their parents regarding the impact of missing school to attend hospital based orthodontic appointments. Teniola Oyeleye1 Roz Walker2, Susan J Cunningham3 ¹Orthodontic Department, Dorset County Hospital, UK ²Orthodontic Department, St Richard's Hospital, UK ³Orthodontic Department, UCL Eastman Dental Institute, London, UK Please address all correspondence concerning this manuscript to the contact author: Miss Teniola Oyeleye Contact details: Miss Teniola Oyeleye **Dorset County Hospital** Orthodontic Department Williams Ave, Dorchester DT1 2JY teniola.oyeleye@nhs.net

A qualitative exploration of the experiences of young people and

A qualitative exploration of the experiences of young people and their parents regarding the impact of missing school to attend hospital based orthodontic appointments.

3

- 4 Abstract
- 5 **Objective:**
- 6 To explore the experiences of young people and their parents regarding the impact on school
- 7 performance due to time away from school for orthodontic appointments and to explore their
- 8 views about a possible extension to the current service.

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- 10 Design:
- 11 Qualitative study using semi-structured interviews
- 12 Setting:
- 13 UK district hospitals.
- 14 Participants:
- 15 Eleven pairs of interviewees: Young people undergoing fixed appliances and their parents.
- 16 **Methods**:
- 17 Semi-structured interviews were conducted with young people and their parents. The
- interviews were audio recorded and transcribed verbatim. A framework approach was used
- 19 to analyse the data.
- 20 Results:
- 21 Thematic analysis of the data identified five main themes which were (i) Expectations of the
- 22 treatment process and appointments, (ii) Impact of school absences and treatment, (iii)
- 23 Appointments, (iv) Implications for young people, parents, and others and (v) Satisfaction
- 24 with treatment. These themes were then further subdivided and analysed.

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Conclusion:

Young people and parents felt that attending appointments for orthodontic treatment had minimal impact on a young person's school performance. However, some young people did engage in coping mechanisms in order to ensure this was the case. Young people and parents advised they were satisfied with the process of the treatment despite the time missed at school/work. Some young people and parents saw a real benefit to appointments that could be fitted into a 'NHS seven-day' service model, but this did not apply to all interviewees.

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- Keywords
- NHS seven-day service, orthodontic appointments, participant perspectives, young person satisfaction, school performance

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Introduction

The majority of young people undertaking and completing fixed appliance orthodontic treatment are teenagers (NHS Digital, Hospital Episode Statistics for England. Outpatient statistics, 2020-21) and are thus likely to be attending educational institutions on a full-time basis. Prior to the COVID-19 pandemic, evidence suggested that the average young person receiving hospital based fixed appliance treatment completed treatment in 19.58 to 20.22 months, requiring an attendance of between 15.47 and 20.15 appointments (Tsichlaki et al. 2016). Given that most orthodontic appointments are during the traditional working hours of 09:00 to 17:00 hrs; it is likely that a high proportion of these appointments take place during school hours and pupils will be absent from school. This means that the equivalent of several days of school could potentially be missed during a course of treatment, depending on what time of the day the appointments take place and whether young people return to school after these appointments.

The common consensus that student absenteeism from school leads to a poorer performance at school is based on American studies of high school attendance and academic achievement, such as those performed by Ehrenberg et al. (1989) and Gottfried (2010). This is also a core component of the Department for Education (DoE) 2016 guidance on school absenteeism, which states that:

"Children should attend school regularly to benefit from their education. Missing out on lessons leaves children vulnerable to falling behind." The DoE also states that both primary and secondary school aged children are affected by absenteeism. However, much of the evidence fails to differentiate between the different types of absenteeism, i.e. authorised vs unauthorised, and in turn their individual effects on school performance or academic achievement. In the studies by Hancock et al. (2013, 2017), authorised absences were found to have much less of an impact on academic performance than unauthorised absences. Within dental research, the relationship between absenteeism and school performance has been studied in relation to the effects of poor oral health. Much of the evidence suggests that there is a correlation between poor oral health and reduced academic achievements due to the psychological impact on the child and greater amounts of time away from school due to pain (Blumenshine et al. 2008, Guarnizo-Herreno and Wehby et al., 2012, Ravaghi et al., 2016). In contrast, there is a paucity of evidence investigating the impact of attending orthodontic appointments on school performance.

