

Short Communication

Wheelchair-accessible dental offices in Nagasaki, Japan

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Objective: To determine the proportion of dental offices in Nagasaki, Japan, that are wheelchair accessible and to identify factors related to the adoption of barrier-free designs within the study area. **Methods:** All 703 dental offices managed by members of the Nagasaki Prefecture Dental Association were studied. We evaluated the accessibility of the offices to wheelchair users and compared the percentage and adjusted odds ratio of the accessible dental offices according to dental office characteristics. **Results:** Of the respondents, 62% deemed their offices accessible. The percentage and adjusted odds ratio of accessible offices were significantly higher for offices offering more specialties, providing more frequent home visits, and with younger head dentists. **Conclusion:** According to the self-reported results from dentists, more than one third of the dental offices in Nagasaki were not easily accessible by mobility-impaired persons. Dentists should understand architectural and perceptual barriers faced by handicapped persons and the aged and consider barrier-free office designs for all patients.

Keywords: Dental office design, physically disabled persons, wheelchair

Introduction

In Japan, “The Law for Promoting Easily Accessible Public Transportation Infrastructure for the Aged and Disabled” was enacted in December 2006. The goal of this law was to promote a barrier-free environment and ensure safe access to public transport facilities and buildings (Government, 2006). Taking leadership in this area, in 1998, Nagasaki prefecture in Japan enacted an ordinance to improve accessibility for aged and disabled persons to any facility related to daily life including dental offices. The ordinance forces an owner who is planning to construct a new dental office to submit an architectural checklist to Nagasaki prefecture. Nagasaki prefecture examines this checklist and gives advice regarding design changes, if there are unsuitable items on the checklist. After passing the examination by Nagasaki prefecture, Nagasaki prefecture certifies the dental office and adds the information on this office to the Nagasaki prefecture web site, if the dentist agrees to this. Although dental offices that were constructed before the ordinance was passed are exempt from this regulation, Nagasaki prefecture recommends that they improve accessibility for aged and disabled persons.

Barriers to accessing dental services, such as fear and anxiety over dental treatment, low income, and communication problems, especially for aged and disabled persons, have been well documented (Gordon *et al.*, 1998, Kane *et al.*, 2008, De Jongh *et al.*, 2008). Although various kinds of barriers exist in this regard, architectural barriers remain the biggest, as they can block access to dental care services. In 2006, a Japanese national survey sent to handicapped persons regarding their daily lives revealed that architectural barriers were the most frequent problem encountered when physically

handicapped persons went out (Ministry of Health, 2006).

The Nagasaki Prefecture Dental Association (NPDA) conducted a survey that included items on dental office design for wheelchair users to all its members. We used the survey results to determine the proportion of dental offices that have adopted a barrier-free design for wheelchair users and to identify factors that were related to the adoption of barrier-free designs in the study area.

Methods

Approximately 95% of the private dentists in Nagasaki prefecture are members of the NPDA, which consists of 791 dentists with their own dental offices. The NPDA sent a questionnaire to all 703 dental offices managed by a member of the NPDA in July 2006. The NPDA has continued to study the activities of these dental offices, from 2004 to 2008, to identify trends in dental office activities as well as patients’ needs. We added one questionnaire item about the accessibility to wheelchair users to this study in 2006. In addition, the NPDA asked all respondents to report the details of treatment for all patients who visited their dental office on 12 July 2006. The mean age of all patients for each dental office was calculated based on these reports of the treatment needs of their patients. All of the dental offices were asked to complete all of the items in the questionnaire and to return the questionnaire to the head office of the NPDA anonymously. In all, 591 dental clinics returned valid questionnaires for a response rate of 84.1%.

The respondents were asked to evaluate the accessibility of their dental office to wheelchair users by the following questionnaire item: “Can wheelchair users move from outside your dental office to a dental chair by themselves?” The respondents selected one of three

categorical answers: “yes”, “yes, but need some assistance”, or “no”. The dental offices were deemed accessible dental offices for wheelchair users if the response was “yes” or “yes, but need some assistance.”

