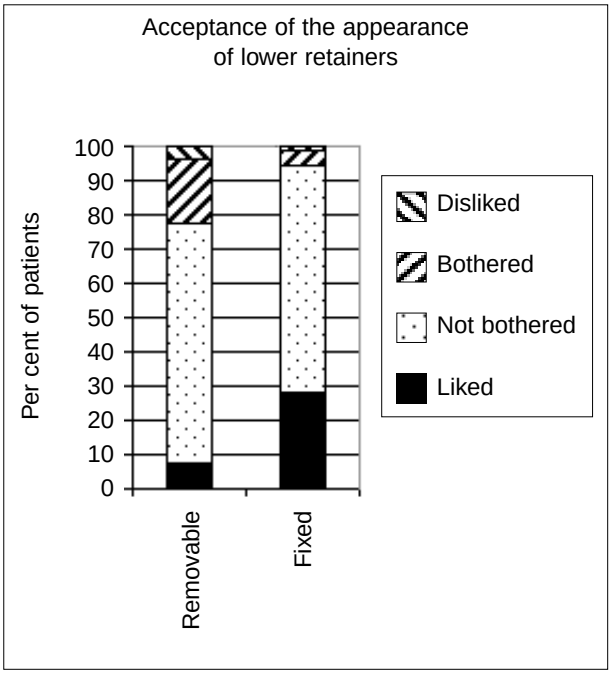


Figure 6. Comparison of acceptance of the appearance of retainers between fixed and removable retainer types.

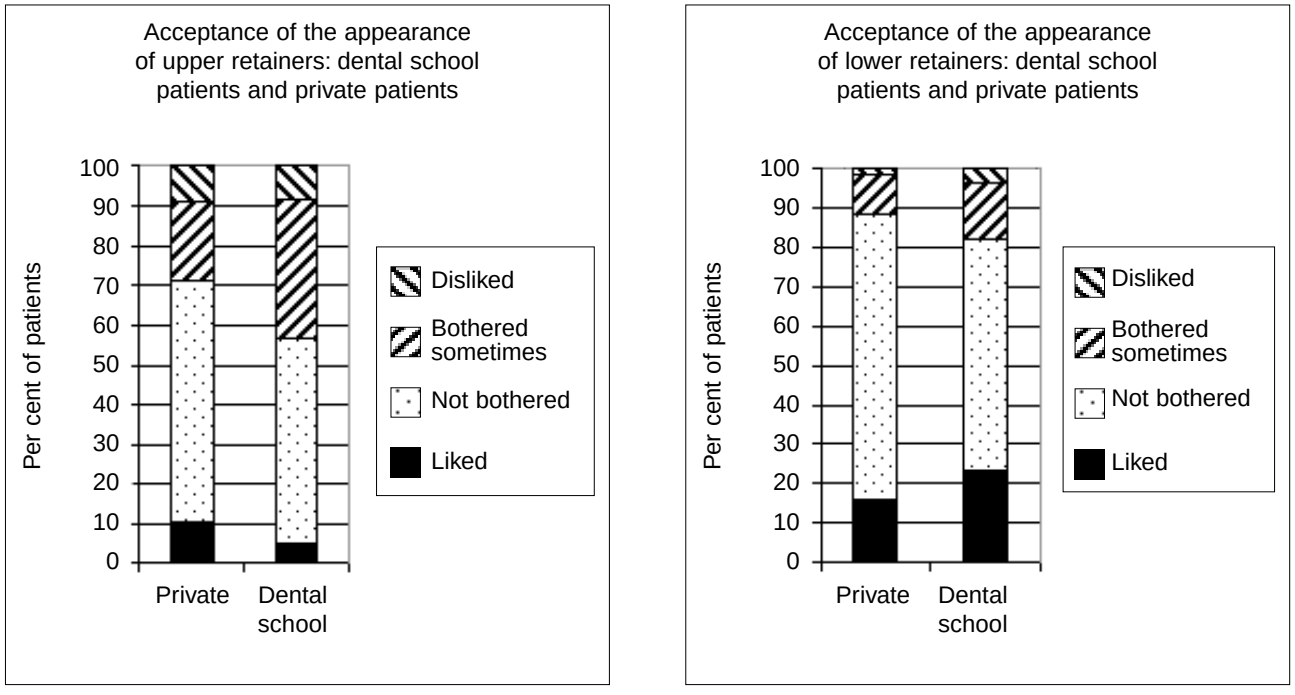


Figure 7. Comparison between dental school and private patient groups of the acceptance of the appearance of retainers.

