

SCIENTIFIC
SECTION

Patients' motivations for treatment and their experiences of orthodontic preparation for orthognathic surgery

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Objective: To determine patients' motivations for undergoing orthognathic surgery and their experiences of the orthodontic aspects of this treatment.

Design: Retrospective questionnaire survey using a patient-centred measure.

Setting: Thirteen National Health Service (NHS) hospital orthodontic departments.

Subjects: Three-hundred-and-twenty-six patients (58% response rate) who underwent orthognathic surgery during the period 1 January 1995 to 30 September 2001 completed a questionnaire.

Main outcome measures: Motivations for treatment and perception of information about treatment and experiences of orthodontic treatment.

Results: Major motivations for treatment were to have straight teeth (80%), to prevent future dental problems (69%) and to improve self-confidence (68%). Females sought treatment to improve self-confidence and their smile. Males wanted treatment to improve their social life. Most of these issues had improved following surgery. Most (94%) respondents felt well-informed about their orthodontics. However, 36% wore braces for longer than they expected. Males and younger patients knew less about the duration of treatment than other groups. Fifty-eight per cent of subjects found their braces difficult to clean and 9% reported that they were very painful. Older patients experienced fewer problems wearing braces than younger patients.

Conclusions: Improving dental appearance and preventing future dental problems are major motivators for orthognathic patients. Although patients felt well informed about what to expect from their orthodontic treatment, a significant proportion, particularly younger patients and males, were surprised at the length of treatment and the need to wear retainers. This suggests that orthognathic patients might benefit from better information regarding the orthodontic aspects of their care.

Key words: Motivations for treatment, orthodontic treatment, orthognathic surgery, patient information, patient satisfaction

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Introduction

Doctors and dentists are expected to produce evidence of the quality of care they are delivering. Clinicians need to be able to demonstrate to commissioners and managers that, not only are they producing good clinical outcomes, but also that the patient's experience of treatment delivery is good. Indeed, some may consider the latter to be a more important outcome to assess, since it is well recognized that most patient complaints are concerned with poor treatment delivery.

Combined orthodontic-orthognathic surgical treatment is unusual because treatment is usually undertaken

at the request of the patient to improve aesthetics or function,¹⁻⁶ rather than for the prevention or treatment of disease. Since orthognathic cases form a significant part of the hospital orthodontist's caseload,⁷ it is particularly important that they are able to demonstrate that this type of treatment is both effective and beneficial to patients. Although clinical measures (for example, the Peer Assessment Rating⁸) are used routinely to assess the clinical outcomes of orthognathic treatment, data about patient perception of the delivery and outcome of care are not regularly collected.

Patients have reported a wide range of benefits from orthognathic treatment, including psychosocial benefits

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such as increased self-esteem,^{3,4,9} as well as improvements to dental aesthetics^{4,5,10} and function.^{2,4,5,9} If, however, patients embark on treatment with unrealistic expectations they are more likely to be dissatisfied with the outcome of care.^{10,11}

Orthodontists play a pivotal role in the initial counselling of patients who are being considered for combined orthodontic–orthognathic surgical treatment. It is vital that patients' concerns are carefully explored before they embark on treatment. It is also essential that the patient is able to articulate those issues they feel will be improved by orthognathic treatment.

Another important influence on patient satisfaction is the quality of information that is provided about treatment. Many studies have shown that patients who are well-informed are more likely to be satisfied with the care they receive. Previous studies of orthognathic patients have focused on their perception of the quality of information that is provided on the surgical aspects of their treatment.^{2,3,6,10,12} Although orthodontic preparation takes up most of the total treatment time for orthognathic cases,^{13,14} little is known about what patients are told to expect during this part of their care. There is also a paucity of information about patients' experiences during the orthodontic treatment. Nurminen (1999),⁵ in a study of Finnish patients, found that, although the orthodontics was the most unpleasant part of orthognathic treatment for many, patients were satisfied with the information they were given on orthodontic treatment. It is not known whether patients in the United Kingdom (UK) have similar views and experiences.

