Investigating Perceptions of Patient-Centred Care in Orthodontics

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Abstract

Objectives
To assess and compare patient and clinician perceptions of patient-centredness for adults about to commence active orthodontic treatment; and to assess if the following variables affected perceptions of patient-centredness: patient gender and age, clinician gender and grade, stage of treatment.

Design
A prospective, cross-sectional questionnaire study.

Setting
Eastman Dental Hospital, UCLH NHS Foundation Trust.

Participants
112 adult patients and 30 clinicians completed 224 questionnaires (112 patient and 112 clinician questionnaires).

Methods
A validated, dyadic questionnaire, the '9-Item Patient Perception of Patient-Centredness' (PPPC) was used to collect data from both patients and their corresponding clinicians following initial assessment or records/treatment planning consultations. Total PPPC scores (possible score range: 9 to 36) were calculated for each patient and clinician to ascertain the extent to which they perceived they were engaging in patient-centredness, where higher scores corresponded with better performance.

Results
Patients and clinicians perceived high engagement in patient-centredness with median scores of 32 and 29 out of 36, respectively. There was a statistically significant difference between total scores with patients perceiving consultations to be more patient-centred than clinicians ($p<0.001$). None of the variables (patient gender and age, clinician gender and grade, stage of treatment) were statistically significant.

Conclusions
Patients and clinicians both perceived high engagement in patient-centredness. Patients perceived consultations to be significantly more patient-centred than clinicians ($p<0.001$).

INTRODUCTION

Patient-centred care (PCC) involves clinicians and patients working together in partnership to support individuals to develop the knowledge, skills and confidence needed to effectively manage, and make informed decisions about, their own health and healthcare (The Health Foundation, 2014). Internationally, many health services aspire to deliver PCC and this is reflected in documents such as the World Health Organization's 'Framework on integrated, people-centred health services' (2016). Within the UK, it has become a core value of NHS England and is now not only an ethical but also a legal obligation to involve patients in healthcare (Health and Social Care Act, 2012).

Within Dentistry, the UK General Dental Council (GDC) publication (2013), '*Standards for the Dental Team*' sets out nine standards that all dentists should adhere to and the principles of PCC are found within all of these standards. Although interestingly, to date, it has not been fully integrated into the undergraduate or postgraduate dental curricula (Scambler et al., 2015) and this may contribute to the lack of universal understanding of the concept of PCC in Dentistry (Mills et al., 2014).

Many studies have explored the impact of PCC on outcomes and the majority have found beneficial impacts for patients, clinicians and funders of care. These benefits include improved patient satisfaction, better adherence to treatment regimes, improved clinician satisfaction, reduced use of limited resources and fewer malpractice complaints (Stewart et al., 2000; Little et al., 2001; Dwamena et al., 2012; Ersöz et al., 2016).

When measuring patient-centred care, patient perception measures, as scored by the patients themselves, are increasingly used to evaluate outcomes, as opposed to third party rating of the clinical encounter. These measures are sensitive to healthcare delivery changes; inexpensive as they can often be questionnaire based; more reliable than physician review methods and may be suitable for quality improvement initiatives (Rosenthal and Shannon, 1997). Many studies have shown that patients' own perceptions are more successful in predicting outcomes than either observation or physicians' perceptions (Stewart et al., 2000; Little et al., 2001; Stewart et al., 2004).

Until now, there has been limited research investigating PCC in orthodontics. As many orthodontic procedures are elective, it is imperative that the risks and benefits of orthodontic treatment are considered in line with the patient's values and preferences to ensure that patients are truly at the heart of their care.

Specific aims and null hypothesis

The aim of this study was to assess patient and clinician perceptions of patient-centredness for adult patients about to start active orthodontic treatment within a central London NHS teaching hospital.

Specifically:

i. To compare patient and clinician perceptions of patient-centredness.

ii. To assess if the following variables affect perceptions of patient-centredness: patient gender and age, clinician gender and grade, stage of treatment.

The null hypothesis for this study was that there was no difference in patient and clinician perceptions of patient-centredness as measured by the median total 9-item PPPC score.

METHODS

This was a prospective, cross-sectional questionnaire study conducted in a large post-graduate teaching hospital. Research Ethics Committee approval (REC Reference: 18/NW/0592) was granted by the Ethics Committee and Health Research Authority and Health and Care Research Wales and Research and Development approval was granted by the Joint Research Office, University College London Hospitals, NHS Foundation Trust. All participants gave informed, written consent to participate in the study and the study complied with the World Medical Organization's Declaration of Helsinki.

