

Clinical Report

Dental Care for Physically or Mentally Challenged at Public Dental Clinics

Kiyoshi Mochizuki, Keiichiro Tsujino, Yumi Ohtawa, Masashi Yakushiji*,
Kou Nomura**, Tatsuya Ichinohe** and Yuzuru Kaneko**

*Division of Pediatric Dentistry,
Department of Clinical Oral Health Science, Tokyo Dental College,
2-9-18 Misaki-cho, Chiyoda-ku, Tokyo 101-0061, Japan*

* *Department of Pediatric Dentistry, Tokyo Dental College,
1-2-2 Masago, Mihama-ku, Chiba 261-8502, Japan*

** *Department of Dental Anesthesiology, Tokyo Dental College,
1-2-2 Masago, Mihama-ku, Chiba 261-8502, Japan*

Received 5 March, 2007/Accepted for publication 18 May, 2007

Abstract

Recently, local administration bureaus have established a number of dental clinics and centers for the physically or mentally challenged (PMC) in collaboration with local dental associations. The aim of this study was to investigate dental treatment and general supportive care for the PMC in dental clinics in Tokyo. A dental clinic for the PMC located in northwestern Tokyo in a district with a population of about 680,000 was selected for the study. The variables studied based on dental records included total number of patients, type of disability, medical history, systemic condition, age, treatment regimen and type of general supportive care. The largest group of new patients was under 9 years of age. The highest total number of patients visiting the clinic belonged to the 60–69-year-olds group and the 70–79-year-olds group. We also investigated type of disability in patients treated under intravenous sedation at time of dental treatment. The most common condition was dementia resulting from Alzheimer's disease (42.74%), autism, cerebral palsy or mental retardation, in descending order. The percentage of patients referred from other medical institutions was 17.4%, including those from private dental clinics and Dental University Hospitals. Type of disability in patients transferred from other medical institutions included developmental disorders (28.2%), senile defects (26.9%), chronic and psychiatric diseases (44.9%). The number of patients who located and visited the clinic by themselves greatly exceeded the number transferred by request. This suggests that a permanent system should be put in place offering public specialized dental clinics where the PMC many obtain treatment.

Key words: Disability—Dental care—Dental treatment—Public dental clinics—
General management care

Introduction

Dental care for the physically or mentally

challenged (PMC) should be performed in consideration of the effect of that care on their systemic conditions^{2,5)}. General supportive

care at the time of dental procedures varies depending on factors such as communication with patients during treatment, medical history, age, dental treatment priorities and problems of prognosis/maintenance^{1,7)}.

PMCs usually visit either private dental clinics, the department of dental surgery in general hospitals/Medical University Hospitals or Dental University Hospitals. These patients present with various problems and risk factors, such as systemic problems due to chronic disease, physical disabilities, severe mental retardation, involuntary movement of the whole body and advanced age. Private dental clinics often refer such patients to the department of dental surgery in general hospitals or Dental University Hospitals in order to control their systemic conditions at the time of dental treatment. However, these patients are sometimes unable to visit such hospitals for a variety of reasons: the hospitals are located far away; they cannot get there by themselves; or they cannot obtain assistance in commuting there. Instances of long distances to travel between the patient's home and the referred facility are easily imagined. When a patient receives treatment, the method of travel often used is public transportation. Poor facility accessibility is probably a factor in cases where the patient has not sought care. Not all patients needing treatment reside in locations allowing them easy access to transportation. Improvement of Quality of Life requires establishment of dental clinics for PMCs which offer easy access. Recently, local administration bureaus have established a number of dental clinics and centers for such patients in collaboration with local dental associations. In Tokyo, 16 clinics in total have already opened. Each clinic operates in accordance with local government policy on budget and conditions for general supportive care. The care package varies depending on the facility. For example, anesthesiologists from University Hospitals perform general supportive care; anesthesiologists, pediatric dentists and/or specialists in dental treatment for PMCs are dispatched from University Hospitals to provide dental treatment; and dentists

who are members of local dental associations perform dental treatment. These facilities are broadly divided into hospitals specializing in prevention of dental caries/periodontal diseases, those which perform dental treatment without sedation, and those which perform dental treatment with sedation, based on patients' general supportive care and treatment limitations. This aim of this study was to investigate dental treatment and general supportive care for PMCs in dental clinics in Tokyo, and to ascertain the visiting patterns and care provided. Such information would be useful in framing operational policy for such facilities. State of dental treatment and general management over the last 5 years, type of patient disability, referral by local dental association, referral rate and coordination with other medical institutions were investigated.