The aims of this study were therefore to explore the experiences of young people and their parents regarding the impact on school performance due to time away from school for orthodontic appointments. It was also intended to explore their views about a possible extension to the available appointment times/hours for the current service.

Methods

This was a qualitative study in which data collection occurred through in-depth interviews and the data were subsequently managed using a thematic approach. Semi-structured interviews were conducted to explore the experiences of young people and their parent(s) as detailed in the aims. Sponsorship and approval for the study was obtained from University College London Hospitals NHS Foundation Trust and ethical approval was obtained from the London-Hampstead Research Ethics Committee.

The study recruited a convenience sample of young people, and their parents. In keeping with the qualitative methodology, no sample size calculation or statistical testing was performed. Young people were eligible for inclusion if they had completed a course of fixed appliance treatment at either St Richard's and Worthing Hospitals (University Hospitals Sussex NHS Foundation Trust) and the accompanying parent/legal guardian was also interviewed. All young people were between 12 and 18 years of age, in full time education, and had completed treatment within the last 6 months. Young people were excluded if they could not participate in an interview for any reason, if they had a cleft lip/palate, other craniofacial syndrome or extensive hypodontia (greater than one missing tooth per quadrant), as it was felt that the young person's journey may be different due to appointments with other dental or medical specialties.

Potential participants were introduced to one of the members of the research team at a routine appointment shortly before debond or on the day of debond. The study was explained in detail, with all young people and parents being made aware that the interviewer was a clinician in the department and that this study was part of an academic degree. They were given the opportunity to ask any questions and also provided with participant information leaflets. All participants were given at least 6 weeks to review this material and to decide whether to participate prior to providing written consent to be interviewed. Participants were not offered any incentives for taking part.

Interviews were undertaken between January and April 2019 by a single interviewer (TO) who was an orthodontic registrar in the department but had not been involved in the actual orthodontic treatment for the majority of the young people interviewed. (TO) had previously undertaken training in qualitative interviewing techniques. The interviews were audio recorded with the consent of the participants. Interviews took place in a quiet non-clinical area at either of the hospitals where the young person had received their orthodontic treatment, with just the interviewer and the participants present. Whilst it could be argued that a neutral setting would have had some advantages, the convenience of undertaking the interviews at the hospital, in conjunction with an existing appointment, was felt to be important and it was ensured that a quiet non-clinical area was utilised for all interviews. On completion of the interviews, the recordings were uploaded to a secure site and transcribed verbatim by a professional transcription company.

Topic guides were developed to guide the interviews and there were separate guides for young people and their parents; the interviewer was free to deviate from the guide where appropriate though. The topic guides were trialled in several practice interviews prior to commencing the study. The guides were modified as successive interviews took place; for example, when new concepts arose these additional topics were added to be explored in future interviews. Interviews were continued until they reached a 'saturation point' and limited additional data was being obtained. After each individual interview, the interviewer listened to the recording to reflect on the discussions and to consider whether any other aspects could have been covered. The team also met after four of the initial interviews to critique them and to determine whether any changes to the process were required.

Data management and subsequent analysis followed a thematic approach using the Framework method (Ritchie et al, 1994). This is a systematic qualitative approach to data analysis in which the research team initially familiarized themselves with the data by reading each transcript several times independently, identifying the main themes and colour coding them for clarity. The main themes were agreed following discussion within the team, and subsequently subthemes were identified within each main theme. The 'framework' was a Microsoft Excel® spreadsheet with a worksheet for each main theme; for each worksheet, individual participants were assigned a row, and the columns represented the subthemes. Quotes from the transcripts were copied into the relevant cells, with the line numbers from the transcripts, in order to allow easy identification and referencing. The findings were then interpreted and summarised. The advantage of using this type of analysis includes its ability to summarise data whilst still retaining links to the raw data.

