REVIEW ARTICLE

Classification of the Physical Disabilities and Actual Conditions of Visceral Impairment in Japan

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ABSTRACT

In this study, among the aspects of physical disabilities, the actual condition of visceral impairment that lies therein will be explored. Visceral impairment is divided into cardiac disorder, renal disorder, respiratory disorder, bladder or rectal disorder, small-intestine disorder, immunological disorder by HIV, and hepatic disorder.

Most of the persons with visceral impairment seem to be able to perform ADL by themselves and seem not to have any problem on the surface. It is important for persons with visceral impairment to actively perform ADL not only so that they can retain the ability to perform ADL and prevent the recurrence of diseases but also so that they can inhibit the aggravation of arteriosclerotic diseases.

The number of persons with visceral impairment will increase if the number of persons who do not satisfy the statutory criteria even though they have visceral impairment clinically will be added to the number. Also, the number of persons with visceral impairment is expected to increase due to the advent of a super-aged society. As such, visceral impairment is a significant area that rehabilitation-related professionals have to become knowledgeable about among the parts of rehabilitation medicine.

<Key-words>

Physical disabilities, visceral impairment, rehabilitation medicine, super-aged society

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I . Introduction

The Law for the Welfare of Persons with Physical Disabilities (1949) defines physical disability as any of the physical disabilities included in the law's attached list of physical disabilities, which are permanent and are recognized to impose substantial limitations on daily life. In this study, among the aspects of physical disabilities, the actual condition of visceral impairment that lies therein will be explored.

II . Disabled Person's Certificate and Disability Grade

The Law for the Welfare of Persons with Physical Disabilities in Japan states that welfare services shall be provided for persons with physical disabilities to promote their welfare, in accordance with the distributed physical disability identification booklet that certifies the types and degrees of physical disabilities (1). Physical disabilities are divided into visual impairment, hearing impairment and equilibrium disturbance, speech impairment, mobility impairment, and visceral impairment (1). Visceral impairment is divided into cardiac disorder, renal disorder, respiratory disorder, bladder or rectal disorder, small-intestine disorder, immunological disorder by HIV, and hepatic disorder. To whom the identification booklet for persons with physical disabilities shall be issued is stipulated in the attached list of the Law for the Welfare of Persons with Physical Disabilities. For the issuance of the identification booklet for persons with physical disabilities, a medical certificate and a written medical opinion by a designated medical doctor are required pursuant to Article 15 of the Law for the Welfare of Persons with Physical Disabilities.

The disability determination can be done by medical doctors with clinical experience in the departments stipulated in Table 1, according to the scope of disabilities, and by the departments in charge of the diagnosis of disabilities (1).

<Table 1> Scopes of disabilities and departments in charge of the diagnosis
(table contents quoted from reference 1)

Disabilities	Name of Department
Visual Impairment	Ophthalmology, Pediatric Ophthalmology
Hearing Impairment	Otolaryngology, Pediatric Otolaryngology, Bronchoesophagology, Otolaryngology
Equilibrium Disturbance	Otolaryngology, Pediatric Otolaryngology, Bronchoesophagology, Neuromedicine, Neurosurgery, Rehabilitation
Voice-Speech Impairment	Otolaryngology, Pediatric Otolaryngology, Bronchoesophagology, Internal Medicine, Bronchoesophageal and Internal Medicine, Neuromedicine, Bronchoesophageal Surgery, Neurosurgery, Plastic Surgery, Rehabilitation
Masticatory ¹ Function Impairment	Otolaryngology, Pediatric Otolaryngology, Bronchoesophagology, Internal Medicine, Bronchoesophageal and Internal Medicine, Neuromedicine, Bronchoesophageal Surgery, Plastic Surgery, Rehabilitation
Mobility Impairment	Orthopedics, Surgery, Pediatric Surgery, Internal Medicine, Neuromedicine, Neurosurgery, Plastic Surgery, Rheumatology, Pediatrics, Rehabilitation
Respiratory Disorder	Internal Medicine, Pulmonology, Bronchoesophageal and Internal Medicine, Surgery, Respiratory Surgery, Bronchoesophageal Surgery, Chest Surgery, Pediatrics, Rehabilitation, Neuromedicine (see 「3. Others」)
Cardiac Disorder	Internal Medicine, Cardiology, Cardiac Internal Medicine, Surgery, Cardiovascular Surgery, Chest Surgery, Pediatrics, Pediatric Surgery, Rehabilitation
Renal Disorder	Internal Medicine, Kidney Internal Medicine, Artificial Dialysis Internal Medicine, Surgery, Transplant Surgery, Pediatrics, Pediatric Surgery, Urology, Pediatric Urology
Bladder or Rectal Disorder	Urology, Pediatric Urology, Surgery, Gastroenterological Surgery, Internal Medicine, Gastrointestinal Internal Medicine, Neuromedicine, Pediatrics, Pediatric Surgery, Obstetrics and Gynecology
Small Intestinal Disorder	Internal Medicine, Gastroenterological Internal Medicine, Gastroenterological Surgery, Abdominal Surgery, Pediatrics, Pediatric Surgery
Immunological Disorder by HIV	Internal Medicine, Blood and Marrow Transplantation, Infectious Diseases, Pulmonology, Surgery, Pediatrics, Obstetrics and Gynecology, etc. (see 「3. Others」)
Hepatic Disorder	Internal Medicine, Gastroenterological Internal Medicine, Liver Internal Medicine, Surgery, Gastroenterological Surgery, Transplant Surgery, Abdominal Surgery, Hepatopancreaticobiliary Surgery, Pediatrics, Pediatric Surgery

