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Factors of the difficulty on dental treatment of disabled people with special needs

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A survey conducted in the 2018 fiscal year reported in Japan, that the number of people with disabilities - i.e. the number of people who have special needs - was approximately 9.36 million (physically disabled: 4.36 million, intellectually disabled: 1.08 million, mentally disabled: 3.92 million). There are approximately 90,000 dentists working at general community-based clinics, but due to the difficulties associated with treating patients with disabilities, patients tend to become concentrated in specialized facilities such as dental centers for the disabled that are managed by university-affiliated dental hospitals, government administrative bureaus, and dental associations. The reason for this is the fact that it is difficult to treat patients with disabilities using the standard methods, special considerations are required, and a great deal of time and effort is required - so much so that it is difficult for general clinics to treat such patients. Therefore, here we report on our survey that investigated what factors contributed to the difficulties associated with the dental care of disabled people at general clinics in the course of actual clinical practice. We conducted a retrospective survey of the following data obtained from medical records and electronic medical charts: Name of disability, chronological age, developmental age, sex, status related to entering the examination room, number of staff members required for examination, oral hygiene status, the time required for a single examination, and the amount of remuneration received from the National Health Insurance (NIH) system. The developmental test utilized was the Enjoji Analytical Development Test for Infants. In order to extract the factors that affect the number of people required for examinations from the above survey items, we conducted multivariate logistic regression analysis with the two groups of numbers of people required as the response variables. The items compared included name of disability, chronological age, developmental age, sex, acceptance of treatment, oral hygiene status, and the amount of time required for a single examination. The reason why it is difficult for general clinics to care for patients with disabilities is the fact the low developmental ages of such patients requires additional time and manpower. This suggests that one factor related to this issue is the assessment that in Japan the medical remuneration proved under the NIH system is insufficient. [Int J Dis Oral Health Vol.15, No.2: 153-162, December 2019]

Key words: Patients with disability, Development test, Behavior management

Introduction

A survey conducted in the 2018 fiscal year reported that the number of people with disabilities - i.e. the number of people who have special needs - was approximately 9.36 million (physically disabled: 4.36 million, intellectually disabled: 1.08 million, mentally disabled: 3.92 million). As the number of dentists in Japan is approximately 100,000, a simple calculation reveals that there is approximately one dentist per 100 patients. There are approximately 4,000 members in the Japanese Society for Disability and Oral Health (JSDH), and approximately 1,300 dentists are certified by this organization and are qualified specialists. There are approximately 90,000 dentists working at general community-

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based clinics, but due to the difficulties associated with treating patients with disabilities, patients tend to become concentrated in specialized facilities such as dental centers for the disabled that are managed by university-affiliated dental hospitals, government administrative bureaus, and dental associations. The reason for this is the fact that it is difficult to treat patients with disabilities (such as intellectual disabilities, cerebral palsy, the autism spectrum, cerebral stroke, dementia, and schizophrenia) using the standard methods, special considerations are required, and a great deal of time and effort is required - so much so that it is difficult for general clinics to treat such patients.^{1,2} Dental examination of those with disabilities such as developmental disabilities requires methods that are tailored to the specific characteristics of the patient's disability. As a result, in many cases it is difficult for general medical clinics to accept patients who have disabilities. A questionnaire survey that we conducted at a certain center that targeted dentists who went into private practice after completing a course of study in dental examination for disabled people found that among the "reasons why the dental examination of disabled people is difficult" was the opinion held by some that "it requires time and manpower" and "the fact that the number of health insurance points granted [for such examination by the National Health Insurance system in Japan] is not reasonable, and as a result it is financially difficult [to treat such patients]."³ Therefore, here we report on our survey that investigated what factors contributed to the difficulties associated with the dental care of disabled people at general clinics in the course of actual clinical practice.

Materials and Methods

1. Subjects

The survey targeted 139 patients with special needs (patients who require some type of special consideration) who were visited a certain center on an outpatient basis between July 2, and July 6, 2018 (5 days). These 139 patients were selected from a group of 176 patients after excluding those who were disabled elderly patients, patients undergoing examination under general anesthesia, and

patients receiving food intake and swallowing guidance. The control group consisted of 201 general patients with typical development who were treated at two general clinics in the same prefecture. This study was conducted after receiving the approval of the Institutional Review Board of Kyushu Dental University Hospital (No.1956).

