Perceived competition in private dental practice in Finland

Risto Tuominen and Jaakko Palmujoki
Department of Public Health, University of Helsinki, Helsinki, Finland

Tuominen R, Palmujoki J. Perceived competition in private dental practice in Finland. Acta Odontol Scand 2000;58:213–216. Oslo. ISSN 0001-6357.

A questionnaire study was conducted among 350 private dentists in Finland to investigate their perception of competition and how this associated with practice characteristics. The questionnaire comprised 46 questions dealing with perceptions of competition, marketing, and collegiality, respondents' personal and practice characteristics, including age, sex, area of main practice location, weekly hours in private practice, functioning in solo or in joint practice, cooperation with other dentists, and whether practicing in more than one location. The majority of these private dental practitioners perceived much competition between themselves. Almost all (96%) of those feeling much competition today expected it to be more intense after 5 years, compared to 60% of those not perceiving much competition today ($P < 0.001$). Private practitioners perceiving much competition also felt it from public health centers significantly ($P < 0.001$) more often (46%) than others (24%). Logistic regression models revealed that those with a practice in more than one location were over 7 times more likely not to perceive competition. Those practicing outside metropolitan Helsinki area had 3.6 times the odds of not perceiving competition, and for women overall the odds ratio was 2.5. Increasing competition in private practice is a widely felt concern, and it may diminish the willingness of new graduates to attempt penetration of the market and establish their clinics. □ *Competition; dentists; economics; private practice*

Risto Tuominen, Department of Public Health, PO Box 41, FIN-00014 University of Helsinki, Finland. Tel. +358 9 1912 7550, fax. +358 9 1912 7540, e-mail. Risto.Tuominen@Helsinki.Fi

From an economic standpoint, delivery of dental services is not considered a free market economy (1) because of limited competition among dentists (2), restricted entry of providers to the market (3), and consumers' poor knowledge of the products and services (4). Increased competition in health care has been justified by the potential reduction in fees. When the number of health-care providers in a market remains limited the professions are said to enjoy prices of monopolistic competition, which are higher than could be expected in a more competitive environment. However, there is little evidence to support this contention (2). Because in health care, dentistry included, third party involvement in financing the costs of treatment and the state's role in regulating the market are significant, competition is assumed to be inefficient (5).

On the other hand, more competition among dentists has been seen as unfavorable, because dentists themselves tend to believe it would reduce the quality of services (6). In New Zealand, between 1985 and 1995, the shift in dentists' attitudes towards acceptance of an openly competitive dental-care market was not dramatic, but nevertheless steady (7).

Finnish public health centers provide dental services free of charge to all aged 18 or younger. In some rural areas, but usually not in towns, health centers are also able to offer subsidized dental services to a proportion of older adults. Since 1991 adults born in 1956 or later have been eligible for dental services subsidized by social insurance from private practitioners.

In Finland, dentist density remained static during the 1990s and is not expected to change markedly in the near future. However, marketing and price competition became more open during the decade, which may have affected dentists' perceptions. Some dentists are probably more reluctant than others to adopt a competitive and market-oriented approach to their delivery of dental services. This may also affect their choice of work environment. Solo practice is the most common set up in many countries (8, 9). Solo practitioners are more often men (10) and male dentists have been shown to be more productive (10–12) and to do more clinical working hours than women (13).

The aim of this study was to investigate the perceived competition among Finnish private dental practitioners and how this associates with practice characteristics.

Material and methods

For the pilot study, a random sample of 50 was drawn from the 2476 registered as private dental practitioners by the Finnish Dental Association. A questionnaire was distributed in May 1998 along with a paid return envelope. Within a month, 90% of the sampled dentists had returned an acceptably filled-out questionnaire, which contained 27 questions dealing with personal and practice characteristics, planning and marketing activities, and cooperation with other dentists, physicians, and denturists. Twenty-one 7-scale Likert-type questions were also included, dealing with views about competition, collegiality, and marketing. These opinions were solicited in relation to the present time and 5 years prior to it, and as expectations of the situation in 5 years' time.