We compared the percentage of accessible dental offices according to the type of building the dental office was located in (tenant office in a commercial building or detached office), number of specialties in the dental office (1, 2, or 3–4), frequency of home visits for dental treatment (none, a few times a year, or a few times a month), age class of the chief dentist (≤ 45 , 46–54, or $55 \leq$), and mean age of all patients who visited each dental office on 12 July 2006 (≤ 52 , 53–59, $60 \leq$). The age of the chief dentist and the mean age of the patients for each dental office were divided into three groups by tertile. The chi-square test was used to compare categorical values. Adjusted logistic regression was used to test multivariate associations with dental office design for wheelchair users. All analyses were performed using SPSS version 13.0 for Windows (SPSS Japan).

Results

In all, 368 dental offices (62.3%) evaluated their dental offices as wheelchair accessible, whereas 223 dental offices (37.7%) reported that wheelchair users could not reach a dental chair starting from outside the dental office. The percentage of accessible dental offices decreased to 50.7% for tenant offices in commercial buildings. The percentages of accessible dental offices were significantly higher for dental offices with more specialties, more frequent home visit treatments, lower age class of the chief dentist, and younger mean patient age (Table 1).

Logistic regression analysis was conducted after incorporating all of the independent variables associated with wheelchair-accessible dental offices (Table 2). The adjusted odds ratios for accessible dental offices were significantly higher for detached dental offices than for tenant offices (OR = 2.19, 95% CI = 1.43–3.37, $p < 0.01$), for dental offices with three or four specialties than with one specialty (OR = 1.73, 95% CI = 1.06–2.83, $p = 0.03$), and for dental offices offering home treatment one or more times a month than for those offering no home visits (OR = 2.42, 95% CI = 1.38–4.23, $p < 0.01$). The adjusted odds ratio was significantly lower when the chief dentist was aged 55 years or older than 45 years or younger (OR = 0.59, 95% CI = 0.36–0.96, $p = 0.03$). The mean age of the patients was not associated with wheelchair-accessible dental offices.

Discussion

Studies have examined the accessibility of dental care for mobility impaired persons. (Fiske *et al.*, 1990) reported that 54% of the general dental practitioners in London considered their dental offices suitable for wheelchair access. In 1999, less than one-third of dentists in Merseyside described their dental office as a fully accessible office, defined as an office on the ground floor without steps or one on the first floor with a lift and adequate door width, adequate circulation space, and an accessible toilet (Edwards and Merry, 2002). A study conducted in Kanagawa prefecture, Japan, indicated that the percentage

of dental offices for which wheelchair users could reach the entrance from outside based on their own efforts decreased from 41% for offices on the ground floor to 12% for those on the first floor (Namie, 2005). Oliver and Nunn (1996) indicated that the main problem affecting access to dental treatment by physically disabled persons was stairs. These studies demonstrated that many dental offices still have architectural barriers for mobility impaired persons. More than 60% of the NPDA respondents evaluated their dental offices as wheelchair accessible. Since the definition of an accessible dental office varies across studies, we cannot simply compare the percentages of accessible dental offices between studies. Nevertheless, more than one-third of the dental clinics in Nagasaki have low accessibility for mobility-impaired persons. Dentists should consider a barrier-free design for mobility-impaired persons and be willing to accept the concept of normalization.

In this study, the accessibility of dental care for mobility impaired persons was defined only by self-reporting to the question: “Can wheelchair users move from outside your dental office to a dental chair by themselves?”. We did not ask about other architectural considerations, such as an accessible toilet, adequate parking space, slope, or steps. In addition to architectural barriers, various other kinds of barrier for handicapped persons exist. Fear/anxiety was reported as a common perceived barrier when seeking dental care among persons with special health care needs (Gordon *et al.*, 1998). Having a low income was also a barrier to receiving needed dental care for children with special health care needs (Kane *et al.*, 2008). From the perspective of dentists, communication problems were reported to be the most important barrier for children with severe mental disabilities when it came to dental treatment (De Jongh *et al.*, 2008). There might be a discrepancy regarding perceived barriers to accessibility between dentists and mobility impaired persons. The real accessibility of the targeted dental offices by mobility impaired persons is likely to be worse and more widespread than the results of this study indicate. This topic needs additional research into the views of handicapped persons and of the elderly as users of dental offices.