Results

Interviews were conducted with 11 pairs of participants: the group of young people included 8 females and 3 males and parents included 7 mothers and 4 fathers. The duration of interviews ranged from 19 to 39 minutes, with the average being 27 minutes.

The young people were aged between 14 and 17 years and were all in secondary education establishments. The average orthodontic treatment duration was 20.90 months. Parents who took part in the interviews had a broad range of occupations, however the majority worked in the education sector. Young people were from both single and two parent families. A summary of demographics is presented in Tables 1 and 2.

Five key themes were identified from the interviews, and these were further divided into subthemes:

- (i) Expectations of the treatment process and appointments
- (ii) Effects of school absences and treatment
- (iii) Appointments
- (iv) Implications for young people, parents, and others
- (v) Satisfaction with the treatment process

All of the young people were found to have had some time away from school in order to attend their appointments. The average time away from school at each appointment was in the region of 1-2 hours and generally involved missing 1 or 2 lessons per appointment.

Theme 1: Expectations of the treatment process and appointments (Table 3)

The majority of young people and parents had anticipated that time away from school and work would be required in order to attend orthodontic appointments. These expectations tended to be based on experiences of friends and other family members, and also the information they obtained at their initial consultation appointment. However, some young people and parents had expected that there would be more flexibility when it came to arranging appointments.

Table 3: Theme 1 - Expectations of the treatment process and appointments

Theme 2: Effects of school absences and treatment (Table 4)

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Table 5: Theme 3 – Appointments

Most young people appeared to cope well with time away from school, although some found that taking time out of school to attend their appointments induced a high level of anxiety. Heightened levels of anxiety or stress were also reported by parents in relation to getting their child to their appointments against a background of traffic, work commitments and

45 46 taking other children to and from school.

A number of young people discussed the impact that the treatment itself had on their school day. They talked about pain or discomfort, particularly at the start of treatment but most young people reported that it did not have an impact on their focus or concentration during lessons. Amongst those who felt their focus and concentration were affected, coping mechanisms were utilised, such as finding a quiet space away from peers or not returning to school immediately following treatment.

In general, participants did not believe that missing school to attend appointments had an impact on school performance in terms of achieving good grades or being successful in examinations, even when missing school during examination periods. Parents discussed that they felt that the lack of impact was due to their child's own personal work ethic.

Missing school often required a young person to actively catch up on the missed work and some did report that this was burdensome.

Table 4: Theme 2 - Effects of school absences and treatment

Theme 3: Appointments (Table 5) For parents, it was important that their child did not miss too much time from school, and they saw this as a priority. Many participants therefore actively attempted to arrange appointments outside school hours. For some young people who had an early start and finish time to their school day, this was easier to accomplish.

The majority of participants felt that it would be ideal to have appointments outside the traditional 09:00 to 17:00 hrs time slots. Appointments at weekends, before school and after school (extending into the evenings), were the preferred choice for many participants. However, others were concerned that appointments outside the traditional time slots would negatively impact on family time and the ability to engage in social activities.

Many parents felt that the service provided a generally good level of flexibility around booking appointments. Nevertheless, some participants felt that the appointment system was inflexible and was more department centred rather than patient centred. Several parents compared the availability of their child's orthodontic appointments with other NHS services and felt that orthodontic appointments should reflect that of their general dental practitioner or general medical practitioner, with early morning or evening appointments also being available.

Parents reported that taking time off work to attend their child's appointments often had impacts for their employer and/or colleagues and this was particularly apparent amongst parents who worked in schools. A small number of parents reported that accompanying their child to their appointment, resulted in loss of earnings. Despite this, parents discussed having to make "financial trade-offs".

The majority of young people and parents felt that attending orthodontic appointments had a limited impact on their family. The impacts which were discussed included siblings having to attend the orthodontic appointments also or having to make additional childcare arrangements.

