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Inequalities in oral health and oral health care delivery among adults in Hong Kong: an analysis of extant data

Key Messages

1. Socio-demographic variations in oral health knowledge, attitudes and behaviour exist in Hong Kong; older adults living in institutions have poorest oral health knowledge, attitudes, and behaviour.
2. Socio-demographic variations in oral health exist with respect to clinical oral health status and perceived burden of oral health on quality of life. Older adults living in institutions have poorest dental caries status.
3. Socio-demographic variations in the use of oral health care services exist. Older people, particularly those living in institutions, have less accessible oral care services.
4. This study highlights inequalities in oral health and oral health care delivery among adults in Hong Kong. Appropriate provision of oral health care services for older people is needed.

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Introduction

In the past, local health service research has focused on mapping the prevalence and severity of various diseases over time. A key indication of the success of a health care system is the overall reduction in the prevalence of diseases that are life threatening or detrimental to quality of life. Although oral health care has improved markedly in recent decades, gross variations remain with respect to oral disease patterns among populations, which are primarily related to socio-demographic factors.[1] It is now widely viewed that a true measurement of the effectiveness of any health care system is how small are the variations in health status within the population. Information on social inequalities in oral health care in Hong Kong is scant. We analysed an extant data set of oral health in Hong Kong (using the Hong Kong Oral Health Survey conducted in 2001)[2] and assessed socio-demographic variations in oral health knowledge, attitudes, behaviour, and clinical status, as well as in the impact of oral health on quality of life, and in the use of oral health care services accounting for predisposing and enabling factors.

Methods

This project was conducted from November 2005 to October 2006. Socio-demographic variations in oral health knowledge scores (derived from knowledge of the causes of dental caries and periodontal disease and how to prevent them), oral health attitude scores (derived from attitudes towards dental check-up, dental treatment and tooth loss), and oral health behaviour scores were assessed using a 2-way analysis of variance (ANOVA). Oral health status comprised clinical oral health status (dental caries status according to the number of untreated decayed, missing, filled teeth [DMFT]), periodontal status (Community Periodontal Index), and perceived burden of oral health on quality of life (Oral Health Impact Profile scores) and was assessed using a 2-way ANOVA taking account of age-gender interactions. Finally, a regression model was created where dental attendance pattern (subjects categorised as 'regular' or 'irregular' dental service attenders) was the dependent variable, whereas oral health knowledge score, oral health attitude score, oral health behaviour score, and oral health status (of different age groups and genders) were independent variables.

Results

Variations in oral health knowledge, oral health attitudes, and oral health behaviour existed with respect to age ($P<0.001$, Table 1). Younger adults (aged 35-44 years) had better oral health knowledge, attitudes, and behaviour. Those aged ≥60 years living in institutions had the poorest oral health knowledge, attitudes, and behaviour. Gender variations in oral health knowledge, attitudes, and behaviour were not apparent ($P>0.05$).

Variations in clinical oral health status existed with respect to age and gender (Table 2). Age was associated with the dental caries status (the number of DMFT) [$P<0.001$]. Those aged ≥60 years living in institutions had the poorest

oral health. Gender variations existed among older people living in institutions with respect to the number of DMFT (P<0.001). Age had a borderline significant association with respect to Community Periodontal Index ratings (P=0.05). Variations in the impact of oral health on quality of life (OHIP14 scores) were apparent with respect to age (P<0.001). Older people had higher OHIP14 scores than younger adults aged 35 to 44 years (Table 2). Variations in the impact of oral health on quality of life with respect to residency (community versus institution) among older adults were not apparent (P>0.05). Gender variations in the impact of oral health on quality of life were not apparent (P>0.05).

Having accounted for oral health knowledge, attitudes, behaviour, and status, as well as socio-demographic factors

Table 1. Socio-demographic variations in oral health knowledge, attitudes, and behaviour

Socio-demographic (Mean±SD)	Adult (aged 35 to 44 years)			Non-institutionalised older people			Institutionalised older people		
	Male (n=157)	Female (n=218)	Total (n=375)	Male (n=157)	Female (n=159)	Total (n=316)	Male (n=116)	Female (n=247)	Total (n=363)
Oral health knowledge score*	3.54±1.69	3.64±1.64	3.60±1.66	1.97±1.52	1.86±1.50	1.91±1.51	1.27±1.74	1.11±1.78	1.16±1.77
Oral health attitude score†	1.92±0.95	1.93±0.92	1.93±0.93	1.36±1.02	1.32±1.02	1.34±1.02	1.02±0.90	0.88±0.90	0.93±0.90
Oral health behaviour score‡	1.32±0.97	1.42±0.94	1.38±0.93	1.24±1.01	1.19±1.04	1.21±1.03	0.88±0.76	0.76±0.72	0.89±0.83