Overall, 58 per cent of the respondents stated that they were not bothered by the appearance of their upper retainers and 68 per cent were not bothered by the appearance of lower retainers. The majority of respondents (100 per cent upper and 96 per cent lower) who were wearing or had worn fixed retainers claimed they liked their retainers or were not bothered by the appearance of their retainers (Figure 6). There were differences between private patients and dental school patients in the acceptance of the appearance of both upper and lower retainers. More private patients (10 per cent) liked the appearance of upper retainers compared with dental school patients (5 per cent). In contrast, a higher percentage of dental school patients (23 per cent) liked the appearance of lower retainers compared with private patients (16 per cent) (Figure 7).

There was a positive relationship between compliance and acceptance of the appearance of upper retainers. A high percentage (74 per cent) of compliant patients (wear retainers exactly as instructed) liked their retainers or were not bothered by the appearance of their retainers. On the other hand, a high percentage (67 per cent) of noncompliant patients disliked or were bothered by the look of their retainers (Figure 8). The graphical analyses did not show any strong relationship between compliance and the patients' acceptance of the appearance of lower retainers.

Discussion

One of the reasons for a much lower response rate (17 per cent) of dental school patients compared with private patients was the incorrect address of those selected participants who had not notified their new addresses when they relocated. Other possible reasons for not responding to the survey were that some patients were from a lower socioeconomic group, less dentally aware, less enthusiastic and/or less compliant towards dental treatments. Because of the low response rates, there would be non-response bias. Formal mathematical statistical tests were not applicable, as they would not produce reliable results. However, the graphical analyses could provide some insights into the results.

The results showed there were positive relationships between compliance, comfort level and acceptance of the appearance of upper retainers. With regard to lower retainers, the difficulty of identifying the relationship between compliance and a patient's