A validated, psychometrically tested, dyadic questionnaire, the '9-Item Patient Perception of Patient-Centredness' (9-item PPPC) was used to assess both patients' and clinicians' perceptions of how patient-centric the consultation was, and the primary outcome measure was the patient and clinician total PPPC score (Stewart et al. 2004). This dyadic questionnaire is one of the most widely used scales to measure patients' perceptions of PCC in medicine internationally and it has been shown to have good reliability and psychometric properties (Stewart et al. 2004).

Participants

Patients were eligible for inclusion if they were 16 years old and above, referred for an orthodontic consultation, had not yet commenced orthodontic treatment and had the capacity to consent. Patients with craniofacial syndromes were excluded. Eligible patients who agreed to participate in the study were recruited at initial consultation, new patient records or treatment planning appointments over a 5-month period.

Clinicians of all grades/experience were recruited to the study to allow comparisons to be made between different grades of clinicians. To reduce bias, the decision was made to recruit clinicians for the study only after the consultation had occurred and after the patient had been recruited to the study. Clinician recruitment was therefore either immediately after the appointment or at the end of that clinical session. This hopefully prevented the clinician modifying their behaviour in response to their awareness of them being observed, thereby reducing the Hawthorne effect (McCarney et al., 2007).

Assessment tool

The dyadic 9-item PPPC has two versions (Figures 1 and 2), one for the patient and the other for their treating clinician, therefore enabling direct comparisons between

patient and clinician perceptions to be made. There are 9 questions in total asking about different aspects of PCC such as '*the extent the patient's main problem was discussed; the extent the Orthodontist listened, explained the problem, explained treatment; and how well the Orthodontist understood the patient*'.

For each question in their respective 9-item PPPC questionnaires, the patient and clinician marked a response on a 4-point Likert scale (e.g. behaviour observed 'completely', 'mostly', 'a little' or 'not at all'). For every response, a score was given from 1 to 4, where 1 was the least patient-centred response (e.g. not at all) and 4 was the most patient-centred response (e.g. completely).

Patient and clinician scores were directly comparable and for each patient and clinician, the total possible score range was 9 to 36. Therefore, low scores represented perceptions of the least patient-centred consultations and high scores represented perceptions of the most patient-centred consultations. Patient and clinician comments could also be recorded as free text at the end of the questionnaire.

Statistical analyses

Descriptive and inferential statistical analyses were undertaken using SPSS Version 25. Scores for each question were summed to give an overall total score of patient-centredness. The distribution of the scores was such that non-parametric tests were used to compare the patient and clinician total scores (Wilcoxon Signed Rank Test).

Each of the 9 questions was analysed individually to assess the percentage of patients who responded with the most patient-centred response (score = 4) to the least patient-centred response (score = 1). For each question, the percentage of paired patient and clinician scores that were the same was calculated and also the percentage where patient scores were higher than clinician scores and where patient scores were lower than clinician scores.

Non-parametric tests (Mann-Whitney and Kruskal-Wallis tests) were undertaken to assess whether patient gender, clinician gender, clinician grade or stage at which patients were recruited affected the total PPPC scores and patient age was examined using a scatter plot.

RESULTS

One hundred and fifteen patients were invited to take part in the study. Two patients declined due to time constraints and one patient did not offer a reason. A total of 112 patients were therefore recruited into the study (Figure 3). All 30 of the corresponding clinicians who conducted consultations with the patients recruited to the study agreed to participate. All questionnaires were fully completed, there were no spoiled questionnaires and therefore it was possible to use data from all questionnaires. A total of 112 patient questionnaires and 112 clinician questionnaires were fully

completed and included in the analyses. The demographics of the patients and clinicians who completed the questionnaires are shown in Tables 1 and 2 respectively.

Patient and clinician total PPPC scores

Table 3 shows the median scores for the total PPPC scores for patients and clinicians, where a higher number indicated a perceived higher engagement in PCC. Comparison of the total patient and clinician scores showed a statistically significant difference between the two scores, with a p-value of <0.001 from the non-parametric Wilcoxon Signed Rank Test. The null hypothesis stating that there was no difference in the perceptions of patient-centredness as measured by the median total 9-item PPPC scores for patients and clinicians was therefore rejected.

Patient and clinician scores for each individual question

Figure 4 is a bar chart showing the distribution of patient responses for each of the 9 questions. For all questions, with the exception of Question 9, more than half of the patients selected 'Completely' (score = 4); indicating perceptions of high engagement with PCC. The highest scores were given for Question 3 asking, '*To what extent did the Orthodontist listen to what you had to say?*' where 84.8% of patients responded 'Completely'. The percentages of patients who responded, 'Not at all' (score = 1) was low for Questions 2, 5 and 7 but 31.3% of patients gave that response for Question 9 asking, '*To what extent did the Orthodontist discuss personal or family issues that might affect your health?*'.

