Dental visiting trajectory patterns and their antecedents

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Abstract

Objective: This study aimed to test whether socioeconomic status (SES) in childhood may affect dental visiting patterns between ages 18 and 32 years.
Methods: Using data from a complete birth cohort, childhood SES status was measured (using the New Zealand Elley-Irving index) at each study stage between birth and 15 years. Longitudinal dental visiting data were available for 833 study participants from ages 15, 18, 26, and 32, and these were analyzed by trajectory analysis.
Results: Three separate dental visiting trajectories were identified; these were categorized as opportunists (13.1%), decliners (55.9%), and routine attenders (30.9%). Bivariate analyses showed low SES in childhood, male sex, and dental anxiety to be associated with membership of the "opportunist" dental visiting trajectory. Multinomial logistic regression showed that low childhood SES and dental anxiety were statistically significant predictors for membership in the opportunist or decliner trajectories after accounting for potential confounding variables.
Conclusion: Individuals who grew up experiencing low childhood SES were less likely to adopt a routine dental visiting trajectory in adulthood than those with a high childhood SES. Dental anxiety was also an important predictor of dental visiting patterns.

Introduction

Over the past 30 years, many studies have reported that regular dental attenders are less likely to suffer from the acute symptoms of dental disease, and that fewer tend to require emergency treatment than non-regular dental attenders (1-4). Australian adults who usually attend a dentist because of a dental problem rather than for a checkup are more likely to have fewer than 21 teeth, wear dentures, and have more missing teeth and dental caries, but are less likely to have coronal restorations (5). Problem-orientated visitors have a higher total caries experience, poorer periodontal health, and more tooth wear than people who usually visit a dentist for a checkup.

Research into social inequalities and oral health has tended to focus on low socioeconomic status (SES) in adulthood as a causal variable in adult oral health. Sanders *et al.* (6) investigated whether oral health behaviors follow a socioeconomic gradient. They found that poor visiting behaviors were more prevalent in socioeconomically disadvantaged groups, and surmised that cost barriers or public dental care rationing may suppress favorable dental care behavior. They also surmised that, compared with more affluent people, adults of low social position lack the necessary economic or educational resources to respond appropriately to health promotion initiatives. Behaviors (including dental visiting behavior) are shaped in social environments (7) (which include social norms, family and peer influences, and marketing strategies). Spencer and Harford (8) found that, although unfavorable dental visiting behavior may be a precursor for poor oral health, poor oral health was also a precursor to unfavorable visiting patterns. In general health, a clear association between childhood socioeconomic circumstances and health-related behavior was shown in large prospective

cohort study (9), even after adjustment for current SES. It may be that dental attendance is a behavioral indicator of a wider approach to health. Individuals who do not attend for regular dental checkups may be more likely to have poorer self-care.

Andersen and Davidson (10) described a conceptual model of health service use which suggested that people's use of health services is a function of factors which encourage or impede use and need for care. This model has evolved over five phases so that it now attempts to explain the links between contextual characteristics, individual characteristics, health behaviors and health outcomes. In this model, individual characteristics were divided into predisposing, enabling, and need factors. People with certain predisposing factors were more likely to use health services even though the predisposing factor was not responsible for health service use.

According to the accumulation risk model, health insults are accumulated incrementally over a person's life course, adding up over time to affect health (11). A variation of this model (called the accumulation risk model with risk clustering) suggested that exposures are clustered along the life course. For example, children raised in adverse social conditions are more likely to be exposed to infection, to become smokers, and to have poor oral hygiene habits which in turn increase their risk of oral disease (12). This developmental heterogeneity may result in differing dental visiting behaviors which (in turn) may result in differing oral health outcomes.

Very few longitudinal studies have investigated the individual predisposing factors of dental visiting behavior. Utilizing a prospective cohort study design, the current study investigated whether trajectories of dental visiting during adulthood are identifiable, and the factors that are associated with unfavorable dental visiting trajectories. The hypothesis was that the individual factor of low childhood SES was a predictor of poor dental visiting behavior in late adolescence and early adulthood.

Materials and methods

The Dunedin Multidisciplinary Health and Development Study is a longitudinal study of all 1,037 children who were born in Dunedin (NZ) between April 1, 1972 and March 31, 1973 (13). This study used data collected at all ages at which study members were assessed: birth, 3, 5, 7, 9, 11, 13, 15, 18, 26, and 32 years.