Our results indicated that the age of the chief dentist was a significant factor for the lack of accessibility in dental offices for wheelchair users. Older dentists constructed their offices before Nagasaki prefecture enacted its ordinance in 1998, and dental offices constructed before 1998 are not subject to the regulations of the ordinance. This is one reason why older dentists do not have a great incentive to reconstruct their dental offices. In addition, older dentists might underestimate the concept of “normalization”. A national survey, conducted by the Japanese Cabinet, in 2001 reported that the percentage of persons who know the concept of “normalization” decreases with increased age. The concept of “normalization” is a relatively new idea for Japanese, for both ordinary citizens and dentists. As mentioned in the Introduction, Nagasaki prefecture promotes a policy recommending that dentists improve architectural accessibility for the aged and disabled persons. This policy should increase dentists’ awareness of normalization. The Ministry of Education announced an educational

Table 1. Percentage of wheelchair accessible dental offices

	(n)	%	p value
<i>Dental office building type</i>			
Tenant office in commercial building	138	50.7	<0.01
Detached office	432	65.0	
<i>Number of specialists in the dental office</i>			
1 subject only	321	55.8	<0.01
2	151	70.9	
3 or 4	118	69.5	
<i>Frequency of home visits for dental treatment</i>			
None	111	52.3	<0.01
a few times a year	313	62.0	
a few times a month	155	71.6	
<i>Age of chief dentist</i>			
45 or less	192	70.8	<0.01
46 to 54	206	62.1	
55 or more	190	53.2	
<i>Mean age of patients</i>			
52 or less	201	69.7	<0.01
53 to 59	178	59.0	
60 or more	187	55.1	

Table 2. Relationship between characteristics of dental office and accessibility for wheelchair users

	Adjusted odds ratio	(95% CI)	p value
<i>Dental office building type</i>			
Tenant office in commercial building	1.00		<0.01
Detached office	2.19	(1.43 – 3.37)	
<i>Number of specialists in the dental office</i>			
1 subject only	1.00		0.03
2	1.69	(1.06 – 2.68)	
3 or 4	1.73	(1.06 – 2.83)	
<i>Frequency of home visits for dental treatment</i>			
None	1.00		0.04
a few times a year	1.67	(1.03 – 2.70)	
a few times a month	2.42	(1.38 – 4.23)	
<i>Age of chief dentist</i>			
45 or less	1.00		0.03
46 to 54	0.67	(0.42 – 1.06)	
55 or more	0.59	(0.36 – 0.96)	
<i>Mean age of patients</i>			
52 or less	1.00		0.11
53 to 59	0.69	(0.43 – 1.10)	
60 or more	0.67	(0.42 – 1.09)	

guideline for Japanese dental schools in 2001, when it recommended that all dental schools include instruction that makes dental students understand the concept of “normalization”. With such efforts, the professional and social attitude towards disabled persons will change dynamically in the future.

Japanese “Medical Care Law” controls the advertising regarding specialties offered by dental offices. Four specialties are allowed: “general dentistry,” “pediatric dentistry,” “orthodontics,” and “oral surgery”. Dental offices that offered more specialties were more likely to be wheelchair accessible. Pediatric dentists and oral surgeons are more likely to accept disabled children and adults than are general dentists. In addition, the dentists from dental offices with more specialties conducted more home visits. The percentage of dental office that conducted more than a few home visits per month was 23, 26, and 39% for dental offices with one, two, and three or four specialties, respectively. Consequently, a dental office that offers more specialties might take an interest in home-visit services and the design of accessible dental offices. The mean age of the chief dentist of an office with one, two, and three or four specialties was 53, 48, and 49 years, respectively. This means that dentists who have more specialties are likely to be younger dentists. This might be other reason why younger dentists are more likely to consider wheelchair accessibility.

The mean age of the patients who visited each dental office on the day of the study did not have a significant relationship with the accessibility of the dental office for wheelchair users. Accessible dental offices should generally accept more elderly patients than other offices. However, the result did not support this expectation. This might be because dentists misunderstand the meaning of “normalization.” Normalization is not only for disabled persons, but also for the elderly. The proportion of elderly in Japan has been increasing dramatically and is estimated to reach 35% in 2050, which will be the greatest percentage for any country in the world (Government, 2006). Consequently, the frequency of treating elderly persons with mobility disabilities will increase rapidly. Therefore, dentists should understand the concept of “normalization” and adopt barrier-free designs for all patients.

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Previous presentation: Part of this study was presented at 48th annual meeting of Japanese Society of Dental Practice Administration on 14 July 2007, Nagasaki city.

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