Previous studies of patient satisfaction with orthognathic treatment have largely been based on questionnaires developed by clinicians.^{1,2,5,10,11,15} It is being increasingly recognized however, that patient satisfaction measures need to be based on issues of importance to the patients themselves. Although Broder *et al* (2000)⁶ identified issues to patients regarding the initial treatment decision-making process for orthognathic surgery, few studies have examined patient satisfaction with the total treatment process.

The aim of this study was to use a patient-centred measure, in the form of a postal questionnaire, to evaluate patient motivations for undergoing orthognathic treatment and their experiences of the orthodontic aspects of this treatment. The questionnaire was based on issues of importance to patients identified in a previous study¹⁶ using qualitative research methods.

Method and materials

Ethical approval for the study was obtained from the South West Multicentre Research Ethics Committee.

The research team contacted Consultant Orthodontists working at 13 NHS hospitals in the South West Region of England and invited them to identify patients who had undergone combined orthodontic–orthognathic surgical treatment at their units during the period of 1 January 1995 to 30 September 2001. Cleft and syndromic patients were excluded from the study, as were patients who underwent orthognathic surgery without orthodontic treatment. Patients who had surgical procedures not involving the tooth-bearing part of the jaws, for example, genioplasty alone, or who required orthognathic surgery following facial trauma were also excluded.

Members of the research team visited each hospital unit and examined the clinical notes of each subject identified for the trial. Details of the type of surgery, date of operation, date of birth and sex were recorded on a spreadsheet, and transferred into a database in SPSS¹⁷ for the analysis. To test the reliability of data recording, a member of the research team re-examined a random sample of 30 sets of clinical notes after a period of 6 weeks.

Subjects who met the inclusion criteria for the study were sent a study information sheet, a letter of invitation from their consultant orthodontist and a consent form, together with a stamped addressed envelope for their return. Subjects who indicated that they wished to participate were sent a copy of the questionnaire and a stamped addressed envelope for its return. The validity and test-retest reliability of the questionnaire had been confirmed in a previous study.¹⁶ Patients who failed to return a copy of the questionnaire after a period of 3 weeks were sent a reminder letter together with another copy of the questionnaire. A second reminder was sent to non-respondents 3 weeks after the first reminder. The responses to the questionnaires were entered directly into a database in SPSS,¹⁷ using double-entry to improve reliability.

Data analysis

Descriptive analyses were used to evaluate the responses of participants to each section of the questionnaire. The duration in years between the date of the operation and the date of the survey was calculated for each subject from the data. The age of the subject at operation was also calculated. The characteristics of participants and non-participants in the survey were compared using chi-squared tests for categorical data and Mann–Whitney *U*-tests for continuous data. To examine the data for recall bias, the subjects were divided into two groups based on the median time between the date of the survey and the date of surgery. The responses of the two groups

were compared. The associations between age at operation and patient experiences, and sex and patient experiences were also tested.

The questionnaire used in this survey is divided into six sections. The data about patient perception of the delivery of the surgical aspects of orthognathic treatment, and the benefits and side-effects of undergoing treatment have been reported elsewhere.¹⁸ This paper focuses on the participants' initial reasons for requesting treatment, their perception of the information that they were given at the start and during treatment and their experiences of orthodontic treatment. Examples of the questions are given in Appendix 1.

Results

A total of 618 patients from 13 centres were identified for inclusion in the study. Fifty-nine patients were uncontactable, therefore 559 subjects were invited to take part in the study. Three-hundred-and-fifty-nine patients indicated that they were interested in participating in the study. Of these, 326 completed and returned the questionnaire, giving a response rate of 58%. Seventy-four per cent ($n=240$) of the respondents were female.

Date of birth data were available for 319 (98%) participants. The age of respondents ranged from 16 years to 63 years (median = 24 years). Information about the date of surgery was available for 309 (95%) subjects. The median age at operation was 20 years (interquartile range 18 – 30 years). The median interval between the date of the survey and the date of the operation was 4 years (interquartile range 2–5 years).

Details of the surgical procedure were available for 277(85%) participants. Forty-four per cent ($n=123$) had

bimaxillary surgery, 39% ($n=107$) underwent mandibular surgery and 17% ($n=47$) had maxillary surgery only. Reliability tests applied to 30 questionnaires showed 100% agreement for recording date of operation, date of birth, sex and surgical procedure from the clinical notes.