Dental visiting

Information on use of dental services was collected at ages 15, 18, 26, and 32, and was determined differently as participants aged. The assumption was made that all were regular attenders up to age 12, as the New Zealand School Dental Service (SDS) provided regular care to almost all children at that time (and the small number who had opted out are believed to have routinely sought private dental care) (14). At ages 15 and 18, participants were asked three dental attendance questions: 1) whether they were enrolled with the General Dental Benefit scheme (whereby all New Zealand adolescents were entitled to receive free regular dental care); 2) the time since their last dental visit; and 3) the reason for their last dental visit (whether for a problem for a checkup). At ages 26 and 32, use of dental services was determined by asking participants three questions: 4) whether they usually visited the dentist for a checkup or only when a dental problem arose; 5) the reason for their last dental visit (whether for a checkup or a problem); and 6) the number of months since the last visit. For each of the ages 15, 18, 26, and 32, regular attenders were identified as those who met both of the following criteria: a) usually visited for a checkup (an affirmative response to Q3 at age 15 and 18; an affirmative response to Q4 at older ages), and b) had made a dental visit during the previous 12 months (Q2 at ages 15 and 18; Q6 at older ages).

Covariates

Child characteristics determined at age 5 years were used as covariates: sex, the number of decayed, missing, or filled surfaces of deciduous teeth (dmfs), and whether the child had visited the SDS. Teeth missing due to exfoliation were not included in the analysis. At that time in New Zealand, virtually no child at 5 years of age received private dental care, so it was assumed that if the child had not visited the SDS, he or she had not visited a dentist at all. As the reason for visiting the SDS by age 5 years was usually for a checkup, as opposed to having treatment for a problem, the "visiting the School Dental Service by age 5 years" variable was considered an indicator of relatively early dental attendance.

Dental anxiety reported between the ages of 15 and 32 formed an additional covariate. An individual was defined as dentally anxious based on their responses to Corah's Dental Anxiety Scale (15) (DAS). Those who had stable low or moderate levels of dental anxiety (forming approximately 77.5% of the cohort) were classed as "not dentally anxious," while the remainder who had experienced greater or more unstable levels of dental anxiety [adult-onset anxious (7.7%); recovery (1.6%); stable anxious (7.2%) and adolescent-onset anxious (5.9%) groups] were classified as "dentally anxious" for the purposes of this analysis (16). Thus, a dentally anxious individual was one who had DAS scores over 13 for most of his/her assessments determined at ages 15, 18, 26, and 32.

Independent variable: childhood SES

SES was measured using the standard New Zealand occupationally based indices (17,18) which utilize a six-category