Figure 5 shows the distribution of clinician responses for each of the 9 questions. In comparison with the patient responses (Figure 4), the clinicians' scores were more variable. Patients gave higher scores than clinicians for all 9 questions and clinicians were more critical of their own performance. Similar to the patient distribution, Question 3 was also perceived to be the most patient-centred with 75.9% of responses scoring 'completely' and for Question 9 asking, '*To what extent did the Orthodontist discuss personal or family issues that might affect your health?*', the response of 'not at all' was selected more frequently than for the other questions, at 39.3%.

Figure 6 illustrates the comparison of scores for each patient and clinician pairing for each question. Overall, patients perceived the performance of PCC to be the same or better than the corresponding clinician for each question.

Effect of demographic and clinic variables on total PPPC scores

None of the variables observed (patient gender, age, stage of treatment, clinician gender, or clinician grade) had a statistically significant effect on total PPPC scores.

DISCUSSION

Discussion of participants and methods

Patients were eligible for inclusion if they were 16 years old and above as the 9-item PPPC was developed for use with adults and it was felt that patients of this age group

would be able to understand fully and independently answer the questions, rather than younger patients who may have needed to liaise with their parents/carers to answer the questions. In addition, parents and guardians often make healthcare decisions for their children and this may have confounded the results due to third party considerations. Patients with craniofacial syndromes were excluded from the study as they have often had different life and healthcare experiences, potentially leading to different perceptions of care, and their orthodontic treatment may be more of a necessity than in other orthodontic patients (Akram et al., 2015). Patients were recruited at initial consultation, new patient records or treatment planning appointments as the nature of the questions in the 9-item PPPC are relevant to all of the initial stages of the treatment process when the patient's problem are discussed, the treatment options are given and treatment is explained.

Discussion of results

Overall, both patients and clinicians perceived high levels of engagement in PCC. There was a statistically significant difference between median total patient and clinician scores ($p<0.001$), with patients perceiving the consultations to be significantly more patient-centred than the corresponding clinician. These findings are similar to those of Mazanec and colleagues (2015) who used a modified version of the PPPC and found that patients scored significantly higher than clinicians.

In the current study, although there was a statistically significant difference between patient and clinician perceptions of PCC, this was only by 3 points on a scale from 9 to 36, therefore it is debatable as to whether this difference is clinically relevant. However, the patient and clinician comments did highlight different perceptions. Clinicians made several free text comments including justifications as to why they felt the visit was not as patient-centred as it might be, for example, 'the patient did not have any concerns'. In contrast, of those patients who wrote comments, they were largely positive and complimentary of the clinicians. Possible reasons for clinicians' more negative perceptions are that they are taught from the early stages of training, to reflect on and critically appraise their practice and continuously find ways in which to improve and develop their skills.

Interestingly, patients and clinicians both felt that '*listening to patients*' (Question 3) was the aspect of PCC that was best practiced, receiving the highest scores. Listening to patients is a core aspect of putting patients' interests first, treating patients with dignity and respect at all times and communicating effectively. Conversely, '*discussion of personal or family issues affecting the patient's health*' (Question 9), '*discussion of respective patient and clinician roles*' (Question 5) and '*exploring how manageable treatment would be for patients*' (Question 7) was perceived to be practiced less than the other questions suggesting that these aspects of PCC may not be practiced as routinely as others by clinicians.

Question 9, '*To what extent did the Orthodontist/ you discuss personal or family issues that might affect your/ your patient's health?*' was the aspect of PCC that was perceived to be practiced the least and had the lowest scores. However, this concept may not have been relevant to the majority of the patients in this study. A similar finding was reported by Reinders and colleagues (2009), who investigated the validity of a 'patient feedback on consultation skills questionnaire' (n=222). They developed a new questionnaire to be used as a learning tool for general practice trainees by adding 7 questions to the 9-item PPPC to ensure that the feedback revealed scope for improvement for the trainee. The authors also found that Question 9 had the highest non-response rate (10.8%), which implied that this question might not have been applicable in all situations. They suggested that for future use, the applicability might be enhanced if the wording of this question was changed.

Limitations of this study

There are limitations to this study in that it was a cross-sectional questionnaire study representing data from one point in time and therefore it cannot measure the whole care pathway over time. It is also important to remember that the results reflect the 224 questionnaires that were completed by 112 patients and 30 clinicians. Therefore, some clinicians had completed multiple questionnaires for the corresponding number of patients that they saw and the results may include some bias towards those clinicians who featured more.

The study was also conducted in a single centre and therefore, the participants recruited may not be representative of the adult orthodontic population as a whole, and the cohort of clinicians recruited may not be representative. By recruiting participants from a teaching hospital, it is not possible to know if the results would be generalisable to the private sector or other hospital settings. However, the study was carried out in a large department and therefore by recruiting a large cohort of patients and clinicians with varying degrees of experience, it is hoped that the results are useful for comparison with future studies investigating PCC in other settings, whilst accepting potential local variations.

