Asian Journal of

HUMAN SERVICES

Printed 2020.1030 ISSN2188-059X

Published by Asian Society of Human Services

October 2020

Vol. 19

ASIAN SOCIETY OF HUMAN SERVICES

Human Services

DOI: http://dx.doi.org/10.14391/ajhs.19.101
Asian Journal of Human Services, VOL.19 101-111

REVIE ARTICLE

Review the Framework of Intellectual Disability from a Physiological / Pathological Perspective in Japan

Chaeyoon CHO [1)] Natsuki YANO [2) 3)]

1) Graduate School of Economics, Shimonoseki City University, Japan
2) Graduate School of Medicine, Tohoku University
3) Faculty of Child Education, Baiko Gakuin University, Japan

ABSTRACT

In Japan, in order to realize inclusive education, teachers involved in special education need to have expertise to meet the diverse needs of children. However, as a result of the survey, it has been pointed out that a sufficient cooperation system has not been established with information on children's disability status is required to be shared reliably by related organizations. Therefore, this study aimed to reviews the framework of intellectual disability in Japan and to reviews the definition of intellectual disability on a physiology / pathology perspective. According to the classification of ICD-11, one of the neurodevelopmental disorders include intellectual disability and autism spectrum disorder (ASD). Schizophrenia, Epilepsy and Down Syndrome (DS) are separate categories and are not included in intellectual disability. Therefore, the low intellectual function found in some people with DS or Epilepsy should not be equated with intellectual disability as a neurodevelopmental disorder. In conclusion, to promote special education in the future, it is necessary for teachers to understand children's diseases and disorders physiologically/pathologically.

Received
August 7, 2020

Revised
October 3, 2020

Accepted
October 3, 2020

Published
October 30, 2020

＜Keywords＞
intellectual disabilities, physiology, pathology, disorder of intellectual development, ICD-11

chaeyoon.cho.1127@gmail.com（Chaeyoon CHO; Japan）
Asian J Human Services, 2020, 19:101-111.

DOI: http://dx.doi.org/10.14391/ajhs.19.101
Asian Journal of Human Services, VOL.19 101-111

I. Introduction

In Japan, in order to realize inclusive education, teachers involved in special education need to have expertise to meet the diverse needs of children. In addition, it is required to build a collaborative system with professionals outside the school, including those in the fields of medicine and welfare[1].

In intellectual disability education, cooperation with the medical field is an issue. A survey on collaboration between special needs education and other occupations[2] also shows that special needs teachers are aware of the need for multidisciplinary collaboration. However, as a result of the survey, it has been pointed out that a sufficient cooperation system has not been established. Teachers may also not understand what advice to seek from out-of-school professionals. Even in such a case, it has been pointed out that the cooperation only in the form causes confusion in the cooperation partner[3]. Special needs education is education for children with disabilities, and cooperation with the medical field is indispensable. In particular, information on children's disability status is required to be shared reliably by related organizations. Children with intellectual disabilities have the largest number of enrollments in Japanese schools. Intellectual disability has the largest number of children in schools in Japan, and its definition has changed significantly in recent years.

This paper reviews the framework of intellectual disability in Japan and reviews the definition of intellectual disability from a physiology / pathology perspective.

II. Intellectual Disabilities in Japan

Internationally, the definition of intellectual disability has changed significantly. When the International Classification of Diseases was revised from the 10th version (ICD-10) to the 11th version (ICD-11) in 2019, Intellectual disability was classified as Neurodevelopmental disorder under the name of "Disorder of intellectual development". This indicates that intellectual disability was defined as a disorder of neurodevelopment as well as Autism Spectrum Disorder and Attention Deficit / Hyperactivity disorder.

However, in Japan, intellectual disability is regarded as a different framework from developmental disability, which is a peculiar situation by international standards[5]. The Ministry of Education, Culture, Sports, Science and Technology defined intellectual disability as a condition in which the development of intellectual functions such as memory, reasoning, and judgment was significantly delayed, making it difficult to adapt to social life. On the other hand, developmental disorders are autism, Asperger's syndrome and other pervasive developmental disorders, learning disabilities, attention deficit hyperactivity disorder and other similar disorders of brain function, and the symptoms usually develop at a young age. It is defined as being specified by a

DOI: http://dx.doi.org/10.14391/ajhs.19.101
Asian Journal of Human Services, VOL.19 101-111

government ordinance. This definition is based on ICD-10. With the revision of the law in 2007, special needs education has newly targeted developmental disabilities in addition to intellectual disabilities and physical disabilities, health impairment, visual disabilities, and hearing disabilities. However, the Ministry of Education, Culture, Sports, Science and Technology has stated that the administrative definition of the term developmental disability is different from the academic definition, which is a cause of confusion.

Children with intellectual disabilities are categorized as either general education or special education based on Intelligence Quotient (IQ) and degree of adaptive function. The classification does not take into account the diminished diseases and disorders, physiological and pathological features that cause the decline in intellectual function. However, in recent years, many children with developmental disabilities such as Autism spectrum disorder (ASD) and Attention-Deficit Hyperactivity Disorder (ADHD) who have no delay in intellectual function have been enrolled in special needs schools for intellectual disabilities[6], and the specialization required of teachers has become extremely wide.

III. Intellectual Disability in Physiology / Pathology

1. Disorders of Intellectual Development: DID (Intellectual disability)

According to ICD-11[4], change the term [Mental Retardation, ICD-10(2016)] to [Disorders of Intellectual Development (DID)]. Therefore, Intellectual disability is indicated as Disorders of Intellectual Development (DID). Moreover, DID is similar to [Intellectual Developmental Disorder: IDD] used by DSM-5(Diagnostic and Statistical Manual of Mental Disorder-5th version, 2013). Table 1 shows the description and classification of DID.