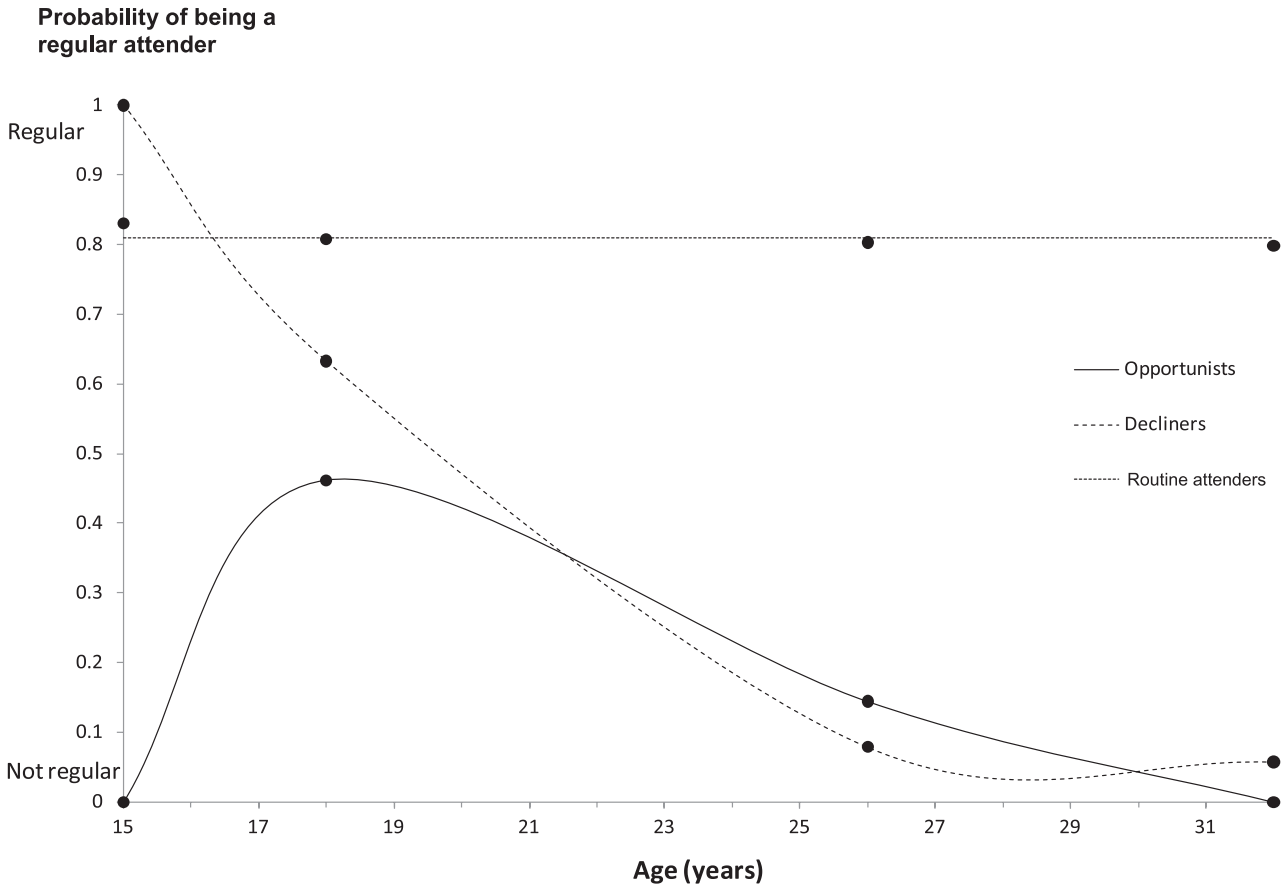

Figure 1 Dental visiting trajectories by age.

classification (where, for example, a doctor scores "1" and a laborer scores "6"). The indices have been updated periodically since 1985, and for this study, the index that was current at the wave of data collection was used to classify SES. In this study, the variable "childhood SES" was recorded as the mean of the highest SES level of either parent, assessed at each assessment between the study member's birth and age 15 years. Measurement of SES at a single point early in the life course does not capture cumulative exposure to low SES status, because there is some SES change within childhood (19). In the following analyses, study participants were allocated to high (Elley and Irving groups 1 and 2), medium (groups 3 and 4), or low (groups 5 and 6) childhood SES categories. Mean childhood SES values of 1.0 to 2.9 were categorized as high, 3.0 to 4.9 as medium, and 5.0 to 6.0 as low. Parents who were homemakers and students were excluded from analyses involving childhood SES.

Data analysis

Group-based trajectory modeling is a specialized application of finite mixture modeling, and can simplify longitudinal data by identifying developmental trajectory groups on a likelihood basis (20). The group-based trajectory analysis was performed with the PROC TRAJ in SAS version 9.1 (20). The PROC TRAJ macro assumes that missing data are missing completely at random. For this study, the trajectory model was fitted using the logit distribution, due to the binary classification of the dental visiting data. PROC TRAJ does not determine the "best" number of trajectories. Instead, the parameters for the trajectory model were determined on a maximum-likelihood basis, and the Bayesian Information Criterion was used to help identify the number of groups for the trajectory model. Three separate trajectories were identified by trajectory analysis (Figure 1). The three group model was selected on a maximum-likelihood basis, and it fitted known dental visiting patterns (14). Furthermore, there were adequate numbers of study members in each trajectory for the three group models. The combined effects of mediation/confounding by childhood SES on dental visiting behavior was estimated by comparing the unadjusted risk ratios with the adjusted risk ratios. PROC TRAJ uses first-order Taylor series expansion to calculate 95 percent confidence intervals (CIs) for the proportion of study members who fall into each

trajectory. Further to this, bootstrapping analysis was used as a secondary validation tool. According to standard practice, 999 bootstrap samples were taken, with 833 participants in each sample (matching the size of the original sample), randomly selected with replacement. PROC TRAJ was then run 999 times, on each of the bootstrap samples. Results were tabulated, and 95 percent CIs for trajectory group membership were then estimated from the bootstrap-estimated standard errors.