Table 6: Theme 4 - Implications for young people, parents and others

Theme 5: Satisfaction with the treatment process (Table 7)

Participants were satisfied with the overall treatment process and felt that there was little that could be improved regarding their overall satisfaction. Missing school to attend appointments had a minimal impact on overall satisfaction for most participants and, for many, it was an expectation of treatment.

The restrictions of appointments to the traditional 09:00-17:00 hrs time frame was found to have a limited impact on satisfaction, despite the possible inconveniences that arose. Many attributed this to the "status quo" of NHS outpatient services. However, a small number of participants did suggest that the traditional appointment slots negatively impacted on their level of satisfaction.

Table 7: Theme 5 - Satisfaction with treatment

Discussion

Expectations of time away from school due to orthodontic appointments was common amongst the majority of participants and this was predominantly based on talking to friends and family members who had experienced fixed appliance treatment. This expectation was also seen in the studies by Bennet et al. (2001) and Kazanci et al. (2016). For many parents, this was a negative aspect of their child's treatment, which was also seen in the study by Dalziel and Henthorne (2005). Despite this, the findings of the current study suggest that it did not have a significant impact on overall satisfaction for the majority of participants. This correlates well with the SERVQUAL consumer theory by Parasuraman and Berry (1985), in which satisfaction or dissatisfaction was seen as a construct of the relationship between prior expectations and the value accredited to the goods or services received. In the current study, participants placed a high value on the treatment they received and so their prior expectation of missing school seemed to have minimal impact on their satisfaction with the delivery of the treatment.

Most young people experienced some form of discomfort during their treatment. However, the degree to which pain or discomfort impacted on their ability to concentrate or focus at school varied. Discomfort did not pose a problem for the majority, while others found the need to engage in coping mechanisms. This included choosing not to return to school after

their appointment, which could further compound the length of time away from school and so might be a potential concern for participants. The finding that the discomfort had no impact for the majority of participants was in accordance with the study by Bernabe et al. (2008) investigating the impact of fixed appliances on daily performance in Brazilian adolescents.

Participants did not believe that attending orthodontic appointments had an impact on the young person's school performance. The limited impact was deemed to be the result of a combination of active involvement in identifying what they had missed and the ease with which it is possible to catch up due to the increasing use of technology in schools. The positive effects of this incorporation of modern technology into schools is well documented and highlighted in a meta-analysis by Tamim et al (2011).

All young people within the study received some of their treatment during the school day and required time away from school. Participants tended to choose early morning appointments or the last ones of the day if they were available. Participants additionally avoided booking appointments too close to important events such as examinations, in order to reduce the potential effect that treatment might have on these events. Many participants favoured the option of being able to arrange appointments outside the traditional 09:00 to 17:00 hr timeslots in an attempt to reduce the amount of time away from school, thereby reducing the burden of missed schoolwork, or to lessen the potential impact that time away from school may pose. The study participants' wish for non-traditional appointment times differed from the findings of Bussell and Ward (2008) and Siddiqui and Ward (2017) in an orthodontic department in Blackburn. However, the results are in accordance with the findings of Harrison and Churchill (2017) in their study of paediatric ophthalmology outpatients. The differences found in this current study could signify a change in the attitude of young people and parents towards appointments outside traditional times.

From the interviews it also became apparent that the impact of attending orthodontic appointments was not just limited to that individual's school performance. Parents also discussed that attendance at appointments had impacted on, or had the potential to impact on, their personal employment, finances, their own levels of stress, and effects on other family members. Many parents described that in order for their child to attend appointments, they had to take time away from their employment. This was problematic for some parents as it meant sacrificing pay or annual leave, or their colleagues had to cover the workload. The flexibility of job roles for some parents helped to negate this effect and this was also seen in the study by Smith et al. (2003) which investigated costs to families when attending outpatient appointments. Holm et al. (2016) also found that parents sustained a financial impact as a result of their child attending appointments in paediatric fracture clinics. Similar research in less affluent areas may have different findings and this would be interesting to study in future research. Parents also discussed that appointments at the end of the school day often involved additional childcare arrangements for siblings and the costs associated with that. This was also found in the study by Sach et al. (2005) looking at costs accrued by families attending a paediatric cochlear implant program.