Overall, this study captured the perceptions of a relatively large cohort of patients and clinicians and used a psychometrically valid measure of PCC. A sample size calculation was not undertaken as there were no pre-existing data available from similar studies but instead, data were collected from as many patients as possible during the 5-month recruitment period. There was a statistically significant difference between patient and clinician perceptions suggesting that the overall sample size was sufficient, however the sample size for the subgroup analyses may well not have been sufficiently large to detect an effect for any of the variables and these would be interesting aspects to consider in future studies.

Implications for clinical practice

PCC has been shown to improve outcomes from a patient, clinician and commissioner

viewpoint and clinicians should be taught about delivering PCC from the outset of their training as part of undergraduate and postgraduate education. The 9-item PPPC is easy to use and paired patient and clinician perceptions can be compared, therefore the questionnaire could be valuable as a learning tool to deliver standardised feedback or for formative evaluation. A greater understanding of the processes of PCC and how these can be integrated into day-to-day practice will improve clinician insight, awareness and engagement in PCC.

By engaging in patient-centred consultations from the outset, patients will hopefully be more aware of the commitment of orthodontic treatment and what this means to them as an individual. This may result in patients who are more informed and engaged from the start of orthodontic treatment, reducing numbers of failed or discontinued treatments and ensuring patients are truly at the heart of their care.

CONCLUSIONS

The results of this study showed that:

- Both patients and clinicians in an orthodontic setting perceived high levels of engagement in patient-centredness.
- There was a statistically significant difference between patient and clinician perceptions of patient-centredness ($p<0.001$). Patients perceived consultations to be more patient-centred than clinicians. The null hypothesis stating that there was no difference in the perceptions of patient-centredness as measured by the median total 9-item PPPC scores for patients and clinicians was therefore rejected.
- Some aspects of PCC considered in the study received higher scores than others. The aspect of PCC that was perceived to be practiced the most was '*listening to the patient*' (Question 3). Conversely, '*discussion of personal or family issues affecting the patient's health*' (Question 9) was perceived to be practiced the least.
- None of the individual variables analysed (patient gender, age, stage of treatment, clinician gender, or clinician grade) were statistically significant so did not appear to affect perceptions on patient-centredness in the current study. This would be interesting to consider in future studies.

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TABLES

Demographics		Total n=112	%
Median age with interquartile range (years)		17 (16, 27)	
Gender (n)	Male	49	43.8
	Female	63	56.3
Stage of Treatment (n)	Initial consultation (New patient clinic)	77	68.8
	Records/treatment planning appointment	35	31.3

Table 1: Patient demographics

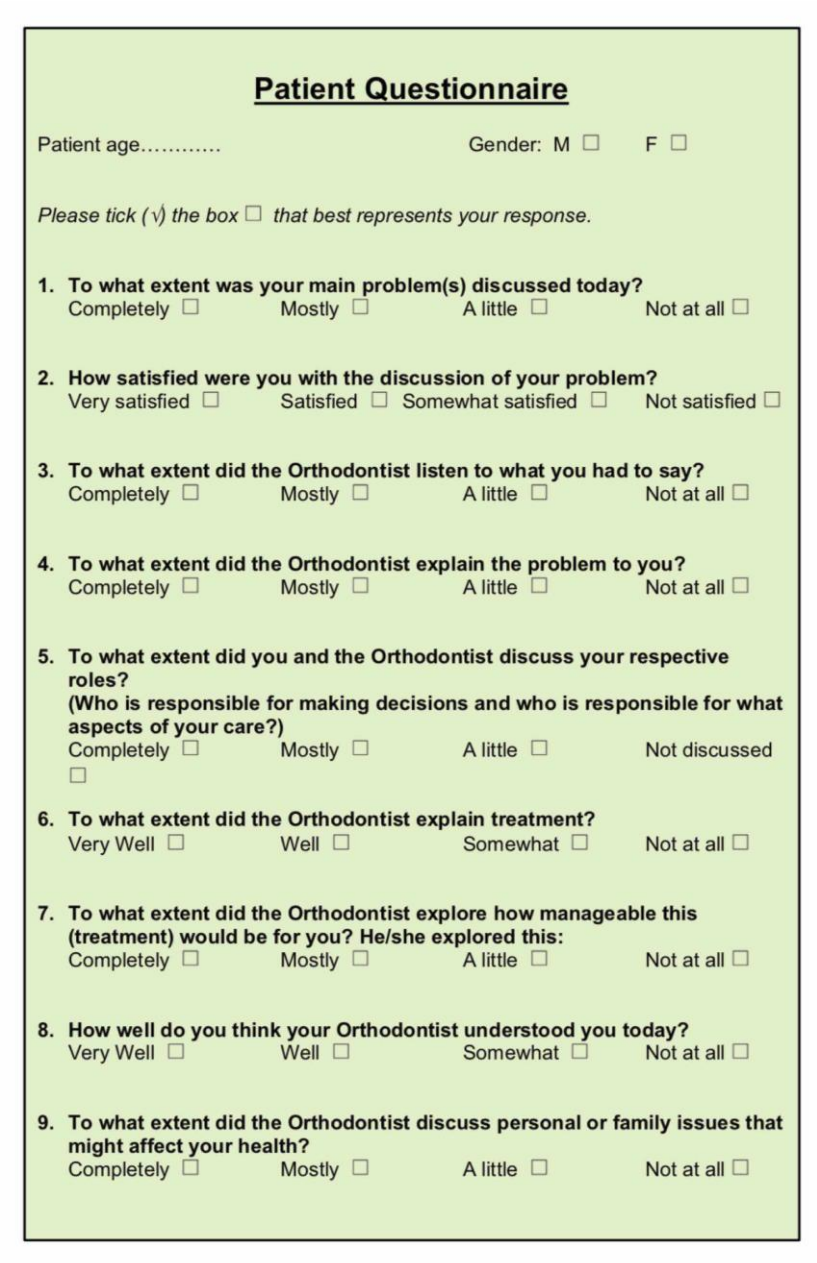
Demographics		Total Questionnaires n=112	%
Gender (n)	Male	27	24.1
	Female	85	75.9
Clinician Grade/Experience (n)	Specialty Trainee	40	35.7
	Senior Specialty Trainee	24	21.4
	Consultant	48	42.9