2. Methods

We conducted a retrospective survey of the following data obtained from medical records and electronic medical charts: Name of disability, chronological age, developmental age, sex, status related to entering the examination room, number of staff members required for examination, oral hygiene status, the time required for a single examination, and the amount of remuneration received from the National Health Insurance (NHI) system. The developmental test utilized was the Enjoji Analytical Development Test for Infants.⁴ Two dentists were involved in the examination (one is a specialist of the JSDH, and one has been certified by the JSDH). The dental hygienists (seven, three of whom have been certified by the JSDH) have a minimum four years (maximum of 10 years) of experience in the field of dentistry for the disabled at this center.

1) Details of the specific procedures performed

The procedures were divided into the following three groups: Recall care by a dental hygienist (brushing, flossing, scaling, preventative dentistry/dental cleaning [PMTC], training), treatment not including the use of infiltration anesthesia, and treatment including the use of infiltration anesthesia.

2) Dental unit use rating

Ratings for the patients' ability to use the dental unit were divided into the following three groups: Satisfactory (able to sit in the unit with only vocal prompting), moderate (able to sit in the unit on his or her own although vocal prompting took time), unsatisfactory (unable to sit in the unit regardless of vocal prompting).

3) Number of people required for examination

The actual number of people, including technicians, required for a single appointment.

4) Number of people required for examination at the general clinics

We surveyed 201 general patients who underwent examination at two general clinics. These 201 patients were utilized as the control group and consisted of people who had no disability. Thus, the developmental test was not performed on these patients. In addition, since many of these patients were cases who were undergoing voluntary examinations and examination, the medical remuneration associated with these patients was not surveyed.

5) Oral hygiene status

Ratings for oral hygiene status were divided into the following three groups: Satisfactory (no plaque, probe scraping revealed thin layer of plaque), normal (plaque was visible in the gingival margins), unsatisfactory (large amounts of plaque in the region from the gingival margins to the dental surfaces).

6) Time required for examination

The actual amount of time required (from the time the patient received vocal prompting to sit in the unit until the patient left the examination room) was measured.

7) Medical remuneration

The medical remuneration received for each examination (one time) was obtained from electronic medical records and recorded.

In order to extract the factors that affect the number of people required for examinations from the above survey items, we conducted multivariate logistic regression analysis with the two groups of numbers of people required as the response variables. The items compared included name of disability, chronological age, developmental age, sex, acceptance of treatment, oral hygiene status, and the amount of time required for a single examination as the explanatory variable. Statistical processing was done using the chi-squared test, multiple comparison (Scheffe test), and regression analysis. All statistical analyses were done using IBM SPSS Statistics® ver.24. The level of significance was set at 5%.

Results

1. Overview of the survey subjects (Table 1, 2)

By disability, 59 subjects - the majority - were on the autism spectrum (Aut), followed by intellectual disabilities (ID) at 26, pervasive developmental disorders (PDD) at 20, cerebral palsy (CP) at 19 and Down syndrome (Down) at 15. The mean chronological age was 19.76 ± 14.45 years (minimum age 42 months, maximum age 56 years, median age 14 years). Investigation of the developmental ages of the subjects indicated that the median was 42 months for mobility, 40.5 months for hand mobility, 42 months for basic learning, 31.5 months for relationships with others, 13.5 months for vocalization, and 25.5 months for verbal comprehension. The results of multiple comparison analysis indicated that the development of CP, Down, and ID subjects was at a significantly lower

Table 1. Overview by type of disability in the study group

		Aut	CP	Down	ID	PDD	Total
n		59	19	15	26	20	139
Sex	Male	48	14	9	16	15	102
	Female	11	5	6	11	5	37
Age	Mean	16.59	31.21	20.13	27.12	6.75	19.76
	SD	13.45	12.15	15.74	13.16	2.17	14.45
	Max.	51	55	51	56	12	56
	Min.	2	7	2	6	3	2
	Median	10	31	18	26	7	14

Table 2. Overview by type of disability in the study group; and Median (months)