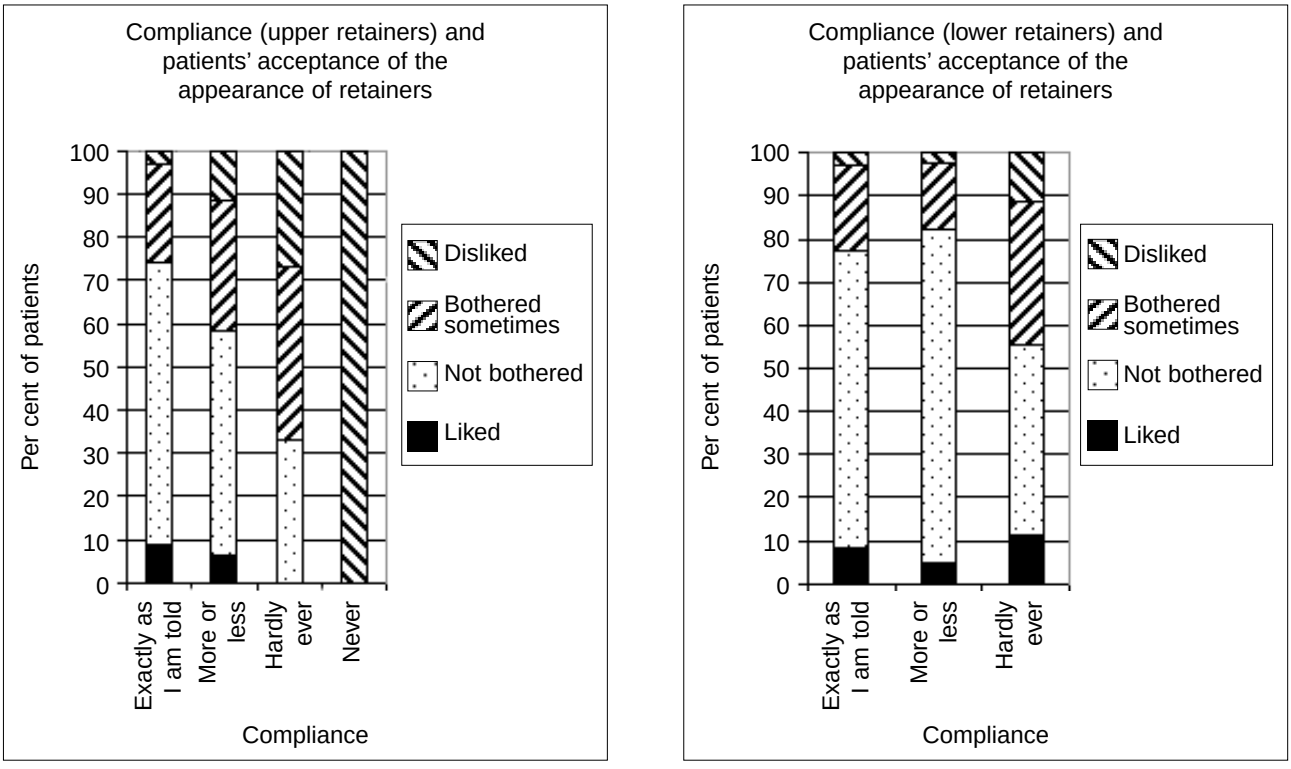


Figure 8. Relationship between compliance and acceptance of the appearance of retainers.

perceived comfort level might be due to the respondents' inconsistency in assessing their compliance and comfort levels. A higher comfort level and acceptable appearance were associated with higher compliance rates. This supported the findings of Sergl *et al.*[13] that acceptance of the orthodontic appliance and treatment in general may be predicted from the discomfort experienced.

Higher proportions of patients wearing fixed retainers liked the appearance of their retainers and found them comfortable to wear, compared with those wearing removable retainers. Better aesthetics and comfort were the possible reasons for this preference. Furthermore, unlike removable retainers, patients cannot forget to wear or lose their fixed retainers. Our results are in agreement with findings of high rates of acceptance of bonded lingual retainers (particularly in adults) by Dahl and Zachrisson[1] and high patient satisfaction with bonded labial retainers by Axelsson and Zachrisson.[2] Cerny[3] also reported that more patients found fixed lingual retainers more comfortable than removable retainers.

There were differences between the dental school and private patient groups in compliance, reported comfort levels, acceptance of the appearance and reasons for noncompliance. Private patients appeared to be more compliant than dental school patients. Private patients are more likely to be from high socioeconomic groups so they may be more compliant with the orthodontic instructions. This assertion needs further investigation. A higher proportion of dental school patients also found their retainers less comfortable to wear compared with private patients. This was probably because a higher proportion of dental school patients wearing removable retainers, compared with private patients and as stated earlier, found removable retainers less comfortable to wear. The main reason given by dental school patients for noncompliance was also discomfort and that given by private patients was forgetfulness. The results showed that more dental school patients were not happy with their retainers. This may be due to the use of removable acrylic retainers that were more visible.

It should be pointed out that apart from comfort level and acceptance of the appearance of retainers, other factors not covered in this study may also influence compliance. Motivation may be a very important factor. A strongly motivated patient may be

compliant and willing to endure inconvenience and discomfort while wearing retainers.

The research findings of Cucalon,[11] Clemmer[8] and Starnbach[10] indicated girls were more compliant with dental instructions than boys. Starnbach pointed out that girls tended to mature earlier than boys and would be more interested in attaining an excellent result through cooperation. Clemmer claimed that girls, being more sensitive to dentofacial attractiveness, were better cooperators than boys. One might, therefore, assume that aesthetics was a motivator and that girls are more compliant in wearing retainers.

Research by Allan[5] and Weiss[6] indicates patients under the age of 14 are more cooperative because young patients are probably more obedient to their parents' advice or orthodontists' instructions.