To estimate power, minimum-detectable risk ratios with fixed sample sizes for two tests with type I error = 0.05 and type II error = 0.2 were calculated: the effect of SES on risk of opportunist versus routine attendance, and the effect of SES on risk of decliners versus routine attendance.

The association of potential confounders of the relationship between childhood SES and dental visiting trajectories were tested using chi-square *P*-values. The potential confounders of sex, whether the participant was dentally anxious, 5-year-old dmfs, and having visited the SDS were tested. Potential confounders were those variables that were statistically significantly associated with the dental visiting trajectory, or for which there was a biological plausibility for a putative association. Bivariate analysis of SES at age 32 years and dental visiting trajectory was also undertaken to ascertain if it played a significant role in trajectory membership.

The multivariate analysis was undertaken with the three categories of dental visiting trajectory as the dependent variable and childhood SES as the main explanatory variable. Multinomial logistic regression was used to generate relative risk ratios, as the dependent variable was categorical and had more than two classes. For the regression model, the "routine attenders" group was selected to be the reference category, and risk ratios were estimated for the "opportunists" and "decliners" relative to that group. As there is an increasing difference between relative risk and odds ratio with increasing incidence rates, and there is a tendency for some to interpret odds ratios as if they are risk ratios, relative risk was used in multivariate analysis.

Results

Participation rates

Participation rates in the Dunedin Study have remained high since its inception, with 972 (96% of the living study members) taking part in the age-32 assessment, of whom 932 (96%) participated in the dental epidemiological examination. Dental visiting trajectories were calculated for 833 participants whose visiting behavior was known for at least three of the assessment ages for this study, and the current analysis was restricted to those individuals. The analysis excluded 104 study members for whom data was available at only two or fewer of the dental assessments (note that 22 study members were deceased by age 32 years). Any other missing data were missing at random.

Dental visiting trajectories

Three trajectories were identified depending on the dental visiting behavior reported when study members were assessed at the ages of 15, 18, 26, and 32 (Figure 1). One trajectory followed a constant pattern with a dental visiting regularity score just under 0.8. The second trajectory started with a dental visiting regularity of 1.0 at age 15 years, uniformly decreased to the low level of over 0.1 at age 26 years, where it remained constant to age 32 years. The third trajectory started at age 15 years at not being regular in dental visiting, became more regular in visiting though less than the other two trajectories at age 18 years, then became less regular in their dental visiting behavior to age 32 years. The minimum-detectable risk ratio with type I error = 0.05 and type II error = 0.2 was 2.13 for the effect of SES on risks of opportunist versus routine attendance, and 1.67 for the effect of SES on risks of decliners versus routine attendance.

Barriers to dental care increase for many New Zealanders when their eligibility for public dental care under the adolescent oral health care scheme ends on their 18th birthday. This resulted in some adolescents in the current study accessing public dental care at age 17 years, even though they had not earlier accessed public dental care via the SDS. Nearly one-third (30.9%, 95% CI = 26.3-35.6) were labeled the "routine attender" group because they reported seeing a dentist for a checkup within 12 months prior to each data collection period. Over half of the cohort (55.9%, 51.3-60.5) was labeled "decliners" because they had a higher probability of having attended for a checkup at age 15, but subsequent to age 15, their visits tended to be problem-orientated. The remaining group of 13.1 percent (95% CI = 10.6-15.7) was labeled "opportunists," and consisted of people who took their last opportunity for a free (to the patient) checkup in the 12 months before their 18th birthday, but subsequent visits were more likely to be problem-orientated. The bootstrapping analysis gave a median for routine attenders of 31.5 percent (95% CI = 27.0-36.8), decliners 55.3 percent (50.3-60.0), and opportunists 13.2 percent (10.5-15.9).

Bivariate analysis

In bivariate analysis, there was a statistically significant association ($P < 0.01$) between childhood SES and dental visiting trajectories, with high childhood SES participants more likely to be routine dental visitors than decliners or opportunists, and those of low childhood SES much less likely to be routine attenders than decliners or opportunists (Table 1). There was not a statistically significant association between adult SES and dental visiting trajectory ($P = 0.05$).