Materials and Methods

A dental clinic for the PMC located in northwestern Tokyo in district with a population of about 680,000 was selected for the study. The basic operational policy of this facility is as follows: dental treatment is performed within the responsibility and limits of the primary medical institution; there should be no age limitation; dental treatment for bedridden patients over 65 years of age in this area should be performed separately under a home visit program, although such patients may be treated at this facility if the dentist in charge considers that dental care by home visit is insufficient and transfer is necessary. Patients difficult to handle at this clinic or who require general anesthesia should be transferred to high-level hospitals.

This dental clinic is open twice a week, and a dental anesthesiologist and pediatric dentist are dispatched from Tokyo Dental College Hospital on one of the consultation days, Thursday. On the other day, Saturday, a dental anesthesiologist and a pediatric dentist from A-Dental University Hospital perform dental treatment in the morning, and a dental

Table 1 Number of initial medical examination patients

Investigation years	Thursday	Saturday	Total
2001	46	42	88
2002	52	49	101
2003	38	44	82
2004	33	62	95
2005	30	52	82
Total	199	249	448

Table 2 Referred from other dental-medical institutions

Private dental clinics	Dental University Hospitals	Total
72	6	78

Table 3 Type of disability in patients transferred from other institutions

Developmental disorders (28.2%)	Mental retardation	13
	Autism	3
	Down syndrome	1
	Cerebral palsy	3
	Epilepsy	2
Senile defects (26.9%)	Cerebrovascular disease	15
	Alzheimer's disease	6
Other chronic or psychiatric diseases (44.9%)	Cardiopathy-respiratory insufficiency	11
	Diabetes	2
	Hypertensive	10
	Schizophrenia	6
	Renal failure	1
	Cancer	1
	Rheumatism	3
	Visual and auditory disabilities	1
Total		78

anesthesiologist and a specialist in treatment for the PMC from B-Dental University Hospital take charge in the afternoon session. Dental anesthesiologists from the above-mentioned University Hospitals are responsible for general supportive care and 3 dentists from the local dental association and the pediatric dentist or PMC treatment specialist dispatched from the Dental University Hospital perform dental treatment.

The study period was 5 years, from 2001 to 2005. The number of new patients was calculated based on new patient records. The number of new patients and number of patients seen on all consultation days (twice a week) were checked from medical history records. The following variables were also studied from dental treatment records on

consultation days by specialists from Tokyo Dental College. They included total number of patients, type of disability, medical history, systemic condition, age, treatment regimen and type of general supportive care.

Results

Table 1 shows the number of new patients presenting during the course of this study. A total of 448 patients visited this dental clinic. Of them, 199 patients visited the facility on Tokyo Dental College consultation days. The number of patients who were referred from other dental-medical institutions was 78, as shown in Table 2, including 72 patients from private dental clinics belonging to the

Table 4 Therapeutic request from other institutions

Extraction	37 (47.4%)
Caries treatment	34 (43.6%)
Removable denture	2 (2.6%)
Caries prevention	3 (3.8%)
Other	2 (2.6%)
Total	78 (100%)

Table 5 Age distribution of new patients

	Age										Total
	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-	
2001	9	2	4	1	4	6	6	4	7	3	46
2002	13	2	2	4	1	3	9	9	9	0	52
2003	11	4	1	0	4	1	3	5	8	1	38
2004	7	0	2	2	1	4	4	8	5	0	33
2005	6	1	1	1	7	1	1	5	6	1	30
Total	46	9	10	8	17	15	23	31	35	5	199

Table 6 Age distribution of total number of patients

	Age										Total
	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-	
2001	97	26	103	105	77	118	225	111	99	12	973
2002	71	39	68	52	48	103	234	174	66	4	859
2003	75	57	53	74	76	64	133	165	141	13	851
2004	49	42	58	100	99	40	146	109	153	6	802
2005	46	36	53	126	98	47	109	121	111	21	768
Total	338	200	335	457	398	372	847	680	570	56	4,253

local dental association and 6 patients from Dental University Hospitals. Table 3 shows type of disability in patients transferred from other dental or medical institutions. These included developmental disorders (28.2%), senile defects (26.9%), chronic or psychiatric diseases (44.9%). Dental treatment requests from other dental institutions are shown in Table 4. The most common regimen among oral surgery was tooth extraction (47.4%) and the second most common was caries restorative treatment (43.6%).