The demographic and treatment characteristics of participants compared to non-participants were similar for all the characteristics tested except for sex. More females responded to the survey than males. [The probability was that females were more likely to participate than males ($p<0.001$). However, this is dependent on the number of females and males identified in the original sample]. It is therefore possible that the views of female patients are over-represented in this study. The data were also tested for recall bias. The respondents were divided into two groups based on the median time in years between the date of the survey and the date of the operation (4 years). No statistically significant differences were identified in the responses of the two groups.

Motivations for treatment

A total of 326 subjects answered the questions about motivations for seeking treatment and the problems they had experienced before undergoing orthognathic surgery. Table 1 shows the frequency of reasons given by respondents for requesting treatment. The most common reason given was to straighten the teeth (80%). Interestingly, over two-thirds of patients (69%) felt that by undergoing orthognathic treatment they would prevent dental problems in the future. By contrast, 5% of respondents were unaware that they had a problem before they were referred to the Consultant Orthodontist (Table 1).

Table 1 Reasons given by participants for seeking orthognathic surgical treatment (by age at operation and by sex)

Reasons for seeking treatment, $n=326$	Total sample, $n=326$	By age at operation (data available for 298 subjects)			By sex		
		<20 years $n=141$	≥ 20 years $n=157$	Chi-sq test (p)	Male $n=86$	Female $n=240$	Chi-sq test (p)
To improve my self-confidence	222 (68%)	94 (67%)	106 (68%)	1.000	51 (59%)	171 (71%)	0.044*
To improve my looks	205 (63%)	98 (70%)	88 (56%)	0.023*	51 (59%)	154 (64%)	0.516
To improve my smile	211 (65%)	94 (67%)	100 (64%)	0.544	45 (52%)	166 (69%)	0.006**
To improve my social life	62 (19%)	28 (20%)	26 (17%)	0.454	24 (28%)	38 (16%)	0.024*
To straighten my teeth	262 (80%)	112(79%)	126 (80%)	1.000	71 (83%)	191(80%)	0.636
To prevent future problems with my teeth	227 (70%)	105(74%)	104 (66%)	0.130	65 (76%)	162 (68%)	0.173
To improve my ability to eat	175 (54%)	79 (56%)	80 (51%)	0.354	47 (55%)	128 (53%)	0.900
To improve my speech	44 (13%)	23 (16%)	16 (10%)	0.123	15 (17%)	29 (12%)	0.269
I didn't think I had a problem	17 (5%)	6 (4%)	8 (5%)	0.791	5 (6%)	12 (5%)	0.781

There were significant differences in motivations for treatment between male and female participants in the survey (Table 1). Females were more likely to have sought treatment to improve their self-confidence and/or their smile. Males, however, wanted treatment to improve their social life and to prevent future problems with their teeth. Younger participants (aged less than 20 years at the time of surgery) were more likely to state that they had sought treatment to improve their looks than older patients (Table 1). The latter data should be treated with caution since no information was collected about the age of each subject at their initial consultation. Younger patients, in particular, may have been referred to the orthodontist some time before they started treatment.

Subjects were also surveyed about the problems that they had been experiencing before they underwent surgery. Table 2 shows that three-quarters (75%) of participants felt self-conscious about the appearance of their teeth; 70% were self-conscious about their facial appearance and two-thirds (63%) avoided smiling in photographs. Some subjects also reported functional problems before surgery. More than half (51%) said they had difficulty eating. The majority (65%, $n=109$) of respondents who reported having difficulty eating before their surgery said they felt embarrassed to eat in public before their operation. Female respondents were more likely to report negative experiences than males (Table 2).

Information about treatment

Participants in the survey were asked about the information they were given by hospital staff before deciding to go ahead with orthognathic treatment. They were also asked how well-informed they felt overall

about their care. The data about participants' perceptions of the information received on the surgical aspects of orthognathic care have been published elsewhere.¹⁸ This paper focuses on the information received by participants about the orthodontic aspects of orthognathic treatment.