Table 1 Dental Visiting Trajectories by Childhood and Adult Socioeconomic Status

	Dental visiting trajectory								
	Opportunists		Decliners		Routine attenders		Chi-square		
Socioeconomic status	*n*	col %	*n*	col %	*n*	col %	*P*-value	Total	
Child SES									
High	12	(11.2)	61	(13.9)	60	(21.1)	<0.01	133	(16.0)
Medium	73	(68.2)	289	(66.0)	183	(64.4)		545	(65.7)
Low	22	(20.6)	88	(20.1)	41	(14.4)		151	(18.2)
Total: *n* (row %)	107	(12.9)	438	(52.8)	284	(34.3)		829	(100)
Adult SES							0.05		
High	13	(12.5)	81	(18.6)	53	(18.7)		147	(17.8)
Medium	51	(49.0)	220	(50.5)	162	(57.0)		433	(52.5)
Low	40	(38.5)	135	(30.1)	69	(24.3)		244	(29.6)
Total: *n* (row %)	104	(12.5)	436	(52.9)	284	(34.5)		824	(100)

SES, socioeconomic status.

Childhood SES was statistically significantly associated with 5-year-old dmfs, the proportion of children with one or more missing teeth, whether the child had attended the SDS by age 5 years, and with being dentally anxious (Table 2). Sex was not associated with childhood SES.

Sex and dental anxiety were associated with the dental visiting trajectories (Table 3). Females were more likely to be routine attenders and males more likely to be opportunists. Dentally anxious people were less likely to be routine attenders than less dentally anxious people ($P = 0.02$).

Table 2 Childhood SES by Study Member Characteristics

	Childhood SES								
	High		Medium		Low				
Study member characteristics	*n*	col %	*n*	col %	*n*	col %	Chi-square *P*-value	Total	
Sex									
Female	81	(48.5)	310	(47.8)	108	(50.2)	0.70	499	(48.4)
Male	86	(51.5)	339	(52.2)	107	(49.8)		532	(51.6)
Age-5 dmfs: *n* (mean)	137	(2.2)	588	(3.5)	193	(5.0)	<0.01	918	(3.6)
Attended SDS	123	(89.8)	544	(92.5)	161	(83.4)	0.02	829	(90.2)
Dentally anxious	12	(9.3)	79	(14.6)	125	(19.0)	0.02	121	(14.7)
Total: *n* (row %)	167	(16.2)	649	(62.9)	215	(20.8)		1,031	(100)

dmfs, decayed, missing, or filled surfaces of deciduous teeth; SDS, school dental service.

Table 3 Dental Visiting Trajectories by Study Member Characteristics

	Dental visiting trajectory								
	Opportunists		Decliners		Routine attenders				
Study member characteristics	*n*	col %	*n*	col %	*n*	col %	Chi-square *P* value	Total	
Sex									
Female	47	(43.9)	212	(48.1)	154	(54.0)	<0.05	413	(49.6)
Male	60	(56.1)	229	(51.9)	131	(46.0)		420	(50.4)
dmfs: *n* (mean)	101	(3.4)	393	(3.8)	266	(3.0)	0.24	760	(3.5)
Attended SDS	89	(88.1)	354	(90.1)	247	(92.9)	0.12	690	(90.8)
Dentally anxious	19	(18.3)	77	(18.1)	20	(7.2)	0.02	116	(14.4)
Total: *n* (row %)	107	(12.8)	441	(52.9)	285	(34.2)		833	(100)

dmfs, decayed, missing, or filled surfaces of deciduous teeth; SDS, school dental service.

Table 4 Multinomial Logistic Regression for Dental Visiting Trajectories and Study Member Characteristics

Visiting Traj†	Characteristics	Rel. risk ratio	95% CIs	Chi-square *P* value
Opportunists	Male	1.51	0.94, 2.40	0.08
	Age-5 dmfs	1.01	0.96, 1.05	0.81
	Visited SDS by age 5	0.62	0.28, 1.36	0.24
	Medium childhood SES†	1.66	0.83, 3.34	0.15
	Low childhood SES†	2.34	1.02, 5.41	<0.05
	Dentally anxious	2.69	1.42, 5.07	<0.01
Decliners	Male	1.35	0.98, 1.86	0.07
	Age-5 dmfs	1.02	0.99, 1.06	0.16
	Visited SDS by age 5	0.74	0.41, 1.34	0.33
	Medium childhood SES*	1.42	0.92, 2.20	0.11
	Low childhood SES*	1.90	1.08, 3.33	0.02
	Dentally anxious	2.43	1.49, 3.94	<0.01

Pseudo-$R^2 = 0.02$, model $P < 0.01$.