Participants advised that despite any perceived "negative aspects of treatment", including time away from school and the limited flexibility of appointment times, these had a very

limited impact on their overall satisfaction with the delivery of the treatment. This finding complements the evidence found in the systematic review by Pachêco-Pereira et al. (2015).

The limited impact posed by attending appointments during the school day on overall satisfaction with the process of their care may be the result of compromises that participants are willing to make in order to receive NHS treatment or that the positive outcomes of treatment outweigh the negatives and so overall satisfaction is achieved. Cheraghi-Sohi et al. (2008) proposed it may reflect the value participants place on certain attributes of care.

There were clearly some limitations to this study. Convenience sampling was employed, and this may reduce the generalisability of the findings, something which has long been debated in qualitative research. Despite this, the diversity was typical of the population of young people treated in the orthodontic departments at St Richard's and Worthing Hospitals. Additionally, the participants shared comparable statistics with young people undergoing orthodontic treatment in the general population such as a female dominance and a greater number of young people coming from more affluent families (Child Dental Health Survey 2013). This study was also performed prior to the COVID- 19 pandemic, and it would be interesting as part of future research to see how participants' perceptions may have changed.

There are also limitations associated with how the interviews were conducted. For example, the interviewer was a clinician in the department which may introduce some personal bias. However, the interviewer aimed to always pose non leading questions, conducted interviews after treatment was completed and reiterated to participants that the opinions raised in the interviews would not affect the care they received. Additionally, parents and young people were interviewed together, and their responses may have been different if they had been interviewed separately, this may particularly apply to the young person's responses. However, Schless and Mendels (1978) identified that by pairing participants, greater amounts of information could be elicited, and this was also seen in this study, when the presence of an additional participant enhanced recall in some interviews. Interviewing in pairs was also convenient for the participants as only a single interview time was required, and this is clearly important when considering the ethical aspects of research.

There were 11 pairs of interviewees, with a total of 22 participants so it could also be argued that the sample size was relatively small. However, a distinctive characteristic of qualitative research is that sample size calculations are not performed, and the validity of data collected is not dependant on obtaining a large quantity of data but rather the richness and quality of that data (Malterud 2001, Malterud et al 2016).

Conclusions

- The majority of participants within this study concluded that time away from school in order to attend orthodontic appointments had only a limited impact on school life and little effect on overall of satisfaction with the delivery of their care.
- However, time away from school to attend appointments was found to impact on the participants' family life, finances, and parental employment.
- The majority of young people/parents said they would have accessed non-traditional appointment times had they been available.

Declaration of conflicting interests

1 The author(s) declared no potential conflicts of interest with respect to the research,

2 authorship, and/or publication of this article.

Funding

4 Transcription of the interviews was funded by the Love Your Hospital Western Sussex

Hospitals charity and Hampshire Hospitals NHS Foundation Trust.

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Acknowledgements

The authors wish to thank all the participants who participated in this study, the treating clinicians and our transcriptionist

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Tables

Table 1 Demographics of treated young people

	Class I (n= 2)	Class II Div 1 (n= 3)	Class II Div 2 (n= 1)	Class III (n= 5)
Average length of treatment (months)	25.5 (Range 20-31)	21.3 (Range 14-27)	23.0	18.4 (Range 9-29)
Educational system	2 nd School 2 6 th Form 0 College 0	2 nd School 3 6 th Form 0 College 0	2 nd School 0 6 th Form 0 College 1	2 nd School 2 6 th Form 2 College 1
Average Age of participant (years)	15.5 (Range 15-16)	14.7 (Range 14-15)	17	15.4 (Range 14-17)
Gender of Participant	Females 2 Males 0	Females 2 Males 1	Females 1 Males 0	Females 3 Males 2

10 Table 2 Parent/guardian demographics

Parent occupation	Accompanying parent (n=11)		
	Mother	Father	
Education	2	1	
Working from home	1		
Marketing	1		
Self-employed		1	
Civil service	3	1	
Student	1		

