

A Study on Disability and Impairment of Dental Disorders in Korea

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The definition and application of disability are becoming more important as society becomes more complex. The precise criteria for the assessment and classification of disabilities are primarily focused on certain medical conditions with a lack of guidelines for dental conditions. This study provides an evaluation and comparison of the current tables available for the assessment of disabilities in the dental field with the aim of identifying areas to be improved.

Key Words: Disability evaluation; Insurance; Injury, Facial nerve

INTRODUCTION

A person is deemed disabled if they have a physical or mental impairment and has been greatly restricted in their daily or social life for an extended period of time. Impairment refers to a state in which symptoms are fixed without recovering to a previous state after any injury or illness has been treated.¹⁾ The assessment of these impairments are of great importance to national compensation schemes and compensation provided through personal insurance.

As industry develops and the life in modern society becomes more complex, the incidence of damage to the human body and its aftermath is increasing each year due to an increase in the number of accidents and misadventures in the following areas: traffic, industry, medical practice, drugs and pollution-related. In most modern welfare states, health policy is concerned with welfare medical care and measures for people with chronic illnesses and persons with

disabilities.²⁾

In Korea, various national laws, foreign McBride method, and American Medical Association (AMA) standard method are used for the judgment of physical impairment, but each has problems and application criteria are different, causing various confusion.²⁾ Due to a lack of research and a comprehensive standard set of criteria for disability judgment in the dental field, there is a lack of consistency in the way dental related conditions are assessed. As a consequence, patients who have genuine disabilities may not receive the appropriate compensation or have the payment of the compensation delayed.

The purpose of this study was to identify the various tables for assessment of impairment in the dental field currently used in Korea. For this purpose, the national laws of the National Compensation Act, the Industrial Accident Compensation Act and the Automobile Compensation Guarantee Act, which are used domestically, are examined. In addition, the McBride method and the AMA method

are reviewed. The limitations in the application of these tables in Korea is investigated so as to identify areas for improvement.

In order to help the evaluation of impairment in the future, it is necessary to summarize the comparison of the evaluation tables for the sensory dysfunction after the

Table 1. Domestic impairment table in oral maxillofacial region

Rating	Labor capacity loss rate	Enforcement Decree of National Compensation Act	Car damages Enforcement Decree of the Act	Industrial Accident Compensation Enforcement Decree of Insurance Act
Class 1, No. 2	100%	A person who is abolished in chewing and language function	A person who is abolished in chewing and language function	A person who permanently lost all of chewing and speaking function
Class 3, No. 2	100%	A person who is abolished in chewing or language function	A person who is abolished in chewing or language function	A person who permanently lost all of chewing or speaking function
Class 4, No. 2	90%	A person who has remarkable impairment in chewing and language function	A person who has remarkable obstacle in chewing and language function	A person who has remarkable impairment in chewing and speaking function
Class 6, No. 2	70%	A person who has remarkable impairment in chewing or language function	A person who has remarkable impairment in chewing or language function	A person who has remarkable impairment in chewing and speaking function
Class 9, No. 2	40%	A person who has impairment in chewing and language function	A person who has impairment in chewing and language function	A person who has impairment in chewing and speaking function
Class 10, No. 2	30%	A person who has impairment in chewing or language function	A person who has impairment in chewing or language function	A person who has impairment in chewing or speaking function
Class 10, No. 3	30%	A person who has been treated over 14 teeth prosthetics	A person who has been treated over 14 teeth prosthetics	A person who has been treated over 14 teeth prosthetics
Class 11, No. 10	20%	-	-	A person who has been treated over 10 teeth prosthetics
Class 12, No. 3	15%	A person who has been treated over 7 teeth prosthetics	A person who has been treated over 7 teeth prosthetics	A person who has been treated over 7 teeth prosthetics
Class 12, No. 12	15%	A person who has stubborn neurological symptoms in the local area	-	A person who has stubborn neurological symptoms in the local area
Class 13, No. 4	10%	-	-	A person who has been treated over 7 teeth prosthetics
Class 14, No. 2	5%	A person who has been treated over 3 teeth prosthetics	A person who has been treated over 3 teeth prosthetics	A person who has been treated over 3 teeth prosthetics
Class 14, No. 9	5%	A person who has neurological symptoms in the local area	-	A person who has neurological symptoms in the local area