* Reference category = high childhood SES.

† Reference category = routine attenders.

dmfs, decayed, missing, or filled surfaces of deciduous teeth; SDS, school dental service; SES, socioeconomic status; CI, confidence interval.

Multinomial logistic regression

After adjustment for confounders and mediators in the multinomial logistic regression model, low SES in childhood continued to be associated with a higher risk of having an opportunist or decliner pattern of attendance (Table 4). Dental caries experience (dmfs) by age 5 years for both opportunists and decliners had a risk ratio close to 1. Risk ratios for low childhood SES and dental anxiety were statistically significant for both opportunists and decliners when routine dental attendance was the reference category. For sex, the associations fell just short of statistical significance ($P = 0.08$ for opportunists, $P = 0.07$ for decliners: each in comparison to routine attenders). To ascertain whether the childhood SES effect would disappear with the inclusion of adult SES, the multinomial logistic regression model was recalculated with adult SES included. The effect of childhood SES on membership of dental visiting trajectories remained, and adult SES was not associated with the outcome (data not presented here).

The unadjusted and adjusted risk ratios for opportunist/routine in low and high childhood SES were 2.7 and 2.3, while, for decliner/routine, they were 2.0 and 1.7. The unadjusted and adjusted decliner/routine risk ratios for low and high childhood SES were 2.1 and 1.9, while they were 2.1 and 1.4 for medium/high childhood SES. The differences between the unadjusted and adjusted risk ratios ranged from 0.3 to 0.7.

Discussion

This study aimed to determine a) whether trajectories of dental visiting behavior during adulthood are identifiable, and b) whether childhood SES was a predictor of membership in a dental visiting trajectory. Three such trajectories were described and subsequently investigated. The bivariate and multivariate analysis showed that low SES in childhood predicted less favorable dental visiting patterns through adolescence and early adulthood with participants of low childhood SES more likely to be opportunists or decliners than routine attenders.

The Taylor series expansion and the bootstrapping analysis gave similar 95 percent CIs. Also, the proportions of Study members who were in each of the three dental visiting trajectory groups fell within the 95 percent CIs for both the Taylor series expansion and the bootstrap analysis, thus supporting our findings.

The minimum-detectable risk ratios with the given sample sizes were sufficient to expect to obtain a statistically significant result and the obtained effect sizes were consistent the magnitude of estimated minimum-detectable effects. The adjusted risk ratios were attenuated by a range of 0.3-0.7 compared with the unadjusted risk ratios, signifying some, but not much attenuation due to the combined effects of confounding and mediation.

The limitations of the study need to be discussed. The study assumed that the benefits (or not) of routine dental care were similar irrespective of the dentist visited, and no differentiation was made between private-sector and public-sector dental care. Recall bias is also a possibility, with study members being required to recall the time since their last dental visit in months, but this question was asked at repeated assessments, so this should have minimized the influence of recall bias.

Previous studies have shown that dental visiting behavior is associated with SES (6,8). The current life course study has found that childhood SES was a predictor of dental visiting behavior in adulthood.

This study differed from previous research in two aspects. First, adult SES was not significantly associated with dental visiting trajectory. This suggested that childhood SES had a stronger influence on dental visiting behavior than adult SES. Second, the trajectory analysis approach enabled the investigation of two separate categories of nonroutine dental attenders. The opportunists were less likely to be regular attenders than both the decliners and the routine attenders, even when dental care was free to the care recipient, although the opportunists did tend to take advantage of their last free New Zealand dental check in the 12 months before they turned 18 years old. In contrast, decliners were regular dental attenders when the service was free, but became less regular in their attendance with the age-associated loss of government funding at the age 18. This suggested that the two groups differ with respect to their philosophies of dental care and its efficacy.