Source: Law for the Welfare of Persons with Physical Disabilities
<<http://www.houko.com/00/01/S24/283.HTM>>

¹ Mastication: the act of assisting the process of absorption after digestion by expanding the areas contacting the digestive fluid and mixing thoroughly through chewing.

Persons with physical disabilities are divided into the 1st to 7th grades according to the degree of disability. Among the types of visceral impairment, the cardiac, renal, respiratory, bladder • rectal, and small-intestine disorders are divided into the 1st, 3rd, and 4th grades while immunological disorder by HIV and hepatic disorder are divided into the 1st, 2nd, 3rd, and 4th grades (see Table 2) (2). While visual impairment, hearing and speech impairment, and mobility impairment contain the 2nd grade among the grades of disabilities, visceral impairment does not contain the 2nd grade, except immunological disorder by HIV and hepatic disorder. As shown in Table 2, while the persons who show extreme limitation in activities of daily living (ADL) due to hearing impairment, speech impairment, damaged sound emission ability, and mobility impairment are classified as 2nd-grade, the persons who show extreme limitation in ADL due to functional disorders of the heart, kidney, respiratory organs, bladder or rectum, or small intestine are classified as 1st-grade, which shows the consideration for persons with visceral impairment. In spite of the consideration for persons with visceral impairment, however, it is very difficult to be classified as 1st-grade and to obtain its accompanying benefit because in reality, the criteria for the complementary examination's numerical values are very strict.

<Table 2> Criteria for visceral impairment certification

Grade	Cardiac Disorder	Renal Disorder	Respiratory Disorder	Bladder or Rectal Disorder	Small Intestinal Disorder	Immunological Disorder by HIV	Hepatic Disorder
1 st grade	Persons who show extreme limitation in activities of daily living (ADL) due to function disorders					Persons who cannot perform the most number of ADL due to function disorders	
2 nd grade						Persons who show extreme limitation in ADL due to function disorders	
3 rd grade	Persons who show noticeable limitation in ADL at home due to function disorders					Persons who show noticeable limitation in ADL at home due to function disorders (excluding persons who show noticeable limitation in ADL in social life due to function disorders)	
4 th grade	Persons who show noticeable limitation in ADL in social life due to function disorders					Persons who show noticeable limitation in ADL in social life due to function disorders	

III. Definition of Visceral Impairment and the Major Diseases Causing It

As mentioned above, the Law for the Welfare of Persons with Physical Disabilities stipulates visceral impairment as including cardiac disorder, renal disorder, respiratory disorder, bladder • rectal disorder, small-intestine disorder, immunological disorder by HIV, and hepatic disorder (1). It was in 1967 that visceral impairment was stipulated in the Law for the Welfare of Persons with Physical Disabilities, which then included only cardiac and respiratory disorder; since then, renal disorder in 1972, bladder • rectal disorder in 1984, small-intestine disorder in 1986, immunological disorder by HIV in 1998, and hepatic disorder in 2010 were added.

The major causes and the types of visceral impairment are shown in Table 3 (3). Most of the persons with visceral impairment seem to be able to perform ADL by themselves and seem not to have any problem on the surface. Even though they easily feel tired and are frequently out of breath, such symptoms are not as noticeable as others, like paralysis. It can therefore be considered a serious and significant problem that persons with visceral impairment cannot be identified or understood (i.e., when they sit on the seats for persons with disabilities, they may be accused of sitting where they are not supposed to). Moreover, their salt, fluid, and dietary restrictions, or the caution they have to exercise with regard to excretion or exposure to electromagnetic waves, may not be readily understood by others.