The majority of subjects (93%) felt that they were given adequate information about wearing fixed appliances to enable them to decide whether to proceed with treatment or not. Subjects tended to be less satisfied however, with the information that they were given on the duration of treatment and the need to wear retainers (Table 3). When asked about the initial counselling that they received before starting treatment, only 54% ($n=176$) of participants could remember being given an information leaflet. The majority of subjects (93%, $n=154$) found this helpful. Around one third (37%; $n=121$) of participants reported that they had been shown pictures of someone who had undergone a similar procedure before they decided to undergo treatment. Again, most (93%, $n=110$) found this helpful. A small proportion (17%, $n=55$) of subjects had also been given the opportunity to meet someone who had undergone orthognathic surgery. Nearly all of these (95%, $n=52$) felt that this helped them to make a decision as to whether to proceed with orthognathic treatment or not. Generally, participants in this survey felt better informed about the orthodontic aspects of their treatment than they did about their surgical care (Table 3).

There were no major differences in the opinions of male and female respondents regarding the quality of information received about orthognathic treatment. Younger subjects tended to be less satisfied than older subjects about the information they were given about braces and the duration of treatment (Table 3). This

Table 2 Pre-treatment experiences related to their dentofacial dysmorphology reported by participants (by age at operation and by sex)

Experiences before surgery, $n=326$	Total sample, $n=326$	By age at operation (data available for 298 subjects)			By sex		Chi-sq test (p)
		<20 years $n=141$	≥ 20 years $n=157$	Chi-sq test (p)	Male $n=86$	Female $n=240$	
Avoided smiling in photographs	207 (63%)	84 (60%)	102 (65%)	0.181	42 (49%)	165 (69%)	0.001
Self-conscious about facial appearance	228 (70%)	105 (75%)	103 (66%)	0.072	49 (57%)	179 (75%)	0.002
Self-conscious about teeth	246 (75%)	106 (75%)	119 (76%)	0.504	54 (63%)	192 (80%)	0.002
Teased about appearance	200 (61%)	83 (59%)	95 (61%)	0.813	42 (49%)	158 (66%)	0.009
Distressed about being teased	174/200 (87%)	70/83 (84%)	84/95 (88%)	0.166	32/42 (76%)	142/158 (90%)	0.080
Had difficulty eating	168 (51%)	79 (56%)	74 (47%)	0.163	44 (51%)	124 (51%)	1.000
Was embarrassed to eat in public	109/168 (65%)	43/79 (54%)	53/74 (72%)	0.166	16/44 (36%)	93/124 (75%)	0.002

Table 3 Positive responses to questions about information received by participants at the beginning and throughout the treatment (by age at operation and by sex)

	Total sample <i>n</i> =326	By age at operation (data available for 296 subjects)			By sex		
		<20 years <i>n</i> =140	≥ 20 years <i>n</i> =156	Chi-sq test (<i>p</i>)	Male <i>n</i> =86	Female <i>n</i> =240	Chi-sq test (<i>p</i>)
Were given enough information about:							
Wearing braces?	302 (93%)	124(89%)	149 (96%)	0.012*	80 (93%)	222 (93%)	0.460
Duration of treatment?	274 (84%)	108(77%)	140 (90%)	0.003**	71 (83%)	203 (85%)	0.470-
Wearing retainers?	258 (79%)	106(76%)	127 (81%)	0.146	68 (79%)	190 (79%)	0.530
Surgery?	281 (86%)	116(83%)	142 (91%)	0.039*	78 (91%)	203 (85%)	0.107
Possible complications?	271 (83%)	113(81%)	132 (85%)	0.232	74 (86%)	197 (82%)	0.302
Felt well informed about treatment	<i>n</i> =326				<i>n</i> =86	<i>n</i> =239	
Braces	305 (94%)	128 (91%)	148 (95%)	0.166	80 (93%)	225 (94%)	0.536
Surgery	247 (76%)	104 (74%)	122 (78%)	0.327	67 (78%)	180 (75%)	0.373
Outcome	246 (76%)	103 (74%)	120 (77%)	0.374	68 (79%)	178 (74%)	0.208

may reflect a long lead-in period between the initial consultation and the start of active treatment in the younger group.