Tables 5 and 6 show age distribution of new patients and total number of patients for the 5-year study period, from 2001 to 2005. The

largest group of the new patients was under 9 years of age. The highest total number of patients who visited the clinic belonged to the 60-69-year-olds group and the 70-79-year-olds group. Type of disability in new patients is shown in Table 7; patients with multiple diseases were counted more than once. The most common disease was cardiovascular disease, followed by cerebro-vascular accident and mental retardation. Table 8 shows therapeutic regimen, which was counted more than once where the same patient received multiple treatments. Over the 5 years, the most common treatment was periodontal treatment, followed by dental caries restor-

Table 7 Type of disability in new patients

	2001	2002	2003	2004	2005	Total
Mental retardation	6	7	9	6	6	34
Autism	9	9	6	3	4	31
Down syndrome	1	4	0	0	1	6
Cerebral palsy	2	3	3	2	1	11
Epilepsy	1	4	6	2	1	14
Cerebrovascular disease	7	12	7	6	2	34
Cardiovascular system	11	17	8	9	8	53
Parkinsonism	1	0	1	3	0	5
Other diseases	19	15	16	19	18	87
Total	57	71	56	50	41	275

Table 8 Type of dental treatment

	2001	2002	2003	2004	2005	Total
Prosthetic treatment	436	397	364	373	343	1,913
Oral surgery	141	127	100	92	123	583
Endodontics	283	226	211	269	169	1,158
Dental caries restorative treatment	676	643	662	773	527	3,281
Periodontal treatment	610	695	770	795	906	3,776
Other	93	85	91	105	105	479
Total	2,239	2,173	2,198	2,407	2,173	11,190

ative treatment, and prosthetic treatment. Type of general management care by dental anesthesiologists, as well as total number of patients, are shown in Table 9. The most frequently used therapy was intravenous sedation (238 cases), followed by monitoring of sphygmomanometry, electrocardiogram and oxygen partial pressure (208 cases), and inhalation sedation (7 cases). Table 10 shows type of disability in patients treated with intravenous sedation at time of dental treatment, together with major disability (a major symptom). The most common symptom was dementia resulting from Alzheimer's disease (101 cases: 42.4%), followed by autism, cerebral palsy or mental retardation.

Discussion

The dental clinic targeted in the current study is located in northwestern Tokyo, in one of the city's 23 wards. This particular ward had

Table 9 Type of general management care

Type of management care	Patients (n)
Monitoring of sphygmomanometry	208
Inhalation sedation	7
Intravenous sedation	238

Table 10 Type of disability, dental treatment under intravenous sedation

Type of disability	Patients (n/%)
Alzheimer's disease	101 (42.4%)
Autism	46 (19.3%)
Cerebral palsy	43 (18.0%)
Mental retardation	33 (13.9%)
Down syndrome	6 (2.5%)
Schizophrenia	4 (1.7%)
Hypertensive	3 (1.3%)
Cerebrovascular disease	2 (0.9%)
Total	238 (100%)

an average population of about 680,000 at the time of the study. The percentage of the population 65 years old or over in this region was 17.4%. It has been 12 years since this public dental clinic for both healthy patients and PMCs was established in 1995. This institution is run by the local administrative office, and 4 dental chairs have been set up in a health center at the municipal office. The local dental association operates this clinic as a subcontractor to the district. It is open twice a week and manned by dentists from the local dental association. Where necessary, such as when general anesthesia is required, dental anesthesiologists and specialists in PMC care are dispatched from University Hospitals. These dental anesthesiologists, pediatric dentists or specialists provide an initial examination for new patients. The patients are then assigned to dentists from the dental association or specialists. Patients with autism or other specific syndromes are always treated by the same specialists. Specialists dispatched from University Hospitals provide lectures on dental treatment in PMCs to dentists from the local dental association, as well as providing of dental treatment.

The number of patients referred to the clinic from other dental-medical institutions during the study was 78, which occupied 17.4% of the total number of new patients, and most of these were transferred from local private dental clinics. However, the majority of new patients visited the clinic by their own or their parents/guardians' will, after obtaining information about the clinic through an official notification from the local administrative office. The clinic provides a free shuttle bus service by advance reservation. The local administrative staff is responsible for the shuttle bus service operation. This service may be one of reasons that the patients and/or their families, who are socially disadvantaged, select this clinic. The location of the clinic, which is placed within the local administrative office, may also be a decisive factor in choosing this clinic. Patients who were transferred from the department of dental surgery at general hospitals or Dental University Hospi-

tals were resident in this area and did not need general anesthesia.

The most common disability type in patients transferred from other dental-medical institutions was sequelae from cerebro-vascular accident, followed by heart disease and respiratory disease. Hence, the most frequently requested procedure was tooth extraction, as general supportive care was critical.

In terms of age distribution, the largest group of new patients was under 9 years of age, but the highest number of patients who visited the clinic belonged to the 60–69-year-olds group and the 70–79-year-olds group. The reason may be that the number of actual treatment days in children was lower because caries was rare, they mainly visited the clinic for caries prevention, or they didn't want to miss school for dental treatment. On the other hand, it seems that elderly patients exhibited various symptoms and had time to visit the clinic. In terms of type of disability in new patients, this was counted more than once where patients had more than one disease. The most common diseases were cardiovascular disease and cerebro-vascular accident, probably due to the high percentage of elderly patients. The details of medical procedures include crossover. The most common treatments were for periodontal disease, followed by caries restorative treatment. This may have been due to decrease in maxillo-facial motor function caused by hypoactivity and/or brain damage leading to mastication and swallowing problems, so that a lot of food residue remained in the oral cavity. Furthermore, it has also been suggested that this may be due to an inability to maintain oral hygiene, including routine dental plaque control¹⁾.