Table 2. Domestic law on masticatory disorder

Rating	Labor capacity loss rate	Enforcement Decree of National Compensation Act	Car damages Enforcement Decree of the Act	Industrial Accident Compensation Enforcement Decree of Insurance Act
Class 1, No. 2	100%	A person who is abolished in chewing and language function	A person who is abolished in chewing and language function	A person who permanently lost all of chewing and speaking function
Class 3, No. 2	100%	A person who is abolished in chewing or language function	A person who is abolished in chewing or language function	A person who permanently lost all of chewing or speaking function
Class 4, No. 2	90%	A person who has remarkable impairment in chewing and language function	A person who has remarkable obstacle in chewing and language function	A person who has remarkable impairment in chewing and speaking function
Class 6, No. 2	70%	A person who has remarkable impairment in chewing or language function	A person who has remarkable impairment in chewing or language function	A person who has remarkable impairment in chewing and speaking function
Class 9, No. 2	40%	A person who has impairment in chewing and language function	A person who has impairment in chewing and language function	A person who has impairment in chewing and speaking function
Class 10, No. 2	30%	A person who has impairment in chewing or language function	A person who has impairment in chewing or language function	A person who has impairment in chewing or speaking function

implant treatment, teeth loss, and masticatory disorder caused by TMJ disorders.

MATERIALS AND METHODS

A comparison of the advantages and disadvantages of domestic disability evaluation tables (national law, industrial accident law, automobile compensation guarantee law) and foreign laws (McBride method, AMA method) was achieved and the evaluation tables related with dental conditions were presented.

1. Domestic Law

1) National Compensation Insurance Act

This act stipulates the liability and compensation procedure for the damages if a public official of a national or local government inflicts damage on other person in performing their duties, in violation of laws and ordinances. The classification of physical handicap is provided in Table 2 of the Enforcement Decree (Table 1, 2).³⁾

2) Industrial Accident Compensation Insurance Act

This Act is to provide insurance benefits to workers in case of an industrial accident. It is shown in Table 3 of the Enforcement Decree.⁴⁾ The advantages of the classification of physical handicap in the National Compensation Insurance Act and the Industrial Accident Compensation Insurance Act are that it is convenient to apply items, grades, compensation days and labor capacity loss rates, but there is no scientific or medical validity. The limitation is that it is not considering the occupation or age of

the victim. It is also true that the difference between classes is unclear due to the lack of consistency in the conversion of disability rates, which makes it difficult for clinical applications.

3) Enforcement Decree of Automobile Damages Guarantee Act

As a law to guarantee the compensation of damages caused by the operation of motor vehicles, the classification of the disability is similar to that of the National Compensation and the Industrial Accident Compensation Insurance Act.

2. Foreign Law

1) McBride method

In 1936, the American orthopedic surgeon, McBride, first published a list of impairment scales that were adjusted for occupation and age, but they are limited to orthopedic surgery. There is no consideration of the differences between American society and our society and it has a disadvantage that it does not deal with dental field.⁶⁾

It is possible to evaluate the rate of loss of labor capacity

Table 4. American Medical Association method on masticatory disorder

Impairment description	% impairment of the whole person
Dietary restrictions	
Diet is limited to semisolid or soft foods	5-19
Diet is limited to liquid foods	20-39
Ingestion of food requires tube feeding or gastrostomy	40-60

Table 3. McBride method on masticatory disorder

Criteria of impairment	Impairment whole percent (%)	Impairment classification by job	
		5	6
(Face)			
I. Fracture of the jaws including disfigurement			
A. Maxilla united with malocclusion	8	10	10
B. Mandibular-malocclusion	8	10	10
C. Condylod process-painful occlusion	8	10	10
II. Ankylosis temporomandibular joint (motion limited 1/4 to 1/2 inch)	10	17	17
Arthritis			
III. Osteoarthritis, Degenerative arthritis			
A. A few joint, no constraction, no time off	5	11	11
B. One or more major joint with pain, time off 1-2/year	15	21	21

due to many occupations, impairments and diseases, and the calculation of multiple impairment is more scientific than other methods, but the labor loss is not equitable. The criteria and definitions are concentrated in the orthopedic area, whereas the parts of the head, brain, etc. are not classified well enough. In addition, occupational classifications are more focused on labor-intensive occupations rather than on white-collar and technical occupations. However, since it was adopted in the comprehensive insurance policy of automobile in 1986, it is still used universally despite the disadvantage to the dental field in its application.⁵⁾

2) AMA method

Since 1958, the AMA has published articles in the Journal of the American Medical Association from 1970 to 2006 dealing with only permanent impairment and has detailed enforcement rules in the evaluation guidelines. It is indicated by the scope of impairment and functional proportional value.⁷⁾

On the other hand, the rate of decline in labor capacity is not mentioned. The rate of decline of labor capacity is affected not only by the rate of physical disability but also by the area of the disability, the occupation, age and sex of the victim, the possibility of transfer, the education level, income, social status, skills, etc., and therefore the calculation of the rate of decline in labor capacity is beyond the scope of the physician's responsibility except for the assessment of the rate of physical disability.

