Peer-reviewed paper; submitted September 2018; accepted March 2019

Accessing orthodontic advice following referral: A survey of parents' perceptions

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Abstract

Background and objectives: It is unclear whether social, economic and/or ethnic factors influence parental decision to attend an orthodontic consultation when referred by the Community Dental Services (CDS) in New Zealand. The aim of our study was to identify the reasons for attendance or non-attendance following referral from the CDS in Canterbury.

Methods: Questionnaires were sent to parents of 500 children aged 10-13 years randomly selected from the source population of 3604 who had received an orthodontic referral from the Canterbury CDS in 2016.

Results: The study had a participation rate of 29.0% (n=143). The ethnic distribution of the respondents was similar to the source population. Children of Asian ethnicity had a lower orthodontic consultation uptake rate (60.0%) than children of Māori (78.6%) or European (74.7%) descent. Children of high socio-economic status (SES) had a higher attendance rate for orthodontic consultation than lower SES children. Around one quarter of respondents who did not seek a consultation cited cost as the main barrier or believed that their child was too young for an orthodontic consultation. Of the 143 respondents, 13.3% claimed that they did not receive an orthodontic referral.

Conclusion: In Canterbury, social and ethnic inequalities were apparent in the uptake of orthodontic consultations following referral. Cost was the major barrier to consultation attendance. Improved communication including education between the dental therapist and parents may help raise awareness of the long-term benefits of an early orthodontic referral.

Keywords: Children, referral and consultation, socioeconomic factors

Introduction

Malocclusion is a prevalent oral condition in New Zealand, with approximately 60% of children aged between 12 and 13 years having a "definite", "severe" or "handicapping" malocclusion (Foster Page and Thomson 2005). Malocclusion has been shown to be negatively associated with oral-health-related quality of life (OHRQoL). This includes effects on aesthetics, masticatory function, emotional and social well-being (O'Brien et al., 2007; Bernabé et al., 2008; Ukra et al., 2013). Orthodontic treatment is associated with improved OHRQoL (De Oliveira and Sheiham, 2003; De Oliveira and Sheiham, 2004; Healey et al., 2016) and is therefore recommended to patients with malocclusion.

In New Zealand (NZ), children younger than thirteen years are eligible for free dental examination and treatment provided by the Community Dental Service. During annual visits, the orthodontic treatment needs of each child are assessed by the dental therapist using a standardised orthodontic screening tool developed by Kirschen (1998). Any child who has one or more features listed on the screening tool are referred for further orthodontic advice (DCNZ, 2014*). However, the cost of the orthodontic consultation or treatment is not publicly funded.

Only one study in NZ has investigated attendance for orthodontic consultation following referral (Foster Page and Thomson, 2005). It was conducted with Taranaki children who were 12-13 years old. A higher number of Europeans (81.0%) than Māori (71.4%) sought orthodontic consultations with a higher proportion being female. Lower SES families were less likely to attend an orthodontic consultation. Of the 23.4% of children who did not seek orthodontic consultation following referral, 84.6% had parents who were concerned about the cost of possible treatment. Healey et al (2015) showed that, on average, lower-SES families had a higher malocclusion severity threshold for seeking orthodontic treatment.

Further investigation into what influences the uptake of orthodontic referrals would allow for a better understanding of the barriers to utilisation of orthodontic services and provide guidance as to how these barriers could be lowered. The aim of our study was to identify the reasons for attendance or non-attendance following referral from the CDS in Canterbury.

Method

A total of 3604 children aged 10-13 years in 2016 who had been issued an orthodontic referral were identified using an electronic oral health information system (Titanium). A random number was generated within Microsoft Excel for each child. The children were then sorted by the random number and the first 500 were selected. A questionnaire was sent to their parent or guardian.

The questionnaire was designed to collect non-identifiable information regarding attendance or non-attendance for orthodontic consultation, the reasons for attendance or non-attendance, as well as

* Scopes of practice for dental therapists. c2014-2018. DCNZ: Dental Council New Zealand; [accessed 2017 Jun 15]. http://www.dcnz.org.nz/i-practise-in-new-zealand/dental-therapists/scopes-of-practice-for-dental-therapists/

demographic information such as sex, age, ethnicity and socioeconomic status. Content, wording, and layout of the questionnaire was refined through semi-structured interviews conducted at the School of Dentistry, University of Otago. Parents of twenty children attending paediatric clinics provided feedback on their ability to read and understand the draft documents. Their comments aided the finalisation of the questionnaire.

To maximise the response rate, a short questionnaire (Edwards et al., 2002), an information sheet (Fox et al., 1988), and a pre-paid return envelope were sent out. An incentive to the parent/guardian to participate was given by offering entry into a prize draw to win one of three electric toothbrushes. Participants were given one month to return the questionnaire. Consent to participate in the study was indicated by the return of the completed questionnaire.