13 Table 3: Theme 1 - Expectations of the treatment process and appointments

Table 3. Theme 1 Expectations of the treatment process and appointments		
Subthemes	Quotes	
Expectations of the	"I've had friends that have had braces on and then I got quite good	
treatment process and	leaflets and stuff" (Patient 8)	
appointments		

Table 4: Theme 2 - Effects of school absences and treatment

Subthemes	Quotes
Receiving treatment, pain and impact on the school day	"I was in quite a lot of pain for a while, but it didn't really affect my school grades. My cognitive ability and my pain receptors sort of are separate." (Patient 1)
Impact at school	"I just went down to the library and did my work in the silence it was only one time." (Patient 2) "No, not at all, it was during my GCSEs, and it didn't have an impact on
Personal responsibility and planning	them at all." (Patient 4) "I'd say that was down to you and your character though your work ethic." (Parent 1)
	"Yeah, I used to go to my teachers afterwards and check what I've missed" (Patient 1) "It's me having to catch up in my spare time probably. It was a little bit [of a burden] (Patient 8)

Table 5: Theme 3 - Appointments

Subthemes	Quotes
Appointment times/ Scheduling	"We deliberately asked for, and got, an appointment that was after the exams finished, just to avoid any uncertainty" (Parent 44)
Scheduling	exams jinished, just to avoid any uncertainty (Falent 44)
Traditional vs non-	"I'd prefer like eight o'clock in the morning-ish Monday through to
traditional appointment times	FridayI can then go to school, and I can just go home and relax, and I don't need to like come back out again" (Patient 3)
	"Mm, I'm quite busy at weekends so probably not, we do family stuff then". (Patient 4)
	"I would come any time out of office hours, if it meant that it didn't cause me grief at workit would be perfect and not a problem." (Parent 6)
Perceptions of flexibility	"Well, everybody here has been so accommodating the balance was good." (Parent 1)
	"I tried to get an appointment at the very end of the day, there was just no flexibility" (Parent 7)

			"I was expecting them to be a little bit more flexible. (Parent 11)
Comparison	with	other	"If one night a week there was later appointments, just like there is with
services			my dentist or my or, you know, all the other professionals." (Parent 7)

Table 6: Theme 4 - Implications for Young people, parents and others

Subthemes	Quotes
Impact on self (treated	"When she has any appointments, her anxiety levels raise dramatically.
young person)	It's the pressure of having to walk out of school to go to an appointment
	and then having to return and that's something that plays on her mind a
	lot." (Parent 8)
Impact on parents	"My stress levels occasionally Only because of trying to make it in time
	to collect her from riding and then rushing from work to her school and
	here [the appointment]sometimes it's a bit stressful". (Parent 5)
Impact on employer	"When I'm not there they've got to get cover in for me, so it's not just a
	case of, "Right, you can go", it's, "Well who's covering you?" They're
	doing extra shifts to cover, so that person then has extra childcare issues,
	it's just a massive knock-on effect." (Parent 7)
Impact on family	"It sometimes meant that **** [sibling] gets dragged along to
	appointments." (Patient 1)
Impact on finances	"Obviously, the trade-off is that she [my wife] won't be earning the time
-	that she's here for an appointment." (Parent 8)
	, , ,
	"If it hadn't been available under the NHS, we would still have had it
	done. (Parent 1)

Table 7 Theme 5: Satisfaction with delivery of care

Subthemes	Quotes
Overall satisfaction	"It's been really good; we've been kept informed very slick. It went
	better than I thought it would." (Parent 4)
Satisfaction and missed	"No, the appointment times did not affect my satisfaction. Because I can
school	understand why that's what's offered." (Parent 5)
Satisfaction and	I'm no less satisfied about ***'s teeth because of the way the
appointment times	appointments are because there was no other option." (Parent 11)
	"I guess, yeah, I think having more flexibility with times would probably
	have made me more satisfied." (Patient 10)