The evaluation of physical impairment is actually carried out for trauma sequelae, but the AMA Disability Assessment Guideline focuses on functional impairment, but neglects some trauma sequelae. In addition, the rate of injury to the oral maxillofacial region is not described in detail.

CONCLUSION

1. Masticatory Disorders and Temporomandibular Disorder

In domestic law, it is classified from grade 1 to grade 10 and deals with masticatory disorders and tooth loss together. However, in the case of masticatory disorders, there is only a rough classification without mentioning the detailed classification of temporomandibular joint (TMJ) disorder (Table 2) so there is room for subjective application in diagnosing impairment. Insurance companies are only applying examples of these classifications.

In the McBride method, there is no specific mention of masticatory disorders, so insurance companies have many problems in classifying masticatory disorders. In case of the limitation of mouth opening, accurate classification is difficult because only TMJ ankylosis is explained in the table. According to the AMA classification, there is a wide range of masticatory disorders and the classification criteria are not shown (Tables 3, 4).

In 1997, the methods used by various US organizations for temporomandibular disorders were classified in detail,

Table 5. Domestic law on nerve injury

Rating	Labor capacity loss rate	Enforcement Decree of National Compensation Act	Car damages Enforcement Decree of the Act	Industrial Accident Compensation Enforcement Decree of Insurance Act
Class 12, No. 12	15%	A person who has stubborn neurological symptoms in the local area	-	A person who has stubborn neurological symptoms in the local area
Class 14, No. 9	5%	A person who has neurological symptoms in the local area	-	A person who has neurological symptoms in the local area

Table 6. McBride method on nerve injury

Criteria of impairment	Impairment whole percent (%)	Impairment classification by job	
		5	6
II. Fracture with brain injury and increase of intracranial pressure		3	4
(A. 2) 5th nerve (with facial pain)	18	20	21
(A. 3) 7th nerve (facial abstraction, language impairment)	16	18	19
(A. 7) 12th nerve (difficulty tongue use and swallowing)	10	12	13

but they are not applied in Korea.⁹⁾

2. Nerve Injury

Domestic law on nerve injury in the dental region is classified into two stages only without any accurate

Table 7. American Medical Association method on nerve injury

Impairment description	% impairment of the whole person
Trigeminal nerve	
Complete paralysis unilateral	3-10
Complete paralysis bilateral	20-85
Trigeminal or glossopharyngeal neuralgia	
Mild uncontrolled facial neuralgic pain that may interfere with ADLs	0-14
Moderate severe, uncontrolled facial neuralgic pain that may interfere with ADLs	15-24
Severe, uncontrolled, unilateral or bilateral facial neuralgic pain and prevents performance of ADLs	25-35
Facial nerve	
Complete loss of taste of anterior tongue	1-4
Mild unilateral facial weakness	1-4
Moderate bilateral facial weakness	5-19
Severe unilateral facial paralysis with 75% or greater facial involvement	5-19
Severe bilateral facial paralysis with 75% or greater facial involvement	20-45

ADL, activities of daily living.

Table 8. Domestic law on tooth loss

Rating	Labor capacity loss rate	Enforcement Decree of National Compensation Act	Car damages Enforcement Decree of the Act	Industrial Accident Compensation Enforcement Decree of Insurance Act
Class 10, No. 3	30%	A person who has been treated over 14 teeth prosthetics	A person who has been treated over 14 teeth prosthetics	A person who has been treated over 14 teeth prosthetics
Class 11, No. 10	20%	-	-	A person who has been treated over 10 teeth prosthetics
Class 12, No. 3	15%	A person who has been treated over 7 teeth prosthetics	A person who has been treated over 7 teeth prosthetics	A person who has been treated over 7 teeth prosthetics
Class 13, No. 4	10%	-	-	A person who has been treated over 7 teeth prosthetics
Class 14, No. 2	5%	A person who has been treated over 3 teeth prosthetics	A person who has been treated over 3 teeth prosthetics	A person who has been treated over 3 teeth prosthetics

Table 9. McBride method on tooth loss

Criteria of impairment	Impairment whole percent (%)	Impairment classification by job	
		5	6
(Face)			
III. Loss of all teeth, replaceable with prosthesis	15	19	19

explanation so there is a disadvantage that subjective diagnosis can be made (Table 5).

In the case of the McBride method, there is no mention of local injuries, so it can be pointed out that the cranial nerve damage should be applied to the local part. The AMA method is more difficult to apply clinically because of the more detailed classification of neuralgia than nerve injury (Tables 6, 7).