Based on the findings of the pilot study, some questions for the main survey were modified, 3 were completely

removed and 1 added. The final survey questionnaire comprising 46 questions was administered in September–November 1998. For the main survey, a random sample of 305 private dental practitioners was drawn from the same register as for the pilot study. The 5 dentists drawn who had already answered the pilot study were not sent another questionnaire, but their data were included.

The pilot study and main study data were combined for all questions where the phrasing remained identical. Those who failed to return the questionnaire within a month were reminded by telephone. A new questionnaire form and ready paid return envelope were mailed to subsequent non-respondents. The final participation rate was 68%.

The level of competition was based on the question: 'How much competition exists between private dental practitioners at this moment?', with the 7-scale Likert-type alternatives numbered from 1) Very little, to 7) Very much. Alternative 4 represented a neutral opinion. Alternatives 1, 2, and 3 were later combined as little competition, and alternatives 5, 6, and 7 as much competition.

Separate, but similar, questions were about the level of competition 5 years prior to the survey and the expected level 5 years hence in relation to the current situation. The answers were later grouped as less competition (1, 2, or 3), neutral opinion (4), and more competition (5, 6, and 7). There were similar questions about the level of competition among private practitioners and between themselves and publicly funded public health centers.

In statistical analysis of the data, the chi-squared test was used to evaluate proportions, and Student's *t*-test the means. The level of statistical significance was set at *P*-values less than 0.05.

Multiple logistic regression models were fitted to study how the respondents' age, sex, and studied practice characteristics explained the probability of not perceiving competition (alternatives 1–3) between private practitioners. Practice data included weekly clinical hours in private practice, whether alone or in joint practice, and if working in more than one location. Area of main practice location was coded as 1) metropolitan capital (Helsinki) area, 2) other large city, and 3) smaller city or rural area. Cooperation with other dentists was based on how many patients per month were referred to other dentists (Table 1). The odds ratios and their 95% confidence limits were calculated from the logistic regression coefficients and their standard errors (14, 15).

Results

Female dentists were only slightly younger (44 years) than their male colleagues (46 years). Joint practice was a more common work environment than solo practice among both women (71%) and men (72%) than solo practice. However, women worked significantly ($P < 0.001$) fewer clinic hours (25 h/week) than men (30 h/week).

The majority of these Finnish private dental practitioners felt that there was currently much competition between them and many that there had been less 5 years earlier. Among those (70%) presently perceiving much competition, the proportion experiencing more 5 years earlier was only slightly higher (28%) than among those not perceiving much competition today (21%) (NS). There was also a general expectation of more competition in 5 years' time: 96% of those currently perceiving much competition expected to have more 5 years hence, compared to 60% of those perceiving less competition today ($P < 0.001$) (Table 2).

Table 1. Personal and practice characteristics of the sample dentists ($n = 237$)

Mean age in years	44
Weekly clinical hours in private practice	27
Number of patients referred to other dentists per month	3
Percentage	
Women	59
Working in joint practice	71
Working in more than one location	17
Practice in metropolitan Helsinki	11

A similar pattern was observed in their perceptions of competition with public health centers, with more than half perceiving less competition 5 years earlier and more in 5 years time (Table 3). Those perceiving much competition between private practitioners also perceived it in relation to public health centers significantly ($P < 0.001$) more often (46%) than others (24%). However, in terms of perceptions 5 years earlier and 5 years hence, no differences were observed between those currently perceiving high or low levels of competition.

The small group who did not perceive competition differed significantly from the others. Logistic regression models revealed that those with a practice in more than one location had more than 7 times the odds of not perceiving competition. Dentists practicing outside metropolitan Helsinki were 3.6 times less likely to be perceiving competition and females overall 2.5 times less likely. Older practitioners also had a significantly ($P < 0.005$) higher probability of not perceiving competition today (Table 4).

Discussion

The present study forms a part of a larger survey in Finland of 9 health-care professions registered to provide health services directly to the public. The dental data were based on responses from almost 10% of all private practitioners nationwide. The age, sex, and geographical distributions of the respondents were practically identical to those of all private practitioners. The findings can thus be considered representative of all Finnish private practitioners.