		Aut	CP	Down	ID	PDD	Total
Mobility		50.00	15.00	21.50	28.50	54.00	42.00
Hand mobility		50.00	5.50	15.00	31.50	54.00	40.50
Basic learning	Median developmental ages	45.00	6.50	16.50	25.50	54.00	42.00
Relationships with others	(months)	38.00	8.50	17.00	18.25	54.00	31.50
Vocalization		31.50	6.50	11.50	9.50	54.00	13.50
Verbal comprehension		54.00	11.50	13.00	13.00	54.00	25.50
Type of examination	Recall	31	12	10	16	9	78
	Treatment (mild)	23	6	4	8	6	47
	Treatment (severe)	5	1	1	2	5	14
Entering/Exiting the examination room	Satisfactory	39	12	7	15	13	86
	Moderate	13	5	4	5	2	29
	Unsatisfactory	7	2	4	6	5	24
No. of people required	Mean	1.93	2.47	2.33	2.77	2.15	2.24
	SD	1.06	0.84	1.11	1.42	1.3	1.18
	Median	2	2	2	3	2	2
Oral hygiene	Satisfactory	5	2	2	0	1	10
	Normal	28	3	7	4	6	48
	Poor	26	14	6	22	13	81

level than Aut.

Investigation of the type of treatment indicated that 78 were recall, 47 did not undergo infiltration anesthesia, and 14 underwent infiltration anesthesia. Examination of patient acceptance of treatment showed that 86 were satisfactory, 29 were moderate, and 24 were unsatisfactory. The number requiring treatment was 2.24 ± 1.18 (median of 2, max. of 6, min. of 1).

Investigation of oral hygiene status indicated that 10 were satisfactory, 48 were normal, and 81 were unsatisfactory. The time required per examination was 30.42 ± 7.27 minutes (median of 30 minutes).

Two hundred one subjects (61 males, 140 females) were surveyed at the general clinic. The mean age was 43.81 ± 25.42 years (max. 87 years, min. 5 years, median 48 years). The types of examinations were recall (34), treatment without infiltration anesthesia (133), treatment with infiltration anesthesia (34). The number of people required for the procedures was 1.71 ± 0.45 (median 2, max. 2, min. 1) (Table 3).

Based on the results obtained at the general clinic, regression analysis was performed on two groups: Small number group (2 or fewer) and Large number group (3 or more) (Table 4).

Table 3. Overview of the general clinic as the control group

		Normal
n		201
Sex	Male	61
	Female	140
Age	Mean	43.81
	SD	25.42
	Max.	87
	Min.	5
	Median	48
Type of examination	Recall	34
	Treatment (mild)	133
	Treatment (severe)	34

Table 4. Comparison of the number of people required for care in the control group

		Aut	CP	Down	ID	PDD	Normal
No. of people required	Mean	1.93	2.47	2.33	2.77	2.15	1.71
	SD	1.06	0.84	1.11	1.42	1.3	0.45
	Max.	6	4	5	5	5	2
	Min.	1	1	1	1	1	1
	Median	2	2	2	3	2	2

2. Comparison of the differences in number of people involved in the procedures (Table 5, 6)

No inter-group difference for chronological age was found. However, the developmental age in the large num-

ber group was significantly lower than the small number group for all surveyed items. In addition, more time was required for examinations, and the acceptance of treatment was poor. No difference was found for medical remuneration.

Table 5. Overview by number of people required in the study group (* $p < 0.05$)