Table 2: Demographics of the number of clinician questionnaires returned according to clinician gender and grade

	Median	Interquartile Range	Significance (p-value)
Total patient PPPC score	32	30,34	< 0.001
Total clinician PPPC score	29	26,31	

Table 3: Comparison of total patient and clinician PPPC scores

FIGURES



Patient Questionnaire

Patient age…… Gender: M ☐ F ☐

Please tick (√) the box ☐ that best represents your response.

1. **To what extent was your main problem(s) discussed today?**
   Completely ☐ Mostly ☐ A little ☐ Not at all ☐

2. **How satisfied were you with the discussion of your problem?**
   Very satisfied ☐ Satisfied ☐ Somewhat satisfied ☐ Not satisfied ☐

3. **To what extent did the Orthodontist listen to what you had to say?**
   Completely ☐ Mostly ☐ A little ☐ Not at all ☐

4. **To what extent did the Orthodontist explain the problem to you?**
   Completely ☐ Mostly ☐ A little ☐ Not at all ☐

5. **To what extent did you and the Orthodontist discuss your respective roles?**
   (Who is responsible for making decisions and who is responsible for what aspects of your care?)
   Completely ☐ Mostly ☐ A little ☐ Not discussed ☐

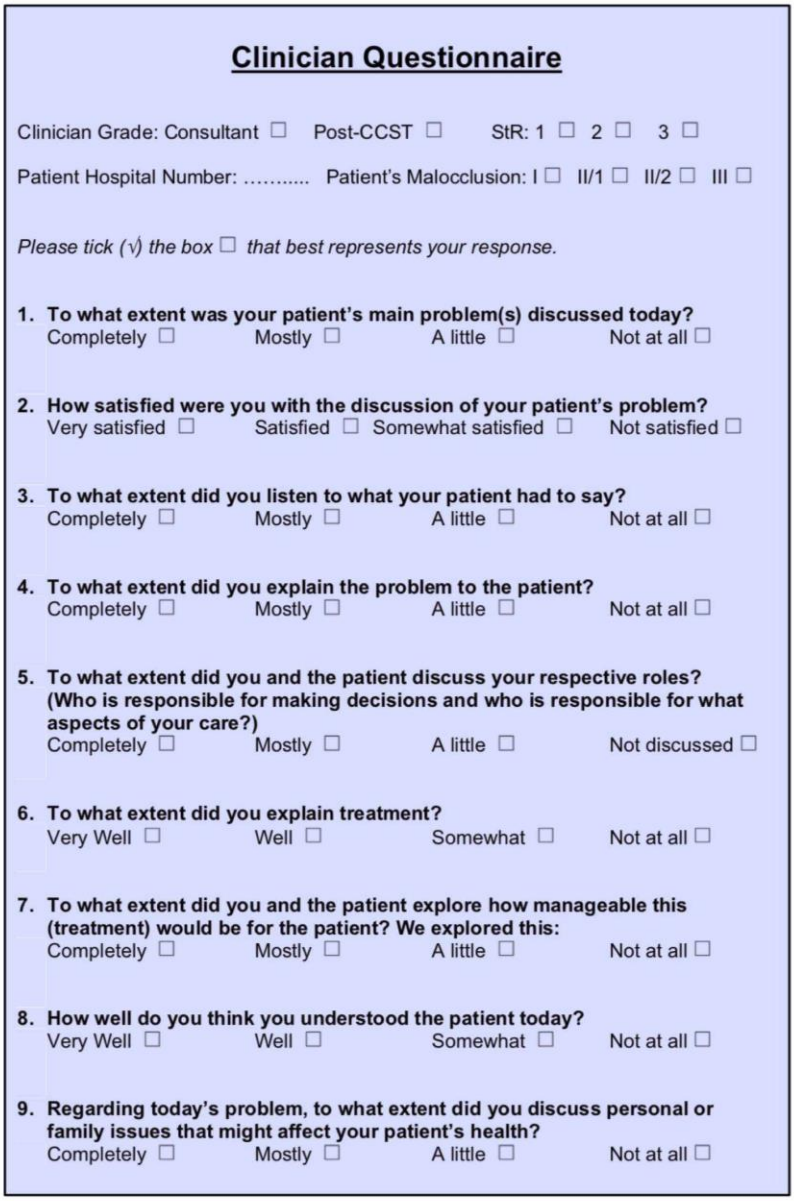
6. **To what extent did the Orthodontist explain treatment?**
   Very Well ☐ Well ☐ Somewhat ☐ Not at all ☐