In private practice in Finland, female dentists outnumber males, which is different from, for example, Norway and the USA (10, 16). Also, solo practice is less common in Finland (8, 9) and female dentists are not over-

Table 2. Percentage distribution of perceived competition between private dental practitioners 5 years before the survey, at the survey time, and 5 years hence

	5 years before the survey ($n = 227$)	At the time of the survey ($n = 235$)	5 years hence ($n = 237$)
Little/less competition	40	14	4***
Neutral opinion	35	16	11
Much/more competition	25	70	85***

Statistical significance by chi-squared test when compared with perceived competition at the time of the survey: ***$P < 0.001$, otherwise non-significant.

Table 3. Percentage distribution of perceived competition between private dental practitioners and public health centers 5 years before the survey, at the survey time, and 5 years hence

	5 years before the survey ($n = 228$)	At the time of the survey ($n = 232$)	5 years hence ($n = 237$)
Little/less competition	51	38	20***
Neutral opinion	36	23	24
Much/more competition	13*	39	56***

Statistical significance by chi-squared test when compared with perceived competition at the time of the survey: *$P < 0.05$, ***$P < 0.001$, otherwise non-significant.

represented among private joint practitioners (10). Although female dentists work fewer clinic hours than males in Finland, as in Norway (10), delivery of dental services differs so much between the countries that the findings of the present study should be generalized cautiously. Although the tradition of men being the family breadwinners is less prominent these days, it may partly explain why women were significantly less likely to perceive competition.

The questionnaires for each profession were based on a set of common questions, dealing with marketing of services and experiences in competition, plus additional questions of particular interest to each profession only.

The distributions of the 7-scale answers concerning levels of competition were skewed. Levels of competition 5 years prior to the survey were skewed to the left, the majority of respondents feeling that competition was less than today. Present and future perceived competition, on the other hand, was more often considered to be harder, causing skewness to the right. These data were thus analyzed using dichotomies, much versus not much, and little versus not little competition, instead of continuous scales.

When more extreme dichotomies—level categories 6–7 and 1–2 alone—were analyzed the differences were even more significant. However, the small numbers of cases in the extreme groups made the logistic regression models unstable and probably produced unreliable estimates.

Although increased competition in private dentistry was clearly demonstrated in the majority of the expressed opinions, these results do not directly imply that dentists in Finland would be shifting along the collegiality competition continuum towards more of a competition situation, as suggested earlier in New Zealand by Bell and Fay (17).

As dentist density in Finland has remained stable during the last decade and no changes are predicted for the present one, possible reasons for the increase in perceived competition could be greater open marketing by dentists along with improved dental health among the adult population. The increasing proportion of dental disease-free adults has also been mentioned as a consideration when planning future needs for the work force in dentistry (18).

In Finland, as elsewhere, third-party involvement in dental-care financing is expanding. More generous health insurance coverage, whether through a private or public scheme, should decrease the insured's interest in seeking lower prices; it will also increase demand (19). In such an environment, price-cutting is not necessarily an effective means of competition among private practitioners. At present in Finland, every year one more age cohort is eligible for subsidized dental care, which can be obtained from private practitioners. According to economic theory (1) this development will increase demand for dental services. The overall effect of this increase in demand and the simultaneous improvement in the adult population's oral health and possible subsequent decrease in need for dental care remains to be seen.

Public health centers are subsidized by tax and can offer treatments at significantly lower charges than private practitioners, unless patients have almost total insurance coverage. Private practitioners are worried that they will face increased competition from these publicly funded organizations as well. When patients are without generous insurance coverage, it is practically impossible for private practitioners to compete on prices with heavily subsidized public health centers. Other means of competition, like accessibility and availability of services, shorter waiting time and other quality components need to be emphasized, as suggested by Meskin (20).

Concerning the age of the dentists, the odds ratio of 1.1 indicates that 1 extra year means about 10% more

Table 4. Odds ratios with their 95% confidence limits for the background factors for private dental practitioners not presently perceiving competition between themselves, obtained from the logistic regression model ($n = 225$)

	Odds ratio	95% confidence limits
Background factors		
Age	1.1	1.0, 1.2
Female sex	2.5	1.0, 6.3
Cooperation with other dentists	0.9	0.7, 1.1
Weekly clinic working hours	1.0	1.0, 1.1
Joint practice	1.3	0.5, 3.3
More than one practice	7.3	2.5, 21.3
Practice in metropolitan capital area	0.3	0.1, 0.8

likelihood of not perceiving competition. Older dentists will have had their clinics running for several years longer; these are well established and generally run without much need for advertising and other marketing. Many older practitioners are also willing to reduce their efforts in terms of clinic hours and services. This is in line with the finding of Grembovski et al. that older practitioners provide fewer services per hour (21).