		Large number group (n = 93)	Small number group (n = 46)	p value
Age	Mean	19.30 ± 14.85	19.63 ± 14.37	0.9
	Median	14	12	
Name of disability	Aut	45 (48.3%)	14 (30.1%)	*0.03
	CP	10 (10.2%)	9 (20.2%)	
	Down	10 (10.2%)	5 (10.8%)	
	ID	12 (12.9%)	14 (30.1%)	
	PDD	16 (17.3%)	4 (8.6%)	
Development Mean (median)	Mobility	29.97 ± 17.12 (31.5)	41.01 ± 14.76 (45)	*< 0.001
	Hand mobility	25.69 ± 18.27 (25)	38.70 ± 17.38 (45)	*< 0.001
	Basic learning	26.76 ± 17.86 (24.5)	41.64 ± 16.12 (50)	*< 0.001
	Relationship with others	20.97 ± 17.41 (16)	35.65 ± 18.82 (42)	*< 0.001
	Vocalization	15.96 ± 17.01 (9.5)	31.10 ± 21.08 (34.5)	*< 0.001
	Verbal comprehension	20.27 ± 18.32 (13)	37.56 ± 19.22 (50)	*< 0.001
Sex	Male	70 (75.2%)	32 (69.5%)	0.542
	Female	23 (24.7%)	14 (30.4%)	
Ability to enter the examination room	Satisfactory	68 (73.1%)	18 (39.1%)	*< 0.001
	Moderate	17 (18.2%)	12 (26.1%)	
	Unsatisfactory	8 (8.6%)	16 (34.8%)	
Oral hygiene	Satisfactory	9 (9.6%)	1 (2.1%)	0.262
	Normal	32 (34.4%)	16 (34.7%)	
	Poor	52 (55.9%)	29 (63.1%)	
Time spent	Mean	33.15 ± 10.23	29.08 ± 4.75	*0.002
	Median	30	30	
Service fee points	Mean	763.54 ± 338.54	741.66 ± 516.33	0.765
	Median	651	588	
Type of care	Recall	53 (57.0%)	25 (54.3%)	0.468
	No infiltration anesthetic	30 (32.3%)	17 (37.0%)	
	Infiltration anesthetic	10 (10.8%)	4 (8.7%)	

Table 6. Factors that affect manpower requirement

	Odds ratio	95%CI	p value
Basic learning	0.950	0.927-0.973	< 0.001
Examination duration	1.083	1.004-1.168	0.040
Entering examination room Moderate	0.940	0.028-0.319	< 0.001
Entering examination room Satisfactory	0.243	0.630-0.941	0.041

The factors that influenced the number of people required for the procedures were basic learning (odds ratio: 0.950, 95%CI: 0.927-0.973, $p < 0.001$), time for examination (odds ratio: 1.083, 95%CI: 1.004-1.168, $p = 0.040$),

acceptance status (in cases in which treatment was impossible used as a reference): Moderate (odds ratio: 0.940, 95%CI: 0.028-0.319, $p < 0.001$) and Acceptance: Satisfactory (odds ratio: 0.243, 95%CI: 0.630-0.941, $p = 0.041$).

3. Comparison of the recall group and the treatment group (Table 7 - 9)

Comparison of the recall group and the treatment group indicated that there were no differences in terms of chronological age, development, or examination time. Naturally, the medical remuneration received by those that underwent treatment was significantly higher.

Table 7. Overview by type of treatment in the study group (* $p < 0.05$)

		Care/Recall group (n = 78)	Treatment group (n = 61)	p value
Age	Mean	19.40 ± 14.07	19.69 ± 15.09	0.958
	Median	12.5	14	
Name of disability	Aut	31 (39.7%)	28 (45.9%)	0.613
	CP	12 (15.4%)	7 (11.5%)	
	Down	10 (12.8%)	5 (8.2%)	
	ID	16 (20.5%)	10 (16.4%)	
	PDD	9 (11.5%)	11 (18.0%)	
Development	Mobility	36.69 ± 16.96 (37.5)	38.20 ± 15.68 (42)	0.726
Mean (median)	Hand mobility	33.42 ± 19.00 (33.5)	35.62 ± 18.27 (42)	0.53
	Basic learning	35.53 ± 18.40 (38)	38.23 ± 17.68 (45)	0.383
	Relationship with others	29.34 ± 19.82 (23.5)	32.66 ± 19.24 (38)	0.392
	Vocalization	24.91 ± 20.52 (13)	27.59 ± 21.71 (21.5)	0.602
	Verbal comprehension	30.35 ± 20.39 (23.5)	33.74 ± 20.76 (50)	0.354
Sex	Male	54 (69.2%)	48 (78.7%)	0.211
	Female	24 (30.8%)	13 (21.3%)	
Entering the examination room	Satisfactory	50 (64.1%)	36 (59.0%)	0.273
	Moderate	16 (23.1%)	11 (18.0%)	
	Unsatisfactory	10 (12.8%)	14 (23.0%)	
Oral hygiene	Satisfactory	7 (9.0%)	3 (4.9%)	0.648
	Normal	26 (33.3%)	22 (36.1%)	
	Poor	45 (57.7%)	36 (59.0%)	
Time spent	Mean	29.81 ± 5.66	31.21 ± 8.91	0.288
	Median	30	30	
Service fee points	Mean	667.03 ± 399.68	853.59 ± 519.732	*0.004
	Median	549	667	
n	High number	25 (32.1%)	28 (45.9%)	0.175
	Small number	53 (67.9%)	33 (54.1%)	