The limited contact information recorded in Titanium meant that a postal survey was the only practical method to contact the participants. To maintain the anonymity of the participants, no identifiable information was included in the returned surveys. Non-respondents could not be identified and so a second round of questionnaires was not used, to avoid repeated entry (Fox et al., 1988; Edwards et al., 2002).

The data were manually entered into a MS Office 2010 Excel spreadsheet. Ethnicity was determined as per Level 1 ethnic grouping of the National Standards guidelines (Ministry of Education, 2014†).

SES was assessed in two ways, first by school and then by parent's occupation. Children who attended a school with a decile rating of 1-3 were categorised as having low SES, those who attended a school with decile rating of 4-7 were categorised as having medium SES, and those who attended a school with decile rating of 8-10 were categorised as having high SES. A household-based SES was calculated using the New Zealand Socio-Economic Index (NZSEI-13) (Davis et al., 1999). The parents with occupation scores of 10-39 were categorised as having low SES; those with occupation scores of 40-59 were categorised as having medium SES; and those with occupation scores greater than 60 were categorised as having high SES.

Ethical approval for the study was obtained from the University of Otago Human Ethics Committee (reference number: 17/073). Locality approval was granted by the Canterbury District Health Board.

Results

Completed questionnaires were received from 143 participants (28.6%). Seven (1.4%) uncompleted questionnaires were returned because of an incorrect address. Of the 143 respondents, 120 (83.9%) had received a physical orthodontic referral form and 4 (2.8%) had received a verbal referral from the CDS in 2016. A total of 19 respondents (13.3%) said that they had not received any form of orthodontic referral, despite the CDS records indicating a referral had been made. All subsequent analyses are limited to the 124 respondents who recalled receiving a referral.

The data collected on participants' demographic characteristics and their uptake of orthodontic consultation are presented in Table 1. The ethnic distribution of the respondents closely reflected that of the source population. A similar proportion of males (74.1%) and females (72.7%) attended consultations. Children of Māori (78.6%) or European (74.7%) ethnicity had a higher consultation uptake rate than Asian (60.0%). Attendance rates for orthodontic consultation were higher among children from households of high SES.

More than two thirds of respondents who had received a referral (N=124) subsequently attended an orthodontic consultation. Three quarters of this group were concerned about the "bite" and/or aesthetics of their child's teeth, while the remaining quarter were not concerned with the appearance of their child's teeth or answered, "Don't know" (Table 2).

Of the children who attended a consultation, 80.2% were recommended to have orthodontic treatment. The majority (76.9%) chose to visit an orthodontist, 16.5% visited a general dental practitioner, and 6.6% visited both an orthodontist and general dentist. Of the non-attenders, more than half (54.5%) felt orthodontic treatment was 'too expensive' and approximately third (30.3%) believed orthodontic treatment was too early to consider for their child. Over half of the parents/guardians (63.2%) who said that they had not received any orthodontic referrals expressed concerns about either the aesthetics or function of their child's teeth.

Discussion

This study identified social, economic and ethnic factors that influence parental decision to attend an orthodontic consultation when referred by the CDS in Canterbury. Children of Māori and European ethnicity were more likely to attend than Asian. Higher rates of attendance were seen with children of high SES. More than two thirds of respondents subsequently attended an orthodontic consultation. Of this group, parents were most concerned about the "bite" and/or aesthetics of their child's teeth.

A weakness of this study was the low response rate (28.6%) for this postal survey. To maintain the anonymity of the participants, no identifiable information was included in the returned surveys. As a result, non-respondents could not be identified and therefore a second round of surveys was not sent to avoid repeated entry (Fox et al., 1988; Edwards et al., 2002). The low response rate opens the findings to potential non-response bias where systematic differences between responders and non-responders may affect the generalisability of the findings (Locker, 2000). An improved study design to facilitate a higher response rate would be beneficial for future investigations.

A strength of this study is that it provides an insight to into the post-referral behaviour of recipients of orthodontic referrals from the CDS in Canterbury. Cost was indicated as the main reason for non-attendance for over half of respondents. This is in conjunction with gradients in household and school-based SES, where increased numbers of high-SES individuals attended consultation following referral. Orthodontic consultation and treatment are not publicly funded in NZ. Within the Canterbury region there

