

DENTIST SERVICE UTILIZATION OF ADULT FINNS: RESULTS FROM THE NATIONAL HEALTH- CARE SURVEY

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Objective

Investigating the utilization of dentist's services among Finns aged 20 or over:

- Which factors are associated with care seeking?
- Which factors affect the number of visits utilized?
- Do subvention for adult dental care and the public dental sector's supply for the whole population have an increasing effect on utilization?



Theoretical background

- **Individual maximizes her own well-being by demanding health services (Grossman 1972)**
- **Rationing and supplier-induced demand**
 - * physicians or dentists
 - * price subsidization for adult dental care

Utilization depends on the need and morbidity (e.g. oral health status and dental problems)



Data sources

1/2

- **Finnish Health Care Survey (FIN-HCS) conducted jointly by the Social Insurance Institution and the National R & D Centre for Welfare and Health in 1996**
 - * a stratified one-stage cluster sampling; households formed clusters
 - * collected by the Computer Assisted Personal Interviewing technique



Data sources

2/2

- **Additional information from various registries, statistics and information concerning respondents' housing conditions**
- **Sample: $n = 4512$; age 20–92 years**
Excluded:
 - * people who were edentulous or used removable prostheses ($n = 1809$)
 - * missing data ($n = 118$)



Methods

1/2

Two-part model

Stage I

- Determining
 - * probability of visiting the dentist
 - * probability of being recalled by the dentist
- Recursive probit model

Stage II

- Estimating the number of visits to dentists
- Zero-truncated negative binomial (NB) regression



Methods

2/2

- **Maximum likelihood (ML) estimation**
- **Chow-type test**
 - ⇒ gender differences in utilization
 - ⇒ separate models for females and males
- **Sampling design of FIN-HCS**
 - ⇒ sampling weights
 - ⇒ households as primary sampling units



Dependent variables

	Mean	
	Females	Males
	(<i>n</i> = 2282)	(<i>n</i> = 2230)
Visiting a dentist		
Yes/No	0.39	0.32
Recalling by the dentist		
Yes/No	0.19	0.17
Number of visits		
All	0.90	0.78
Users	2.33	2.44
(females <i>n</i> = 880; males <i>n</i> = 714)		



Independent variables

1/2

In(Risk)

Risk = risky days/145; Variable
controlling for different interview date

Age

Age in years

Age²

Age x age

Age2040*

= 1, if age between 20 and 40

In(Income)

Income = annual disposable income in
FIM 1000 per household member

Unemployment*

= 1, if unemployed

Education*

(*ref. value 10-12 years of education*)

Basic

= 1, if \leq 9 years of education

High

= 1, if \geq 13 years of education

Pain*

= 1, if toothache

* Dummy-variable



Independent variables

2/2

Oral health*	(ref.value Best oral health All natural teeth)
Good	= 1, if missing 1- 5 teeth
Fair	= 1, if missing 6- 10 teeth
Poor	= 1, if missing more than 10 teeth
Fear*	= 1, if visits to dentists frightening
Time*	= total time in hours required for a visit to the dentist
Number of dentists	= number of dentists working in health centre districts per 1000 residents
Care for all*	= 1, if public health center provides dental care for the whole population
Recalling*	= 1, if is invited by the dentist to the office
Midcare*	= 1, if dental treatment is unfinished
	Control variable in the second stage



Presenting results

Coefficients

Marginal effects

= Change in the probability of a positive outcome when a covariate changes its values from

* mean \rightarrow (mean + 1), for continuous variables

* 0 \rightarrow 1, for dummy-variables



Results

Among both females and males

- care seeking was common and the number of visits was high if in need (pain)
- unemployment negatively affected the probability of getting recalled

The number of visits utilized was high if

- ◊ females had a fair or poor oral health status
- ◊ males had a good or fair oral health status



Visiting a dentist and being recalled: coefficients and marginal effects, Females

Variable	Visiting		Recalling		
	Coeff.	Marg effect	Coeff.		Marg effect
<i>Continuous</i>					
In(income)	0.013	0.005	0.158	*	0.015
Time	-0.068	-0.026	0.043		0.004
Nr of dentists	-0.064	-0.024	-0.022		-0.002
Age	0.018	0.007	0.017		0.002
<i>Dummy</i>					
Age2040	0.153	0.058	-0.083		-0.008
Unemployment	-0.100	-0.037	-0.270	**	-0.024
High education	0.013	0.005	-0.105		-0.010
Fear	-0.221	***	-0.083		-0.005
Care for all	-0.077		-0.225	*	-0.020
Recalling	0.929	***	0.357		



Visiting a dentist and being recalled: coefficients and marginal effects, Males

Variable	Visiting		Recalling		
	Coeff.	Marg effect	Coeff.		Marg effect
<i>Continuous</i>					
In(income)	0.182 *	0.061	0.155		0.037
Time	-0.031	-0.011	-0.056		-0.013
Nr of dentists	-0.075	-0.025	0.014		0.003
Age	-0.006	-0.002	0.060 ***		0.014
<i>Dummy</i>					
Age2040	0.043	0.014	-0.002		0.000
Unemployment	-0.113	-0.037	-0.400 ***		-0.080
High education	-0.179 *	-0.058	0.002		0.001
Fear	-0.136	-0.045	-0.190 *		-0.043
Care for all	-0.013	-0.004	-0.130		-0.030
Recalling	1.346 ***	0.495			



Number of visits to dentists: coefficients and marginal effects, Females & Males

Variable	Females			Males		
	Coeff.		Marg effect	Coeff.		Marg effect
<i>Continuous</i>						
In(income)	-0.003		-0.004	-0.012		-0.018
Time	0.130 *		0.186	0.051		0.080
Nr of dentists	0.311 **		0.444	0.046		0.071
Age	0.012		0.017	0.051 *		0.079
<i>Dummy</i>						
Age2040	-0.173		-0.247	0.365 *		0.566
Unemployment	-0.014		-0.020	-0.157		-0.244
High education	-0.191 *		-0.272	-0.049		-0.077
Fear	0.042		0.060	0.123		0.190
Care for all	0.017		0.024	-0.032		-0.050



Discussion

1/2

- Different factors affected the probability of care seeking and the number of visits utilized among females and males
- Need for care (pain) best predicted utilization of dentist's services
- Supply positively affected the number of visits only among females
- Subvention for adult dental care had an increasing effect on the number of visits utilized only among males



Discussion

2/2

- Unemployment had a decreasing effect on the probability of getting recalled
- Recalling significantly affected care seeking
 - ⇒ effect of supplier-induced demand
 - ♦ regional differences in supply of services
 - ♦ supply of private dental sector strong in areas where the public sector offers few services
 - ⇒ inequality in utilization
 - ⇒ further study: aim for studying and explaining the factors driving inequalities in the demand for dentist's services.