Experiences of orthodontic treatment

The final part of the questionnaire asked about participants' experiences of the orthodontic aspects of orthognathic treatment. The majority of subjects (56%, *n*=183) reported that they wore fixed appliances for more than 2 years; 38% (*n*=124) wore braces for 1–2 years and 10 (3%) subjects wore them for less than a year. Nine subjects could not recall how long they had worn their braces. Table 4 shows that approximately one third of subjects wore braces for longer than they were expecting to. A significant proportion (23%) of respondents were surprised that they were required to wear retainers at the end of their orthodontics. Male subjects and younger patients were more likely to have been surprised about the duration of their treatment than other groups (Table 4).

When participants were asked about their experiences of wearing braces, approximately one-third (35%) reported that they had felt self-conscious about wearing fixed appliances. Surprisingly, older subjects were no more likely to feel self-conscious than younger ones (Table 4). Nearly all the subjects (88%, *n*=288) in the survey reported that their braces were painful. For a small proportion of these (9% of total sample, *n*=30) the appliances were 'very painful'. Females and younger patients were more likely to describe wearing braces as 'very painful' than other groups (Table 4).

In the final section of the questionnaire patients were surveyed about their perceived benefits of undergoing orthognathic treatment. The results for the whole sample have been reported elsewhere.¹⁸ Most patients reported that the issues and concerns that had motivated them to undergo treatment had improved following surgery (Table 5). Furthermore, a significant proportion of patients who did not perceive that they had problems before treatment reported that several aspects of their lives had been improved by undergoing orthognathic

Table 4 Experiences of orthodontic treatment reported by participants (by age at operation and by sex)

	Total sample <i>n</i> =326	By age at operation (data available for 296 subjects)			By sex		
		<20years, <i>n</i> =140	≥ 20 years, <i>n</i> =156	Chi-sq test (<i>p</i>)	Male, <i>n</i> =86	Female, <i>n</i> =240	Chi-sq test (<i>p</i>)
Wore braces for longer than were expecting to	118 (36%)	63 (45%)	46 (30%)	0.003**	36 (42%)	82 (34%)	0.057
Surprised that had to wear retainers	75 (23%)	29 (21%)	39 (25%)	0.223	20 (23%)	55 (23%)	0.462
Felt self-conscious wearing braces	115 (35%)	51 (36%)	50 (32%)	0.251	26 (30%)	89 (37%)	0.173
Found braces were very painful	30 (9%)	12 (9%)	16 (10%)	0.377	4 (5%)	26 (11%)	0.068
Had difficulty cleaning their teeth	189 (58%)	92 (66%)	82 (53%)	0.014*	50 (58%)	139 (58%)	0.466

treatment. Although most of the reported benefits in the latter group were related to dental and facial appearance as one might predict, these patients also reported less obvious benefits of treatment such as improved self-confidence. Interestingly, patients who reported that one of their original motivations for undergoing surgery was to improve their social life were less likely to report that their needs had been met following treatment than other groups (Table 5).

Discussion

This study, based on a large sample of patients, has shown that patients undergo orthognathic treatment not only to improve their facial and dental appearance, but also because they believe that surgery will prevent dental health problems in the future. Most of the participants reported that the issues that had led them to seek treatment had improved following treatment. Although patients generally felt better informed about the orthodontic aspects of undergoing orthognathic treatment than they did about the surgery, many were surprised at the duration of treatment and the need to wear retainers at the end of orthodontic treatment. Surprisingly, older patients found wearing fixed appliances easier to cope with than younger patients.

This study is based on a retrospective postal questionnaire survey. The retrospective nature of the study presented a number of problems. For example, what people state as being their motivation after the event (i.e. surgery) may not necessarily be consistent with what

they would have reported before the event. There is, therefore, the potential that motivations are conditional on the status of pre/post surgery. In addition, to achieve an adequate sample a wide timeframe was chosen and some subjects were included who had undergone surgery up to 7 years previously. It is likely that, although we could find no particular evidence of this, the results of the study may be subject to recall bias, particularly regarding their motivations for treatment. Ideally, patients should be surveyed at the beginning of their treatment and then again at the end to find out whether their needs have been met. This method would be prohibitively expensive however, for a regional or national survey, but could be built into the routine audit cycle for orthognathic patients.