The most common therapy provided by dental anesthesiologists was intravenous sedation, followed by monitoring of sphygmomanometry, electrocardiogram and oxygen partial pressure. Nitrous oxide sedation was the least used therapy. Intravenous sedation was used most for patients with dementia resulting from Alzheimer's disease, followed by autism, cerebral palsy or mental retardation. This method is frequently used due to

loss of comprehension regarding dental care needs³⁾, communication difficulty, learning disability⁶⁾, or involuntary movement. Patients with cerebro-vascular accident, heart disease or respiratory disease often undergo dental procedures under monitoring of the cardiovascular system.

Recently, many local administrative offices have set up dental clinics for the PMC in cooperation with dental associations. There are two patterns: with or without Dental University Hospital involvement. As a result, some regional differences may occur: for example, general supportive care or dental procedures using sedation may not be provided due to lack of anesthesiologists. However, establishment of such dental clinics results in providing dental treatment for the PMC, who might not otherwise be able to get treatment. The dental clinic in targeted in this study, basically, does not provide dental procedures requiring general anesthesia. In such cases, or where the patient requires specialist treatment, they are referred to high-level hospitals.

Typically, dental clinics seldom actively treat patients who present with risks due to their general condition. Such patients are referred to key local hospitals and university hospitals, where general management is possible. This is because it is necessary to prevent occurrence of medical mishaps and because the investment needed to provide such care is difficult to recoup. Nevertheless, not all patients referred to University Hospitals visited those facilities. Instances of long distances to travel between the patient's home and the referred facility are easily imagined. When a patient receives treatment, the method of travel often used is public transportation. Poor facility accessibility is probably a factor in patients failing to seek care. Not all patients needing treatment reside in locations allowing them easy access to transportation. In addition, not all patients needing care have the ability to travel alone. An attendant to accompany them to and from the hospital and a means of travel can not always be provided. For groups of such patients, that is, individuals needing care, PMCs, and the

elderly, who desire to go to medical institutions such as University Hospitals but lack the means to do so, providing facilities that can care for them in their community is probably linked to an improvement in patient QOL. Increasing the return on treatment for individuals needing care and PMCs under Japan's current dental insurance system is difficult. Under current conditions, where there is a lack of consistency between long-term care insurance and medical insurance, if medical institutions specializing in dentistry for the PMC do open privately they cannot raise their revenue base without having patients pay their own expenses. Not all patients can pay high medical fees, so even if a treatment facility is run privately it may only receive few visits by patients with low incomes. To improve QOL, patients needing care must be encouraged to seek care. To encourage patients to seek care, public dental treatment facilities must be located near residential areas. Additionally, a transportation system linking the patient's home and clinic is needed for groups of patients who lack a means of travel. Establishment of a more convenient transportation system and lower charge system so that patients can easily visit facilities are needed.

Dental care and treatment without regional differences should be provided for the PMC. However, the government policy of health care cost cuts may make this difficult. In this study, the number of patients who located and visited the clinic by themselves greatly exceeded the number of patients transferred. Consequently, a permanent system offering public specialized dental clinics capable of treating any patients with any kind of disability should be put in place.

References

- 1) Album MM (1990) The philosophy of dental care of the handicapped: Past, present and future. *Spec Care Dent* 10:129-132.
- 2) Franks AST, Winter GB (1974) The management of the handicapped and chronic sick

- patient in the dental practice. *Br Dent J* 136: 20–23.
- 3) Fukami MC (2005) Outpatient intravenous anesthesia for dental procedures in the USA. *J Jpn Dent Soc Anesthesiol* 33:164–168.
 - 4) Hunter B (1987) *Dental Care for Handicapped Patients*, pp.6–13, Wright, Bristol.
 - 5) Little JW, Falace DA, Miller CS, Rhodus NL (2002) *Dental Management of the Medically Compromised Patient*, 6th ed., pp. 1–20, Mosby, St. Louis.
 - 6) Park CJ, Kim HJ (2005) Intravenous sedation in South Korea. *J Jpn Dent Soc Anesthesiol* 33:169–173.
 - 7) Scully C, Cawson RA (1998) *Medical Problems in Dentistry; Disability, the Young and the Elderly*, 4th ed., pp.470–487, Wright, Oxford.

Reprint requests to:

Dr. Masashi Yakushiji
Department of Pediatric Dentistry,
Tokyo Dental College,
1-2-2 Masago, Mihama-ku,
Chiba 261-8502, Japan
E-mail: yakusiji@tdc.ac.jp