* 2-way ANOVA: age group, P<0.001; gender, P=0.946/0.995; age*gender, P=0.394

† 2-way ANOVA: age group, P<0.001; gender, P=0.793/0.810; age*gender, P=0.762

‡ 2-way ANOVA: age group, P<0.001; gender, P=0.523/0.726; age*gender, P=0.643

Table 2. Socio-demographic variations in oral health status

Socio-demographic	Adult (aged 35 to 44 years)			Non-institutionalised older people (NOP)			Institutionalised older people		
	Male (n=157)	Female (n=218)	Total (n=375)	Male (n=157)	Female (n=159)	Total (n=316)	Male (n=116)	Female (n=247)	Total (n=363)
Mean±SD dental caries status (No. of untreated decayed, missing, filled teeth)	7.3±4.7	7.7±4.9	7.5±4.8	16.9±8.9	17.7±9.4	17.3±9.2	22.2±7.4	25.8±8.5	24.7±8.3
t-test within gender (P value)	0.390			0.451			<0.001		
t-test within age group: adult & NOP (P value)	<0.001								
Periodontal status (%)									
No periodontal disease	0.0	1.4	0.7	0.0	0.0	0	0.0	0.6	0.4
Bleeding only	4.5	3.2	3.4	1.6	2.3	1.8	0.0	0.0	0.0
Calculus	47.4	52.1	49.9	40.6	46.2	43.1	42.7	52.8	49.2
Shallow pockets	39.1	37.3	38.9	42.2	43.8	43.6	42.7	33.1	36.7
Deep pockets	9.0	6.0	7.1	15.6	7.7	11.5	14.6	13.5	13.7
Chi-square test within gender (P value)	0.390			0.244			0.334		
Chi-square test within age group: adult & NOP (P value)	0.052								
Mean±SD oral health–related quality of life score (OHIP-14 score)	4.4±5.6	3.8±4.7	4.1±5.1	7.0±8.0	6.7±8.8	6.9±8.4	6.2±9.3	4.6±8.9	5.1±9.0
t-test within gender (P value)	-0.229			0.781			0.114		
t-test within age group: adult & NOP (P value)	<0.001								

Table 3. Summary of logistic regression analyses*

Irregular dental service attender	Regression coefficient	Standard error	Odds ratio	95% CI	P value
Age (1=older adults living in institutions, 0=all other adults)	0.45	0.17	1.56	1.12-2.19	0.009
Gender (1=female, 0=male)	-0.34	0.17	0.71	0.52-0.98	0.04
Oral health attitude score	0.36	0.09	1.44	1.21-1.70	<0.001
Oral health behaviour score	0.40	0.19	1.49	1.03-2.14	0.03
Periodontal status (1=periodontal pockets, 0=no periodontal pockets)	-0.37	0.16	0.69	0.50-0.95	0.02

* Dental caries status (No. of untreated decayed, missing, filled teeth), oral health–related quality of life (C-OHIP14) and oral health knowledge score are not associated with dental attendance patterns (P>0.05)

of age and gender, older people residing in institutions were 1.56 times more likely to be irregular dental service attenders than other adults (P=0.009; 95% confidence interval [CI], 1.12-2.19; Table 3). Women were 29% less likely to be irregular dental service attenders than men accounting for other factors in the model (P=0.04; 95% CI, 0.52-0.98). An increase in oral health attitude score of 1 was associated with a 1.44 times more likelihood of being irregular dental service attenders (P<0.001; 95% CI, 1.21-1.70) accounting for other factors in the model. An increase in oral health behaviour score of 1 was associated with a 1.49 times greater likelihood of being irregular dental service attenders (P<0.03; 95% CI, 1.03-2.14) accounting for other factors in the model. Subjects with periodontal pockets were 31% less likely to be irregular dental service attenders than those without periodontal pockets accounting for other factors in the model (P=0.02; 95% CI, 0.50-0.95).

Discussion

Variations in oral health knowledge, attitudes, and behaviour exist with respect to age. Since the 1980s, the Department of Health in Hong Kong has provided school dental services and oral health promotion activities. Most local young adults participated in the school dental service during childhood and benefited from it.[3] Among older people, particularly those living in institutions, there is a need to improve oral health knowledge and attitudes. Furthermore, positive oral health behaviour (snacking control and tooth brushing) among older people, particularly those living in institutions, should be encouraged.

Socio-demographic variations in clinical oral health status exist among Hong Kong adults. Older people have poorer overall dental caries status, particularly those living in institutions. It is unclear whether institutionalised older people, who have more ill health than the rest of the population, are also more likely to have less self-care ability, and thus have more oral diseases.[4] This is a gross inequality for which urgent attention is required.

Variations in the use of oral health services exist. Accounting for other factors in the final regression model, older people living in institutions were >50% more likely to be irregular dental service attenders than other adults. This highlights the need for the provision of oral health care in Hong Kong. It is important to determine whether usage of oral health care services is an issue related to accessibility.

Socio-demographic variations in oral health and oral health care delivery exist in Hong Kong. Older people living in institutions are deprived the most. Appropriate provision of oral health care services for older people, particularly those living in institutions, is needed.

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