Another approach would be to sample patients who have been treated recently from a larger number of hospitals. This would enable a larger contemporary population to be surveyed, providing more up to date information about patients' views of the delivery of care. Since data about patient perceptions of orthognathic care were not available when we planned this study, it was difficult to calculate the sample size required to examine simple research questions. The study was also intended to be more descriptive than analytical because of the difficulties involved in obtaining valid data from clinical notes retrospectively. Future researchers, interested in the relationship between patient satisfaction and treatment factors, for example, can use the data collected in this study to inform their sample size calculations.

Table 5 Reported benefits of treatment compared with original motivations for treatment in patients who underwent orthognathic treatment in the South West Region 1995–2001

	Proportion of the sample reporting these benefits of orthognathic treatment								
	More confident, (n=264)	Better facial appearance, (n=280)	Improved smile, (n=271)	Social life improved, (n=108)	Teeth are straight, (n=280)	Future problems prevented, (n=216)	Eating better, (n=189)	Speech improved, (n=62)	No benefit, (n=14)
Proportion of the sample reporting the following Motivations for treatment									
Improve self-confidence	93%								86%
Improve looks		94%							57%
Improve smile			96%						79%
Improve social life				83%					0%
Straighten teeth					93%				86%
Prevent future problems						86%			93%
Improve eating							92%		50%
Improve speech								93%	0%
Not aware had a problem	77%	82%	77%	24%	77%	65%	77%	24%	17%
Total sample	81%	86%	83%	33%	86%	67%	58%	19%	4%

Although a significant proportion of patients were lost to follow up, a response rate of 58% was achieved in this study. This is typical for this type of study.¹⁹ Considering the mobility of this group of patients, who tend to be operated on just as they are about to leave school, however, this should be regarded as a good response rate for this population. The sample was selected from hospitals in the South West of England. This population may not be typical for the UK. Non-white ethnic groups, in particular, are likely to be under-represented. There is therefore a need to survey a representative sample from the country. This will enable national standards for patient perception of the delivery of orthognathic care to be developed.

Motivations for treatment

The major motivation for undergoing orthognathic treatment in this population was to improve appearance. This is similar to the findings of many previous surveys.^{1-3,6,10} Interestingly, the aspect of the appearance that most subjects wanted to change was the alignment of their teeth. Changing their 'looks' tended to be a secondary issue. Many orthognathic patients are unaware that they have a discrepancy in their facial skeleton when they first seek treatment and are surprised to learn that they need surgery. The option of 'camouflage' treatment²⁰ may need further discussion and consideration.

A large proportion of the sample reported that they underwent orthognathic treatment to prevent future problems with their teeth. This motivation for treatment has not been widely reported previously. Since this was a retrospective study it is difficult to ascertain whether participants in this survey held this belief from the beginning or whether they 'learned' this from interactions with clinicians during their treatment. With the exception of deep-bite cases associated with gingival stripping, there is little long-term evidence to support the view that orthognathic treatment improves dental health. This flimsy reasoning gives potential grounds for dissatisfaction and further study to establish how this perception arises could be helpful as there is little evidence to support it.

In common with other studies,^{1,5} this survey has shown that the motivations for undergoing orthognathic treatment vary in males and females. Girls are more likely to undergo treatment for internal psychosocial reasons, to improve their appearance and self-esteem, while boys are more practical, hoping that treatment will not only improve their social life, but will also prevent dental problems in the future. We also found that

younger patients had different motivations for treatment than older ones. Orthodontists need to appreciate that different groups may have different expectations of treatment so that they can tailor their counselling accordingly.