3. Tooth Loss

There is a limit to the number of lost teeth in the domestic law, but there are limitations in application because the teeth used as an abutment tooth of prosthesis are also allowed to lose function (Table 8). In addition, there is a disadvantage in the McBride method that only the classification of the complete loss of entire teeth is presented so the number of missing teeth must be obtained as a ratio because there is no classification according to the number of tooth loss (Table 9). There is no classification of tooth loss in the AMA.

DISCUSSION

According to the World Health Organization International Disability Classification, 'physical disability' refers to a psychological and physiological or anatomical structure or

function defect or abnormality when used in connection with the health field. There are two types of physical impairment: temporary impairment and permanent impairment, in the form of abnormalities in physical functions,

including deficits or abnormalities or mental effects of the arms, legs, organs, tissues and other structures of the body.⁸⁾

Many domestic laws and regulations provide similar criteria for disability, and the definition of disability is similar in the McBride and the AMA method. In practice, however, there are much confusion in the application of the guideline, as we have discussed in the advantages and disadvantages each taxonomy. In the dental field, especially, the classification is so poor that it is difficult to apply. Nonetheless, it would be desirable to identify the strengths and weaknesses of each classification and apply the class similar to the impairment as much as possible if the impairment classification like impairment determination etc. is applied clinically.

Not all dental conditions that cause or contribute to a

Table 10. Evaluation criteria for impairment of masticatory disorders by Korean Academy of Dental Science

Classification	Criteria of impairment	Impairment whole percent (%)
Opening limitation		
Distance between incisal edges		
Degree 3	0-10 mm	10
Degree 2	10-20 mm	5-7
Degree 1	21-30 mm	2-4
Degree 0	More than 30 mm	0
Limitation of lateral movement		
Degree 1	Movement range 0-4 mm	1

Table 11. Evaluation Criteria of Nerve Injury by Korean Academy of Dental Science

Classification	Criteria of impairment	Impairment whole percent (%)
Paralysis and Sensory depression (included of taste loss)		
Degree 3	Complete sensory loss with pain	4-5
Degree 2	Complete sensory loss without pain	2-3
Degree 1	Partial paresthesia	1
Degree 0	Mild paresthesia	0
Facial neuralgia (included trigeminal neuralgia)		
Degree 3	Highly unadjusted bilateral facial nerve pain that prevents the activities of daily living from being performed	6-10
Degree 2	Moderate to severe, unadjusted facial nerve pain that interferes with activities of daily living, but has not been operated on	3-5
Degree 1	Mild facial nerve pain that interferes with activities of daily living	1-2
Degree 0	No pain	0

Table 12. Evaluation Criteria of Tooth loss by Korean Academy of Dental Science (per tooth basis)

Classification	Criteria of impairment		Impairment whole percent (%)
	Authoring function based on 100 points (Mr. Damburg)	McBride by 15	
Tooth loss			
Anterior teeth	2 point deduction		0.3
Canine	3 point deduction		0.45
Premolar	3 point deduction		0.45
Molar	6 point deduction		0.9
Implant crown			
Anterior teeth	0.4 point deduction (20%)		0.06
Canine	0.6 point deduction (20%)		0.09
Premolar	0.6 point deduction (20%)		0.09
Molar	1.2 point deduction (20%)		0.18
Denture			
Pontic site	0.4-1.2 point deduction (tooth loss 20%)		0.06-0.18
Removable denture site	0.6-1.8 point deduction (tooth loss 30%)		0.09-0.27
Full denture	1.0-3.0 point deduction (tooth loss 50%)		0.15-0.45
Complete tooth loss	100 point deduction		15

disability are defined in the classifications that we have discussed in the conclusion. However, if you have an understanding of at least the scope of application, we will carefully predict the range of application may broaden. The data gathered by consensus opinions from a number of US groups on masticatory disorders would be a good example for domestic researchers.⁹⁾ Fortunately, the current Korean Academy of Dental Science officially presents the impairment classification table for the dental area, so it should be accepted by the Korean Dental Association and it should be strengthened so that all dentists can use it practically.¹⁰⁾ It is considered that the classification of disability classification of Korean Academy of Dental Science is the most valid classification for realistic application in Korea and it should be recommended to cite it with other classification table for its application (Tables 10-12).

First of all, it is important to inform the foreign classification of disability in the poor dental area of overseas law. It is important to not only the physical feelings of the national institutions but also the reports of each insurance company by presenting the data by Korean Academy of Dental Science Should be the homework of forensic odontologist who are in charge of forensic affairs.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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