Table 1. Uptake of referral by socio-demographic characteristics

		Respondents	Referral not received	Referral received (%)	Uptake of consultation (%) N=124	
					Attended	Did not attend
Total number		143 (100.0)	19 (100.0)	124 (100.0)	91 (73.4)	33 (26.6)
Gender	Male	66 (46.2)	8 (42.1)	58 (46.8)	43 (74.1)	15 (25.9)
	Female	77 (53.8)	11 (57.9)	66 (53.2)	48 (72.7)	18 (27.3)
Ethnicity	Māori	15 (10.5)	1 (5.3)	14 (11.3)	11 (78.6)	3 (21.4)
	Asian	10 (7.0)	0 (0.0)	10 (8.1)	6 (60.0)	4 (40.0)
	European	115 (80.4)	16 (84.2)	99 (79.8)	74 (74.7)	25 (25.3)
	Pasifika	2 (1.4)	2 (10.5)	-	-	-
	MELAA[d]	1 (0.7)	0	1 (0.8)	0 (0.0)	1 (100.0)
Household SES[a b] (NZSEI-13)	High	58 (40.6)	7 (36.8)	51 (41.1)	41 (80.4)	10 (19.6)
	Medium	38 (26.6)	5 (26.3)	33 (26.6)	23 (69.7)	10 (30.3)
	Low	36 (25.2)	4 (21.1)	32 (25.8)	22 (68.8)	10 (31.3)
School Decile groups[c]	High	94 (65.7)	7 (36.8)	87 (70.2)	64 (73.6)	23 (26.4)
	Medium	41 (28.7)	11 (57.9)	30 (24.2)	23 (76.7)	7 (23.3)
	Low	6 (4.2)	1 (5.3)	5 (4.0)	2 (40.0)	3 (60.0)

[a] Missing data from 11 children for referrals received/not received
[b] Missing data from 8 children for uptake of consultation
[c] Missing data from 2 children
[d] Middle Eastern/Latin American/African

Table 2. Uptake of referral by parental concern and perceived needs

		Respondents	Referral not received	Referral received (%)	Uptake of consultation (%) N=124	
					Attended	Did not attend
Total number		143 (100.0)	19 (100.0)	124 (100.0)	91 (73.4)	33 (26.6)
Parental concern	Concerned	103 (72.0)	12 (63.2)	91 (73.4)	69 (75.8)	22 (66.7)
	Not concerned	29 (20.3)	3 (15.8)	26 (21.0)	20 (22.0)	6 (18.2)
	Don't know	11 (7.7)	4 (21.1)	7 (5.6)	2 (2.2)	5 (15.1)
Orthodontic according to parents[d]	Need	91 (64.1)	7 (36.8)	84 (68.3)	63 (69.2)	22 (66.7)
	No need	13 (9.1)	4 (21.1)	9 (7.3)	6 (6.6)	3 (9.1)
	Unsure	38 (26.8)	8 (42.1)	30 (24.4)	22 (24.2)	8 (24.2)

[d] Missing data from 1 child

are several orthodontic practices who offer the first consultation at no cost. However, the cost of proceeding onto treatment following the consultation remains an issue. The perception by parents that their children were too young to seek an orthodontic consultation at the time of referral was the second most common reason for refusing a consultation. This indicates a lack of understanding of the importance of early orthodontic assessment, particularly to detect features that may benefit from early intervention (Kirschen, 1998). This reinforces the importance of communication and quality information given by the dental therapists to the parents in the referral process.

Our study had similar findings to that reported by Foster Page and Thomson (2005) who assessed malocclusion and uptake of orthodontic treatment by 430 children aged 12-13 years-old in Taranaki. Similarities included attendance rate following referral, with both studies finding that approximately three quarters of respondents who received a referral attend an orthodontic consultation. Foster Page and Thomson (2005) also reported those from higher SES were more likely to attend an orthodontic consultation than those lower SES. However, our findings showed the lowest orthodontic consultation uptake were Asian children and the highest were Māori. This contrasted with Foster Page and Thomson (2005) who reported lower consultation uptake for Māori than non-Māori.

The CDS plays an important role in providing oral health care and education to the adolescents in Canterbury. This study showed 80.2% of attendees to an orthodontic consultation were recommended treatment. This highlights

the dental therapist's ability to correctly identify the need for an orthodontic intervention aided by referral criteria guidelines. Early orthodontic referral by dental therapists may have had a contributory impact on timely provision of orthodontic treatment (Tan et al., 2016).

However, improvements could be made in passage of information from therapist to parents as well as education on reasons for referral. Nineteen respondents (7.5%) indicated they had not received a paper referral. CDS appointments occur within the school day and do not require the presence of a parent. The child is given the referral form and is expected to deliver it home (Tan et al., 2016). This process opens opportunity for the referral form to be lost in transit leaving the parent unaware of the referral. Consideration of electronic methods such as email or text message to relay information to absent parents may be beneficial.

Conclusion

This study reports on the post-referral behaviour of recipients of orthodontic referrals from the Community Dental Service in Canterbury. Social and ethnic inequalities were apparent in the uptake of orthodontic consultation following referral. Cost was the major barrier to consultation attendance. Improved communication including education between the dental therapist and parents may help raise awareness of the long-term benefits of an early orthodontic referral. Further research is required to support the findings of this study.

Acknowledgment

The authors acknowledge Professor Mauro Farella for his help with the ethics application at the University of Otago and Ann Dunlevy for her help with survey postage and collection.

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