To understand the distinction between opportunists and decliners, one needs to have an overview of the public child dental care system in New Zealand. Up to the age of 12 years, children accessed dental care via the SDS. The unique New Zealand dental service system means that all children were routine attenders up to the age of 12 years. From ages 13 to 17 years, dental care was accessed via the adolescent oral health care scheme (previously the general dental benefit scheme), whereby dentistry was provided free of charge to all teenagers by dentists working under a third-party funding arrangement. There was not a continuity in dental care providers: children aged 12 and younger received dental care in the SDS; after that, the care was provided by contracted private sector dentists. Many adolescents attended for a last free dental check even if they had not been to a dentist since leaving the SDS some years earlier. The opportunists tended to be those participants who did not access dental care with the SDS, while decliners did. While Figure 1 indicates that the two groups did not differ much by age 32, their different pathways to the same point suggest a degree of developmental heterogeneity which was likely to be important for oral health in adulthood, given the likely preeminence of the accumulation model in the etiology of the common oral conditions (12).

Previous studies have found that attitudes and beliefs about oral health and dental care are important determinants of the use of dental services (21-25). Utilizing the longitudinal Florida Dental Study, Riley *et al*. (26) used a hierarchal clustering algorithm to identify empirical groups of dentate adults with similar attitudes and beliefs about dentists and oral health. They identified four such groups and found that they had differing histories of oral health care. They noted that such groups were formed on variables more proximal to oral health than those used in traditional epidemiology, such as age and sex.

The Dunedin study remains the only dental study to have followed a group of individuals from birth to adulthood. Its strengths include a high retention rate after three decades and its mix of clinical and self-report outcome measures. The use of trajectory analysis in the current study allowed the observation and categorization of the degree of change and stability in participants' dental visiting behavior as they aged from mid-adolescence to their early 30s.

The association between dental anxiety and dental visiting behavior has been shown in previous studies. For example, Thomson *et al*. (27) reported from the same cohort study that the incidence of dental anxiety was greatest among those who had not visited a dentist at all during the study period, and that it was lowest among the group described as "preventive visitors." In a Swedish study of 1,017 urban women aged 38 to 84 years, Hagglin *et al*. (28) found that high dental anxiety was associated with irregular dental utilization among dentate women. Similarly, in a Canadian longitudinal study, Maggirias and Locker (29) found that people reporting an episodic visiting pattern and those who avoided dental care altogether were also more likely to be anxious about dental treatment. In Detroit, Sohn and Ismail (30) found that, among those who had dental insurance, dentally anxious patients were less likely to visit dentists regularly.

Part of the decliners' change from regular to non-regular attendance over time might be explained by their not being able to satisfactorily negotiate the transition from public to private dental care. One could then hypothesize that the routine attenders' transition to private dental care was buffered to a certain extent by their higher childhood SES. However, poor negotiation of the transition from public to private dental care would not explain all of the decliners' change from regular to non-regular attendance over time; otherwise, there would have been a more abrupt fall-off in regular dental attendance after age 15 years, rather than a continuous decline towards non-regular attendance. By age 26 years, the pattern of dental attendance by the decliners had reached its lowest level. The age of leaving school would not be expected to impact on the use of dental services at ages 13 to 17 years, because it is accessed via the adolescent oral health care scheme, where dentistry is provided free of charge to all teenagers, whether or not they are enrolled in a school. Further research into why people do not continue their prior regular dental visiting behavior is required.

That the opportunists were not regular attenders even when dental care was free indicated that the cost of dental care was not the only (or even the major) reason for their not accessing regular dental care. This suggests that in spite of public health messages about the importance of regular dental care having been promoted over many years, these messages have not been acted on by a large proportion of the New Zealand population. Fewer than one in three participants were routine attenders, while more than half became less regular in their dental visiting behavior as they aged.

Despite efforts by the New Zealand SDS to eliminate oral health inequalities, more needs to be done to improve the dental visiting behavior of adults whose parents were of low SES. More research into the causes of regular and irregular dental visiting behaviors will assist in improving population oral health. Further research could investigate whether membership of a dental visiting trajectory is a predictor of clinical and self-reported adult oral health and explore the effect of SES mobility on dental visiting and oral health.

Conclusions

Three trajectories of dental visiting behavior were identifiable, and low SES in childhood predicted less favorable dental visiting patterns through the life course (to age 32, at least). Low-SES children were more likely to be "opportunists" or "decliners" than routine dental attenders in adulthood.

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