There are other factors which help improve motivation, and hence, compliance. Good relationships between orthodontists and patients/parents, parents and children[7] and the orthodontists' communication skills[15] are positive motivators that help improve compliance.

In summary, compliance in wearing removable retainers is related to a patient's perceived comfort level and the acceptance of the appearance of the retainer. However, other important factors influencing compliance cannot be ruled out. Patients in this sample did find fixed retainers more comfortable and preferred the appearance of fixed retainers over the removable retainers. To avoid the issue of compliance in wearing retainers, fixed retainers should be used, if possible.

Conclusions

For this sample, there was a strong relationship between compliance and comfort level in wearing upper removable retainers. The higher the comfort level and the more acceptable the appearance, the better were the compliance rates. No strong relationships were identified in the case of lower removable retainers.

Higher proportions of patients found fixed retainers more comfortable to wear and were more willing to accept the appearance of fixed retainers than removable retainers.

In general, a higher proportion of dental school patients was not satisfied with their retainers, as reflected in their relatively low compliance in wearing removable retainers, low acceptance of appearance and low comfort level. The main reason given by dental school patients was discomfort and that given by private patients was forgetfulness.

Acknowledgments

This study was supported by the Australian Society of Orthodontists' Foundation for Research and Education Inc. The authors would like to thank Dr Olena Kravchuk of the School of Land and Food Science at The University of Queensland, for her statistical advice. The authors would also like to thank all those orthodontists who helped distribute questionnaires and all patients who participated in this survey.

Corresponding author

Emeritus Professor T. J. Freer
School of Dentistry
University of Queensland
200 Turbot Street
Brisbane, Queensland 4000
Australia
Tel: (+61 7) 3365 8059
Fax: (+61 7) 3365 8199
Email: t.freer@uq.edu.au

References

1. Dahl EH, Zachrisson BU. Long-term experience with direct-bonded lingual retainers. J Clin Orthod 1991;25:619–30.
2. Axelsson S, Zachrisson BU. Clinical experience with direct-bonded labial retainers. J Clin Orthod 1992;26:480–90.
3. Cerny R. Permanent fixed lingual retention. J Clin Orthod 2001;35:728–32.
4. Stormann I, Ehmer U. A prospective randomised study of different retainer types. J Orofac Orthop 2002;63:42–50.
5. Allan TK, Hodgson EW. The use of personality measurements as a determinant of patient cooperation in an orthodontic practice. Am J Orthod 1968;54:433–40.
6. Weiss J, Eiser HM. Psychological timing of orthodontic treatment. Am J Orthod 1977;72:198–204.
7. Bartsch A, Witt E, Sahm G, Schneider S. Correlates of objective patient compliance with removable appliance wear. Am J Orthod Dentofacial Orthop 1993;104:378–86.
8. Clemmer EJ, Hayes EW. Patient cooperation in wearing orthodontic headgear. Am J Orthod 1979;75:517–24.
9. Richter DD, Nanda RS, Sinha PK, Smith DW, Currier GF. Effect of behaviour modification on patient compliance in orthodontics. Angle Orthod 1998;68:123–32.
10. Starnbach HK, Kaplan A. Profile of an excellent orthodontic patient. Angle Orthod 1975;45:141–5.
11. Cucalon A, Smith RJ. Relationship between compliance by adolescent orthodontic patients and performance on psychological tests. Angle Orthod 1990;60:107–14.

12. El-Mangoury N. Orthodontic cooperation. Am J Orthod 1981;80:604–22.
13. Sergl HB, Klages U, Zentner A. Pain and discomfort during orthodontic treatment: causative factors and effects on compliance. Am J Orthod Dentofacial Orthop 1998;114: 684–91.
14. Doll GM, Zentner A, Klages U, Sergl HG. Relationship between patient discomfort, appliance acceptance and compliance in orthodontic therapy. J Orofac Orthop 2000;61:398–413.
15. Nanda RS, Kierl MJ. Prediction of cooperation in orthodontic treatment. Am J Orthod Dentofacial Orthop 1992; 102:15–21.