Table 8. Significant factors that affect manpower requirements during care and recall procedures in the recall group ($p < 0.05$)

	Odds ratio	95%CI	<i>p</i> value
Verbal comprehension	0.955	0.926-0.985	0.004
Acceptable status: Moderate	0.127	0.021-0.767	0.025

Table 9. Significant factors that affect manpower requirements during treatment in the treatment group ($p < 0.05$)

	Odds ratio	95%CI	<i>p</i> value
Basic learning	0.868	0.781-0.964	0.008
Medical remuneration	1.244	1.036-1.494	0.019
Acceptable status: Impossible	0.067	0.013-0.363	0.002

Investigation of the factors that influence the number of people required for the procedures performed indicated that in the recall group they were verbal comprehension (odds ratio: 0.955, 95%CI: 0.926-0.985, $p = 0.004$) and acceptance status: Moderate (odds ratio: 0.127, 95%CI: 0.021-0.767, $p = 0.025$). In the treatment group they were basic learning (odds ratio: 0.868, 95%CI: 0.781-0.964, $p = 0.008$), medical remuneration (odds ratio: 1.244, 95%CI: 1.036-1.494, $p = 0.019$), and acceptance status: Impossible (odds ratio: 0.067, 95%CI: 0.013-0.363, $p = 0.002$).

Discussion

1. Overview

The median values for all items related to the developmental age of the patients who were the subjects of this study were mobility: 42 months, hand mobility: 40.5 months, basic learning: 42 months. In comparison, the median value for relationships with others was 31.5 months, vocalization was 13.5 months, and verbal comprehension was 25.5 months, indicating that these were lower values. This is likely due not to the fact that those on the autism spectrum exhibit unique developmental patterns, but rather due to the fact that the developmental

level of those with cerebral palsy, Down syndrome, and intellectual disabilities was particularly low. The number of subjects whose oral hygiene status was unsatisfactory was 81 (58%), which was the majority of subjects. Overall, these were patients whose low level of development made it difficult for them to perform routine oral hygiene tasks.

2. Comparison of number of people required to perform procedures

Comparisons of the numbers of people required for procedures indicated that the large number group had significantly lower development and the acceptance status was poor. In association with these findings, the examination time was longer. In their study of behavior management during dental treatment of people with developmental disorders, Ogasawara et al. reported that the most effective predictor variable for use in determining whether a patient require “restraining” or not - based on an analysis of the Akaike Information Criterion (AIC) for fitness of the items on the Enjoji Scale of Infant Analytical Development - was “basic learning” and that the result was the borderline value of 3 years 2 months.⁵ Based on this, in the large number group the general developmental age was around 2 years of age, and therefore a large number of patients were unready for treatment. As a result, the amount of time and the number of people required to perform procedures on these subjects was higher.

3. Comparison of the recall group and the treatment group

Investigation by type of procedure indicated that there were no significant differences for any items except for number of points. We believe that this is due to the fact that, under the health insurance system currently in place in Japan, the points for procedures provided are high while points are not granted for monitoring and training.

The results of our analysis of the factors that influence the manpower required for each of the items indicated that, overall, the fact that significant differences were found for items related to basic learning was consistent with previous studies. In the present survey, there was a

large number of patients on the autism spectrum who had a high level of development (3 years 9 months: 45 months). This is the likely reason our results for items such as verbal comprehension showed that those in the treatment group required only small numbers of people. Expressed in the opposite way, the results indicated that the lower the score for these items, the more people were required for treatment. The fact that the number of people required increased as the time required increased was likely due to the specific type of treatment and difficulties associated with handling the patients. Investigation of status related to entering the examination room indicated that, although it was difficult for patients to enter the examination room on their own, the results we obtained were likely due to the fact that many patients were young children with PDD who could be handled with only a small number of people with little restraint and who could enter the examination room if their parent or guardian hugged them in preparation of entering the examination room.