This study also shows that many patients who undergo orthognathic treatment have suffered social problems in the past. Not only are they self-conscious about their dental appearance, but functional problems may lead to social embarrassment, for example, when eating. This issue to patients has not been reported elsewhere and was included in the questionnaire because it arose in the focus groups that were undertaken to inform the questionnaire development. This illustrates well the benefits of undertaking qualitative research when developing measures of satisfaction. Since a discrepancy of the jaw position is seen as part of normal biological variation, rather than a particular medical or developmental condition, these patients are also less likely to attract sympathy for their condition and may be teased more often.²¹ A significant proportion of our sample, particularly girls had been teased at some time about their appearance and many were distressed by this. Studies have shown that these feelings can persist into adulthood and so orthognathic surgery may provide a real benefit to a patient's psychosocial well-being.²²

By contrast, some of our sample were unaware that they had a problem with their teeth until they were alerted to this by their dentist. This finding is similar to studies by Kiyak *et al.*¹ and Broder *et al.*,⁶ and can produce a difficult dilemma for orthodontists: does one alert a patient to a problem they don't know they have? It was interesting to observe that, although some subjects didn't perceive that they had any problems before undergoing surgery, most felt that they had benefited from their treatment. In addition, it should be noted that this sample contained only those who elected to have surgery. It could be equally valuable to establish why those who elected not to undergo surgery made that decision.

Patient information

The majority of patients in this survey felt that they had been given enough information about what to expect from their treatment before they decided to go ahead. Despite this, many reported that they wore braces for longer than they were expecting. Some participants were also unaware that they needed to wear retainers at the end of their treatment. It is difficult to put these results into context because there have been few studies of

patient perception of information about orthodontic treatment, however, this may be a reflection of the general tendency amongst orthodontists to underestimate treatment times. It may also be difficult for an orthodontist to predict the time which some tooth movements, for example, space closure, will take in an individual patient. This can lead to further confusion and dissatisfaction for patients.

Many studies^{2,6,10,23} recommend that patients are given written information on their treatment. Only around half of the respondents in this survey however, remembered being given a leaflet about their treatment. Since this is a retrospective survey, and some respondents started their treatment up to nine years earlier, it is impossible to know whether the latter group were given a leaflet or not. Harwood and Harrison (2004)²⁴ have shown that many orthodontic treatment information leaflets are difficult for patients to understand. It is possible therefore that these subjects were given written information about their treatment, but this failed to have an impact and so was forgotten.

Previous studies^{6,10,16} have shown that orthognathic patients would like to have the opportunity to meet patients who have undergone a similar procedure. Although only a small proportion of the patients surveyed had had the opportunity to meet other patients, nearly all of these felt that this had been helpful. Arranging for new patients to talk to patients who have undergone treatment may be difficult to organize as part of a busy joint clinic and also raises issues of patient confidentiality. There would however, appear to be some patients who would find this very helpful.

Experiences of orthodontic treatment

Little is known, in general, about patients' experiences of wearing fixed orthodontic appliances. Nurminen *et al.*⁵ reported that orthognathic patients found the orthodontic part of their treatment painful and unpleasant. Nearly all the subjects in the present study reported that their braces were sometimes painful. For a small, but significant group of patients, this pain was severe. Since most patients develop pain after they leave the orthodontic surgery, orthodontists may underestimate how much they suffer.

It was interesting to observe in this survey that older patients were no more self-conscious about wearing braces than younger ones. This could be because most of the patients in the younger age group would not have started wearing braces until after their peer group had completed treatment. This is a particular problem in the

treatment of orthognathic patients, especially boys. This study is based on patients who successfully completed orthognathic surgery. Prove *et al.*²⁵ have shown that children wearing orthodontic appliances can be the subject of teasing and name-calling. It is not known how many patients fail to complete treatment or decide not to go ahead with orthognathic treatment in the first place because of concerns about wearing braces. Again, it might be helpful for patients to talk to other patients for realistic advice about what to expect during their treatment.

Conclusion

- Dental appearance and preventing future dental problems are major motivators for patients to undergo orthognathic treatment. The latter may require further investigation as it is unclear how this perception comes about.
- Most of the patients surveyed felt that their pre-treatment expectations were met.
- Although orthognathic patients tend to feel better informed about the orthodontic part of their treatment than the surgery, a significant proportion, are surprised about the duration of treatment and the need to wear retainers at the end. Many also found their appliances to be painful or very painful. Orthognathic patients might benefit from more information about these aspects of their care at the start of treatment.
- The patients surveyed would also have liked the opportunity to meet other patients.