7. **To what extent did the Orthodontist explore how manageable this (treatment) would be for you? He/she explored this:**
   Completely ☐ Mostly ☐ A little ☐ Not at all ☐

8. **How well do you think your Orthodontist understood you today?**
   Very Well ☐ Well ☐ Somewhat ☐ Not at all ☐

9. **To what extent did the Orthodontist discuss personal or family issues that might affect your health?**
   Completely ☐ Mostly ☐ A little ☐ Not at all ☐

Figure 1: Patient version of the 9-item PPPC



Clinician Questionnaire

Clinician Grade: Consultant ☐ Post-CCST ☐ StR: 1 ☐ 2 ☐ 3 ☐

Patient Hospital Number: ..... Patient's Malocclusion: I ☐ II/1 ☐ II/2 ☐ III ☐

Please tick (√) the box ☐ that best represents your response.

1. **To what extent was your patient's main problem(s) discussed today?**
   Completely ☐ Mostly ☐ A little ☐ Not at all ☐
2. **How satisfied were you with the discussion of your patient's problem?**
   Very satisfied ☐ Satisfied ☐ Somewhat satisfied ☐ Not satisfied ☐
3. **To what extent did you listen to what your patient had to say?**
   Completely ☐ Mostly ☐ A little ☐ Not at all ☐
4. **To what extent did you explain the problem to the patient?**
   Completely ☐ Mostly ☐ A little ☐ Not at all ☐
5. **To what extent did you and the patient discuss your respective roles? (Who is responsible for making decisions and who is responsible for what aspects of your care?)**
   Completely ☐ Mostly ☐ A little ☐ Not discussed ☐
6. **To what extent did you explain treatment?**
   Very Well ☐ Well ☐ Somewhat ☐ Not at all ☐
7. **To what extent did you and the patient explore how manageable this (treatment) would be for the patient? We explored this:**
   Completely ☐ Mostly ☐ A little ☐ Not at all ☐
8. **How well do you think you understood the patient today?**
   Very Well ☐ Well ☐ Somewhat ☐ Not at all ☐
9. **Regarding today's problem, to what extent did you discuss personal or family issues that might affect your patient's health?**
   Completely ☐ Mostly ☐ A little ☐ Not at all ☐