<Table 3> Causes and types of visceral impairment
(table contents revised from reference 3)

Types of Visceral Impairment	Causes and Types of Visceral Impairment
Cardiac Disorder	Cardiac insufficiency is a type of heart failure caused by ischemic heart disease (myocardial infarction, angina, etc.), valvular disease, or arrhythmia. The symptoms, such as palpitation ² , breathlessness, and fatigue, easily lead to cold and other illnesses. Moreover, persons with a cardiac pacemaker or an implantable cardioverter defibrillator (ICD) need to be cautious in daily life.
Respiratory Disorder	Respiratory disorder refers to the state where pulmonary respiration is insufficient and alveolar gas exchange is interfered with due to chronic obstructive pulmonary disease (COPD), the aftereffects of pulmonary tuberculosis, etc. Persons with respiratory disorders have difficulty breathing due to chronic breathing difficulty, breathlessness, and cough, and have trouble performing simple activities such as going up or down the stairs and moving blankets up and down. Many people have trouble going out and get depressed due to respiratory disorders. The recent increase in home oxygen therapy has made people avoid going out because they have to carry a portable oxygen tank when they do, which is heavy and uncomfortable.

² Palpitation: very fast, irregular heartbeats.

Renal Disorder	Renal disorder refers to renal failure where the function of the kidney is noticeably lowered due to diabetes or nephritis. Hemodialysis takes four to five hours three times a week. Patients who have had hemodialysis show various symptoms: renal anemia, subnutrition caused by uremia (decreased oral intake of protein and deterioration of protein metabolism due to dialysis), decreased and malfunctioning skeletal muscles, muscle weakness, decreased motor ability, frequent fatigue, reduced activity, and lower quality of life. Moreover, as dialysis must be done continuously, the patients have trouble traveling.
Bladder or Rectal Disorder	Some diseases, such as spine cord injury, congenital malformation, inflammatory diseases, and malignant tumor, reduce the functionality of the bladder and rectum and weaken the excretory function, which leads to stoma creation. Stoma is an artificial hole for the passage of waste (stool or urine) from the human body. The patients may find themselves in shock just because they have to undergo stoma creation. They frequently avoid going out due to the anxiety that may be caused by the need to change diapers or the smell of their stool or urine.
Small-Intestine Disorder	Persons with small-intestine disorder have trouble gaining nutrients due to the decrease or loss of their small-intestine function caused by Crohn's disease, small-intestine volvulus, or congenital small-intestine obstruction, which requires controlling or constraining diet (i.e., some patients can take pudding or tofu but cannot take other foods through the mouth; as such, they have to ingest food or gain nutrients through their noses while they sleep. In addition, patients who cannot ingest food through their mouths need to do so via central venous hyperalimentation.
Immunological Disorder by HIV	AIDS is the condition where the immune system has been compromised by HIV infection. When the symptoms are soothed, AIDS patients may live at home or may work if they are regularly on medication and on a controlled diet and are capable of engaging in ADL. Their greatest challenges are wrong information and prejudices and discrimination against AIDS.
Hepatic Disorder	Hepatic disorder is caused by viral hepatitis, autoimmune hepatitis, primary biliary cirrhosis, alcoholic liver disease, nonalcoholic fatty liver disease (NAFLD), and cirrhosis caused by drug-induced liver disease, and its symptoms include absent-mindedness, itchiness, muscle pain, weight loss, abdominal inflation by ascites, edema, bloody discharge caused by the cutting of the varix of the alimentary canal, consciousness disorder or coma caused by encephalopathy, loss of appetite, nausea, and vomiting. Hepatic disorder patients show decreased ADL or motor ability; the motor ability shows a correlation with life expectancy.

Most people with visceral impairment need to restrict their physical and mental activities because they have to rest and be recumbent for a long time; their long-term inactiveness may cause many problems, including functional degradation of all their organs, decreased abilities, deterioration of their mental power or quality of life, and occurrence of disuse syndrome. Eventually, these problems may lead to obesity, insulin-resistant diabetes, hyperlipidemia, and artery hardening, which can easily get them caught in the vicious circle of cardiovascular diseases inducing shortened life expectancy. So as not to get caught in that vicious circle, they need to exercise regularly and maintain and improve their fitness (4). That is, it is important for persons with visceral impairment to actively perform ADL not only so that they can retain the ability to perform ADL and prevent the recurrence of diseases but also so that they can inhibit the aggravation of arteriosclerotic diseases.