Behavior management during dental treatment of people with disabilities is performed in accordance with each patient's developmental age. If a certain degree of readiness is achieved, then the goal is to handle patients without resorting to the use of pharmacological management or restraining methods.^{1,9} Thus, many cases require readiness assessment and training based on learning theory.^{25,9} It is rare to obtain adaptive behavior with only one session as successful adaptive behavior must be based on a large number of steps. In addition, this requires the availability of dental hygienists and other staff members who have enough experience that they can predict how patients will react based on their behaviors. Furthermore, even if training is successful and adaptive behaviors are achieved, some patients suffer setbacks as a result of changes in their treatment or daily living environments.

When dealing with patients who have serious cardiovascular or respiratory disabilities, a dentist in charge of monitoring the patient is required. In addition, surgeons and staff members also need to exercise extreme caution, and as a result, they experience more physical and mental fatigue than when providing general dental care. The fact that a variety of other matters must be dealt with when

providing dental care to the disabled - matters that are not covered by the categories of time and manpower - means that there are additional difficulties associated with this type of care.

In this survey the median examination time was 30 minutes. This was not due simply to the fact that there were no differences in development, number of people required, or procedure specifics, but rather due to consideration of each patient's condition. We believe this was the result of taking into account the fact that the procedures had to be completed in the shortest possible time and that the patients included emergency cases involving trauma or pulp exposure that required physical restraints and patients on whom standard examination methods were used at first but inappropriate behavior exhibited by the patient required the use of restraints after the examination had begun. As only a minimum number of procedures were performed, there were no cases that underwent treatment over long periods of time while under restraint. Since the WHO Convention on the Rights of Persons with Disabilities was ratified and the Anti-Discrimination Act was implemented, the restraining of patients is avoided whenever possible and is not actively utilized. However, as the normal oral hygiene status of the patients who visited the clinic targeted in this survey was quite poor, and since many of the patients were such that family oral care was difficult, a large number of the patients expressed the desire to undergo expert care by a dental hygienist at the center. Under pressure to make an increasing number of recall appointments, it is unrealistic to perform monthly care with patients under anesthesia, and since there are patients who are subject to panic or self-harm after the procedures are completed, such patients need to be restrained when procedures are performed.

In the present survey, we excluded from our analytical population patients who underwent general anesthesia or intravenous anesthesia because they showed marked refusal behaviors, or because they were prone to accidents, panic, flashbacks, or self-harm when treated under restraint and who - as a result of such events - may have trouble returning to their normal daily lives, or because they required a large number of procedures and as a result their total outpatient treatment period could not be

determined. However, if we include the use of drugs to control behavior during preoperative testing and entrance into the examination room, then the results would show that large amounts of time and manpower were required. Therefore, when considering equipment, environment, and facility maintenance, it becomes clear that there are limitations to the extent that general dental clinics that attempt to accept all patients with disabilities can do due to the restrictions placed on them by their concurrent provision of general, standard care.

Throughout Japan, dental care for disabled people aims to involve cooperation between universities, community centers and other tertiary hospitals, secondary hospitals, and primary hospitals such as local dentists in private practice. In addition, local dental associations, cooperating medical research associations, and training facilities are often involved as well.^{8,9} The objectives are to ensure that intensive care under general anesthesia, training, and other tasks are performed at highly advanced facilities, and that patients who are able to undergo standard treatment methods are referred by and followed-up at first-tier medical care facilities in the communities in which they reside. The dental association-affiliated center that was surveyed in this study has been providing training sessions for 16 years. During that time, a total of nearly 3,000 individuals have attended these sessions, 140 people have completed the training program, and nearly 90 people have been trained as regional collaborating dentists. Thus, there are only a few dental clinics that are able to successfully handle patients in cooperation with the center.^{2,10} In addition, due to reasons associated with the parents and guardians of the patients, such as the opinion that "it is impossible to visit [the dental clinic] without hesitation because general patients do not understand the characteristics of disabled patients," and "crowding in the clinic causes [my child to experience] panic" and "[my child] could not get used to the examination room environment," many patients do not return to the center after an initial visit.¹⁰ Although there are problems on the medical providers' side, there are cases in which the specific characteristics of patient disabilities make it exceedingly difficult for them to transition from specialized clinics frequented by patients with similar disabilities and circumstances to general clin-

ics that also care for patients who do not have disabilities.

Conclusion

The reason why it is difficult for general clinics to care for patients with disabilities is the fact the low developmental ages of such patients requires additional time and manpower. This suggests that one factor related to this issue is the assessment that in Japan the medical remuneration proved under the NHI system is insufficient.

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