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Contributors

Alison Williams was responsible for study design, obtaining funding, administering the survey, data analysis and interpretation, and drafting, critical revision and final approval of the article. Hemendra Shah

was responsible for data entry and drafting, critical revision and final approval of the article. Helen Travess was responsible for the design of the questionnaire, data entry, and critical revision and final approval of the article. Jonathan Sandy gave advice on the study design and data analysis, and was responsible for the critical revision and final approval of the article.

Alison Williams is the Guarantor.

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Appendix 1**A. Reasons for Orthodontic / Surgical treatment**

A1. Which of the following would you say were reasons you felt for wanting treatment?

Please tick "Yes" or "No" for each.

- | | | | | | |
|----|--|-----|--------------------------|----|--------------------------|
| a) | To improve my self confidence | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> |
| b) | To improve my looks | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> |
| c) | To improve my smile | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> |
| d) | To improve my social life | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> |
| e) | To straighten my teeth | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> |
| f) | To prevent future problems with my teeth | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> |
| g) | To improve my ability to eat | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> |
| h) | To improve my speech | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> |
| i) | I didn't think I had a problem/ reason | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> |
-

A2.

- | | | | | | |
|------|---|-----|--------------------------|----|--------------------------|
| i). | Were you ever teased about your appearance? | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> |
| | | No | <input type="checkbox"/> | | |
| ii). | If yes , did this distress you? | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> |
-

A3. Were you embarrassed about eating in public? Yes No

A4.

- | | | | | | |
|-----|------------------------------------|-----|--------------------------|----|--------------------------|
| i). | Did you have difficulty in eating? | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> |
| | | No | <input type="checkbox"/> | | |
-

B. Before you had any treatment

B3. Did you avoid smiling in photographs? Yes No

B4. Were you self conscious about the appearance of your teeth? Yes No

B5. Were you self conscious about your facial appearance? Yes No

- B6.**
- i). Were you shown photographs of patients who had had similar treatment to you, to help you make a decision? Yes No
- If no, go to section B7**
- ii). **If yes, did you find this helpful?** Yes No
-

- B7.**
- i). Did you meet anyone who had had similar treatment to you before you started your treatment, as a result of the hospital putting you in contact? Yes No
- If no, go to section B8**
- ii). **If yes, did you find this helpful?** Yes No
-

- B8.**
- i). Were you given an information leaflet to read about your type of treatment? Yes No
- If no, go to section B9**
- ii). **If yes, do you think his helped?** Yes No
-

- B9.**
Were you given enough information to help you to make a decision about having treatment, with regard to
- Please tick "Yes" or "No" for each*
- a) Wearing braces Yes No
- b) Duration of treatment Yes No
- c) Wearing retainers Yes No
- d) Surgery Yes No
- e) Possible complications involved with treatment Yes No
-

C. Wearing braces.

- C1.**
- i). For approximately how long did you wear braces stuck to your teeth?
Please tick ONE box only
- 0 – 1 years
- 1 – 2 years

- 2 – 3 years
- longer
- can't remember

ii). Was this
longer than you expected / as you expected / shorter than you expected?

C2.

i). Did you experience ulcers in your mouth
as a result of wearing braces? Yes

No

If no, go to section C3

ii). **If yes, were you given wax to use to ease the
problems of ulcers in your mouth?**

Yes No

C3. Overall, how painful did you find wearing braces?

Very painful / sometimes painful / not at all painful

C4. Did you have difficulty in cleaning you teeth?

Yes No

C6. Were you self conscious about wearing your braces?

1 2 3 4 5
Not at all Very self conscious

C7. Did you have retainers fitted after the braces were removed?

Yes No

C8. Were you expecting to have to wear retainers?

Yes No

J. Information given

J1. Overall, how well informed about your treatment did you feel?

	Very well				Not at all
a. Braces	1	2	3	4	5
b. Surgery	1	2	3	4	5
c. Outcome	1	2	3	4	5