IV. Changes in the Number of Persons with Visceral Impairment

The Ministry of Health, Labor, and Welfare has been regularly investigating the actual conditions of persons with physical disabilities in Japan. As of its 2006 survey, the total number of persons with physical disabilities who were 18 years old and over and with in-home care was 3,483,000, which represents a 7.3% increase from 2001 (see Figure 1 and Table 4) (5). While the number of persons with physical disabilities (in-home care), including visual impairment, hearing and speech impairment, and mobility impairment, did not change much for five years (from 2001 to 2006), the number of persons with visceral impairment increased by 26%. The percentage of persons with visceral impairment among all the persons with physical disabilities increased yearly and reached 30% in 2006 (see Figure 1 and Table 4) (5).

<Figure 1> Changes in the number of persons with physical disabilities by type of disability
(figure contents quoted from reference 5).

<Table 4> Changes in the number of persons with physical disabilities by type of disability (table contents quoted from reference 5)

Year	Total	Visual Impairment	Hearing • Speaking Impairment	Orthopedic Impairment	Visceral Impairment	Multiple Disabilities
Changes in Number (Unit: 1,000 persons)						
1951	512	121	100	291	-	-
1955	785	179	130	476	-	-
1960	829	202	141	486	-	44
1965	1,048	234	204	610	-	215
1970	1,314	250	235	763	66	121
1980	1,977	336	317	1,127	197	150
1987	2,413	307	354	1,460	292	156
1991	2,722	353	358	1,553	458	121
1996	2,933	305	350	1,657	621	179
2001	3,245	301	346	1,749	849	175
2006	3,483	310	343	1,760	1,070	310
Percentages (Unit: %)						
1951	100.0	23.6	19.5	56.8	-	-
1955	100.0	22.8	16.6	60.6	-	-
1960	100.0	24.4	17.0	58.6	-	5.3
1965	100.0	22.3	19.5	58.2	-	20.5
1970	100.0	19.0	17.9	58.1	5.0	9.2
1980	100.0	17.0	16.0	57.0	10.0	7.6
1987	100.0	12.7	14.7	60.5	12.1	6.5
1991	100.0	13.0	13.2	57.1	16.8	4.4
1996	100.0	10.4	11.9	56.5	21.2	6.1
2001	100.0	9.3	10.7	53.9	26.2	5.4
2006	100.0	8.9	9.8	50.5	30.7	8.9
Percentages over Last Survey (Unit: %)						
1951	-	-	-	-	-	-
1955	153.3	147.9	130.0	163.6	-	-
1960	105.6	112.8	108.5	102.1	-	-
1965	126.4	115.8	144.7	125.5	-	488.6
1970	125.4	106.8	115.2	125.1	-	56.3
1980	150.5	134.4	134.9	147.7	298.5	124.0
1987	122.1	91.4	111.7	129.5	148.2	104.0
1991	112.8	115.0	101.1	106.4	156.8	77.6
1996	107.8	86.4	97.8	106.7	135.6	147.9
2001	110.6	98.7	98.9	105.6	136.7	97.8
2006	107.3	103.0	99.1	100.6	126.0	177.1

Among the 1,070,000 persons with visceral impairment, the persons with cardiac disorder numbered 595,000, those with respiratory disorder 97,000, those with renal disorder 234,000, those with bladder or rectal disorder 135,000, those with small-intestine disorder 8,000, and those with immunological disorder by HIV 1,000 (Table 5) (5).

Given the distribution of persons with visceral impairment by age group, the elderly group showed a higher rate than the other age groups, which shows that the population aging may have caused the increase in the number of persons with visceral impairment (see Figure 2) (5). Furthermore, as the patients with diabetes and hyperlipidemia, which may cause visceral impairment, increased in number, the persons with visceral impairment is expected to continue to increase (4). The percentage of persons with multiple disabilities increased to 77.1% from 2001 to 2006, and among them, the number of persons with both visceral impairment and mobility impairment was the biggest (see Table 4) (4). Population aging and the increase of arteriosclerotic diseases may have also contributed to this situation.