Figure 2: Clinician version of the 9-item PPPC

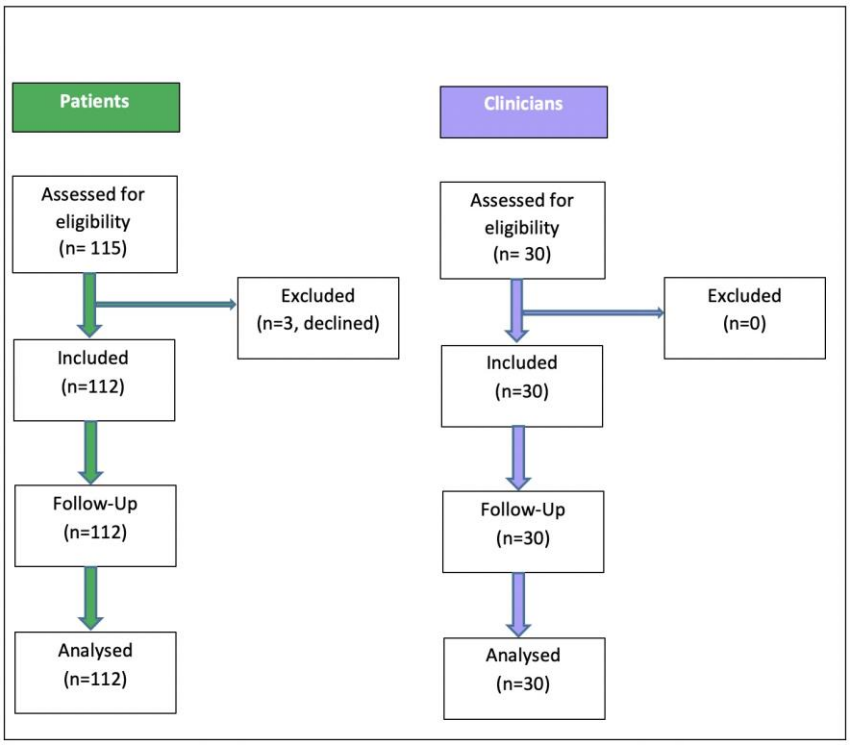


Figure 3: Participant flow diagram

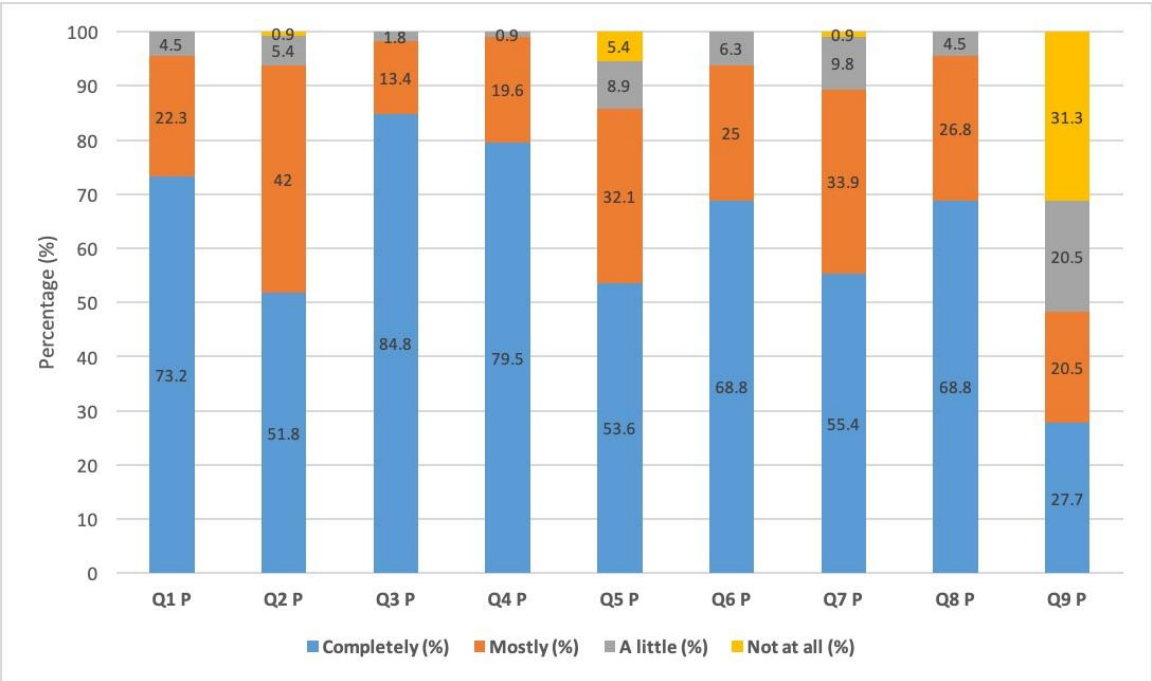


Figure 4: Distribution of patient scores for each question