Dentists practicing in more than one clinic attract patients from a wider population base. It may be that those working in a sole location are more vulnerable to changes in patients' attendance. Dentists also practicing elsewhere were slightly more often men and significantly younger than those with a sole location. However, the logistic regression model simultaneously controlled the effects of all other factors in the model, so the observed 7-fold odds ratio for not perceiving competition if practicing in more than 1 clinic was not affected by the other background factors.

Increasing competition in private practice is a widely felt concern, a concern which may also reduce the willingness of new graduates to attempt penetration of the market and establish their private clinics. In more open competition, more managed and efficient forms of practices like practice networks are likely to become increasingly popular ways of cutting costs.

Acknowledgements.—This study was supported by the Finnish Cultural Foundation and the Yrjö Jahnsson Foundation.

References

1. Tuominen R. Health economics in dentistry. Malibu, California: MedEd; 1994. p. 8–13.
2. Frech III HE. Competition and monopoly in medical care. Washington, D.C.: AEI Press; 1996.
3. Fraundorf KC. Organized dentistry and the pursuit of entry control. J Health Politics Policy Law 1984;8:759–81.
4. Pauly MV, Satterthwaite MA. The pricing of primary care physicians' services: a test of the role of consumer information. Bell J Econ 1981;12:488–506.
5. Polder JJ, Hoogland J, Jochemsen H, Strijbos S. Profession, practice and profits: competition in the core of health care system. Systems Res Behav Sci 1997;14:409–21.
6. Fay MT, Bell JD. Competition, advertising and the professions: a cross profession comparison. NZ J Business 1989;11:33–41.
7. Fay MT, Bell JD. A longitudinal study of the attitudes of the dental profession towards competition and advertising. NZ Dental J 1997;93:10–13.
8. Grytten J, Dalen D. Too many or too few? Efficiency among dentists working in private practice in Norway. J Health Econ 1997;16:483–97.
9. Brown J, Lazar V. Solo general practitioners and specialists. J Am Dent Assoc 1998;129:11559.
10. Grytten J, Skau I. Supply of dental services in Norway: the impact of a growing proportion of female dentists. Norw Dent J 1999;109:224–7 (Summary in English).
11. Brown J, Lazar V. Trend analysis of dental expenditures by selected dentist and practice characteristics 1985–1995. J Am Dent Assoc 1998;129:1615–21.
12. Brown J, Lazar V. Differences in net income of male and female owner general practitioners. J Am Dent Assoc 1998;129:373–8.
13. Grytten J, Skau I. Fees and economies of scale in private dental practice in Norway. Norw Dent J 1999;109:172–8 (Summary in English).
14. Afifi AA, Clark V. Computer-aided multivariate analysis. Belmont, CA: Lifetime Learning Publications; 1984. p. 287–308.
15. Kleinbaum DG, Kupper LL, Morgenstern H. Epidemiologic research: principles and quantitative methods. Belmont, CA: Lifetime Learning Publications; 1982. p. 405–507.
16. Brown J, Lazar V. Trends in the dental health work force. J Am Dent Assoc 1999;130:1743–9.
17. Bell JD, Fay MT. Attitudes of dental practitioners towards advertising and competition. NZ Dent J 1990;86:86–9.
18. Grytten J, Lund E. Future demand for dental care in Norway; a macro-economic perspective. Community Dent Oral Epidemiol 1999;27:321–30.
19. Manning WG Jr, Bailit HL, Benjamin B, Newhouse JP. The demand for dental care: evidence from a randomized trial in health care. J Am Dent Assoc 1985;110:895–902.
20. Meskin LH. The competitive edge. J Am Dent Assoc 1994;125: 656–8.
21. Grembovski D, Milgrom P, Fiset L. Factors influencing variation in dentist service rates. J Public Health Dentistry 1990;50:244–50.

Received for publication 12 May 2000
Accepted 10 August 2000