Even though there was no official report for liver function failure in 2010, it is estimated that there were about 400,000 patients with cirrhosis as of that year. Assuming that the percentage of C class patients (those with a score of 10 or over) was about 10%, the number of liver cirrhotic patients is estimated to have been 30,000-50,000; the number of persons with liver function failure may have been 35,000-55,000, adding 5,000 patients who underwent liver transplant to that estimation (6). This figure will be fed into the nationwide survey for persons with physical disabilities. The comprehensive rehabilitation of persons with liver function failure should be pursued for the improvement of their treatment or vital prognosis as well as for the improvement of the quality of their lives, and is expected to be further developed (7).

Given the aforementioned facts, the number of persons with visceral impairment is expected to further increase in the future, and the development of the rehabilitation modality for persons with visceral impairment is also expected to be developed as a specialized part of rehabilitation medicine. Furthermore, as the number of persons with multiple disabilities including visceral impairment has increased, the professionals in the field of rehabilitation need to become more knowledgeable with regard to visceral impairment (4).

The number of persons with visceral impairment will increase if the number of persons who do not satisfy the statutory criteria even though they have visceral impairment clinically will be added to the number. The persons who have high blood pressure, diabetes, or malignant tumor as well as respiratory, cardiac, renal, or liver disease may become the beneficiaries of the disability pensions given to persons who become low-incomers due to their disabilities. In the future, the physical disabilities that have been caused by such diseases must be included in the scope of visceral impairment (4).

<Table 5> Number of persons with physical disabilities by type of disability
(table contents quoted from reference 5)

(Unit: 1,000 persons)

	2001	2006	Percentage over Last Survey
Total	3,245 (100.0)	3,483 (100.0)	107.3 %
Visual Impairment	301 (10.7)	310 (8.9)	103.0 %
Hearing · Speech Impairment	346 (10.7)	343 (9.8)	99.1 %
Hearing Impairment	305 (9.4)	276 (7.9)	90.5 %
Equilibrium Disturbance	7 (0.2)	25 (0.7)	357.1 %
Voice· Speech· Mastication Function ³ Impairment	34 (1.0)	42 (1.2)	123.5 %
Limbs impairment	1,749 (53.9)	1,760 (50.5)	100.6 %
Upper extremity amputation	98 (3.0)	82 (2.4)	83.7 %
Functional disorder of the upper or lower limbs or the torso	479 (14.8)	444 (12.7)	92.7 %
Lower extremity amputation	49 (1.5)	60 (1.7)	122.4 %
Functional disorder of the lower half of the body	563 (17.4)	627 (18.0)	111.4 %
Trunk impairment	167 (5.1)	153 (4.4)	91.6 %
Cerebral motor function disorder	60 (1.8)	58 (1.7)	96.7 %
Motor function disorder of the entire body (multiple limbs and trunk)	333 (10.3)	337 (9.7)	101.2 %
Visceral impairment	849 (26.2)	1,070 (30.7)	126.0 %
Cardiac disorder	463 (14.3)	595 (17.1)	128.5 %
Respiratory disorder	89 (2.7)	97 (2.8)	109.0 %
Renal disorder	202 (6.2)	234 (6.7)	115.8 %
Bladder · rectal disorder	91 (2.8)	135 (3.9)	148.4 %
Small-intestine disorder	3 (0.1)	8 (0.2)	266.7 %
Immunological Disorder by HIV	2 (0.1)	1 (0.1)	50.0 %
Multiple Disabilities	175 (5.4)	310 (8.9)	177.1 %

* The figures within the parentheses are the percentages.

³ Mastication: the act of assisting the process of absorption after digestion by expanding the areas contacting the digestive fluid and mixing thoroughly through chewing

<Figure 2> Distribution of the number of persons with physical disabilities by age group (figure contents quoted from reference 5).

V. Closing Remarks

Until now, the scopes of physical disabilities and the actual conditions of visceral impairment, whose significance has increased, are being explored in Japan. It may be very important particularly for persons with visceral impairment to regularly engage in activities of daily living not only so that they can retain their ability to perform such activities or so that they can prevent the recurrence of diseases but also so that they can inhibit the aggravation of arteriosclerotic diseases. The number of persons with visceral impairment is expected to increase due to the advent of a super-aged society. As such, visceral impairment is a significant area that rehabilitation-related professionals have to become knowledgeable about among the parts of rehabilitation medicine. Unfortunately, this study didn't deal with the actual status of disaster prevention, even though it dealt with the disaster consciousness of employees of rehabilitation facilities for the disabled. Therefore, there may be the gap between actual status of disaster prevention system and the disaster consciousness. To build better system for disaster prevention, the gap between disaster consciousness of employees and actual status of disaster prevention system needs to be examined in the future.

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