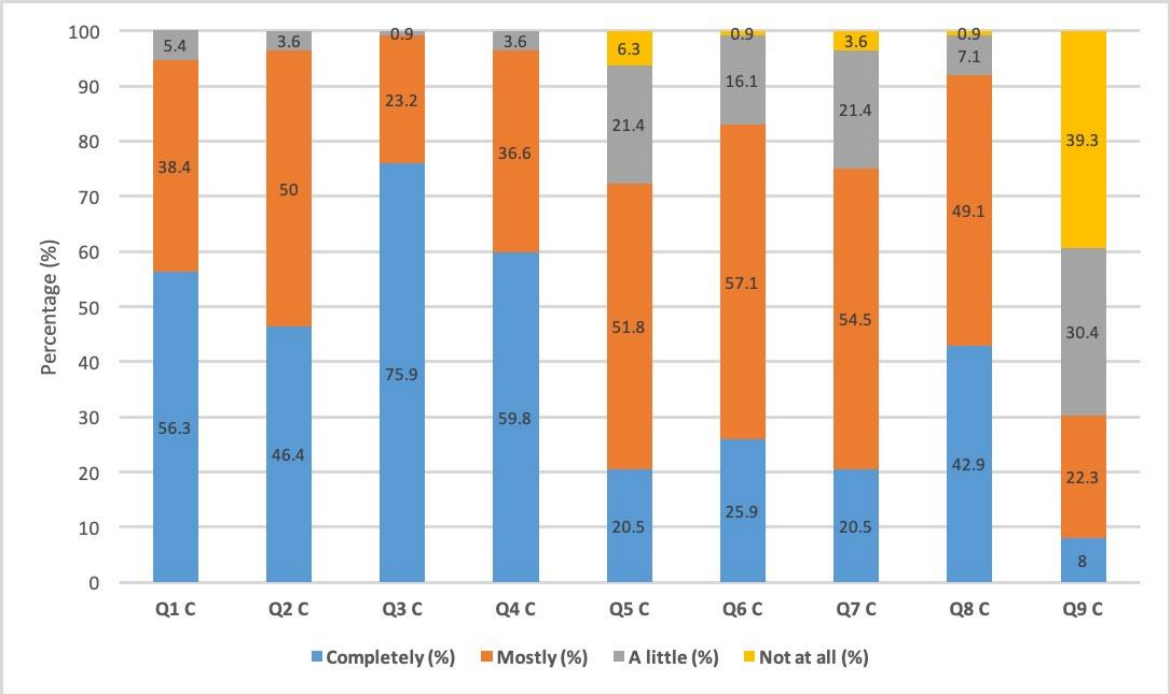


Figure 5: Distribution of clinician scores for each question

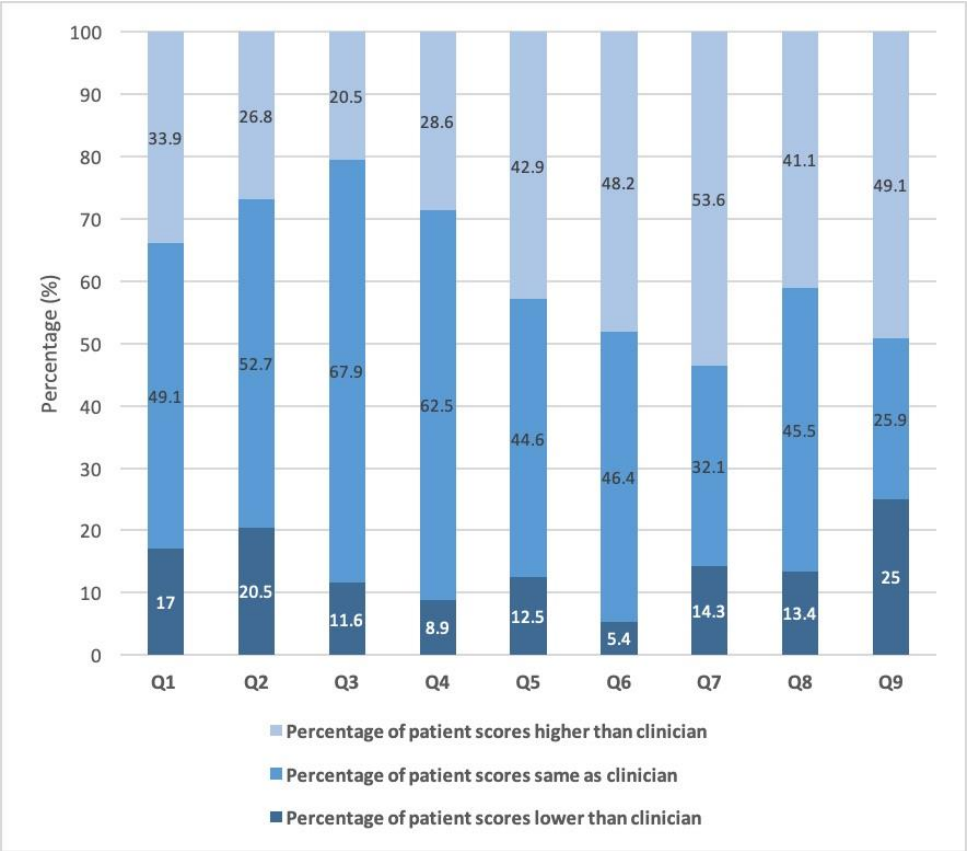


Figure 6: Comparison of paired patient and clinician total scores for each question