DOI: http://dx.doi.org/10.14391/ajhs.19.101
Asian Journal of Human Services, VOL.19 101-111

<Table 1> ICD-11(International Classification of Diseases- 11th version) for Intellectual disability (Disorders of intellectual development)

Description for DID	Disorders of intellectual development are a group of etiologically diverse conditions originating during the developmental period characterised by significantly below average intellectual functioning and adaptive behavior that are approximately two or more standard deviations below the mean (approximately less than the 2.3rd percentile), based on appropriately normed, individually administered standardized tests. Where appropriately normed and standardized tests are not available, diagnosis of disorders of intellectual development requires greater reliance on clinical judgment based on appropriate assessment of comparable behavioral indicators.
Division for DID	06 Mental, behavioral or neurodevelopmental disorders ≫Neurodevelopmental disorders 6A00 Disorders of intellectual development 6A00.0 Disorder of intellectual development, mild 6A00.1 Disorder of intellectual development, moderate 6A00.2 Disorder of intellectual development, severe 6A00.3 Disorder of intellectual development, profound 6A00.4 Disorder of intellectual development, provisional 6A00.Z Disorders of intellectual development, unspecified

(WHO, International Classification of Diseases-11th, 2019)

1) Autism Spectrum Disorder: ASD

Autism spectrum disorder (ASD) is a neurodevelopmental disorder characterized by deficits in social interactions and communication, as well as restricted activities, such as repetitive stereotypic behaviors[7].

According to ICD-11[4], there is a description and classification of ASD(Table 2).

DOI: http://dx.doi.org/10.14391/ajhs.19.101
Asian Journal of Human Services, VOL.19 101-111

＜Table 2＞ ICD-11(International Classification of Diseases- 11th version) for ASD

Description for ASD	ASD is characterized 1)by persistent deficits in the ability to initiate and to sustain reciprocal social interaction and social communication. 2)by a range of restricted, repetitive, and inflexible patterns of behavior, interests or activities that are clearly atypical or excessive for the individual's age and sociocultural context. The onset of the disorder occurs during the developmental period, typically in early childhood, but symptoms may not become fully manifest until later, when social demands exceed limited capacities. Deficits are sufficiently severe to cause impairment in personal, family, social, educational, occupational, or other important areas of functioning and are usually a pervasive feature of the individual's functioning observable in all settings, although they may vary according to social, educational, or other context. Individuals along the spectrum exhibit a full range of intellectual functioning and language abilities.
Division for ASD	06 Mental, behavioral or neurodevelopmental disorders ≫Neurodevelopmental disorders 6A02 Autism spectrum disorder 6A02.0 Autism spectrum disorder without disorder of intellectual development and with mild or no impairment of functional language 6A02.1 Autism spectrum disorder with disorder of intellectual development and with mild or no impairment of functional language 6A02.2 Autism spectrum disorder without disorder of intellectual development and with impaired functional language 6A02.3 Autism spectrum disorder with disorder of intellectual development and with impaired functional language 6A02.5 Autism spectrum disorder with disorder of intellectual development and with absence of functional language 6A02.Y Other specified autism spectrum disorder 6A02.Z Autism spectrum disorder, unspecified

(WHO, International Classification of Diseases-11th, 2019)

DOI: http://dx.doi.org/10.14391/ajhs.19.101
Asian Journal of Human Services, VOL.19 101-111

2) Down Syndrome: DS

Down Syndrome (DS) is a disorder caused by trisomy of human chromosome 21 (Hsa21) and presents various anomalies of the cardiovascular, respiratory, organs, hematological, immune, musculoskeletal systems[8]. Therefore, DS is related to congenital heart diseases (CHD), Alzheimer's diseases (AD), learning and memory disorders, leukemia, cancers and Hirschsprung disease (HD)[9].

<Table 3> ICD-11(International Classification of Diseases- 11th version) for Down syndrome

Description for DS	Trisomy 21 is a chromosomal abnormality, characterised by the presence of a third (partial or total) copy of chromosome 21, which clinical manifestations include variable intellectual deficiency, muscular hypotonia and joint laxity, often associated with facial dysmorphism and variable malformations (essentially heart and digestive) and a risk of complications (epilepsy, leukemia, auto-immune and endocrine pathologies, earlier aging and Alzheimer disease. Inclusions: Down syndrome
Division for DS	20 Developmental anomalies ≫Chromosomal anomalies, excluding gene mutations LD40 Complete trisomies of the autosomes LD40.0 Complete trisomy 21

(WHO, International Classification of Diseases-11th, 2019)

3) Epilepsy

Epilepsy is considered the chronic neurological disease characterized by the recurrence of seizures, and associated with stigma, psychiatric comorbidity. Majority of epilepsy people are young age (<18 years), medically intractable epilepsy being present in nearly one-fourth of them[10-12].

DOI: http://dx.doi.org/10.14391/ajhs.19.101
Asian Journal of Human Services, VOL.19 101-111

<Table 4> ICD-11(International Classification of Diseases- 11th version) for Epilepsy

Description for Epilepsy	The group of conditions characterised as being in or associated with the nervous system. At least 2 unprovoked (or reflex) seizures occurring more than 24 hours apart.
Division for Epilepsy	08 Diseases of the nervous system ≫Epilepsy or seizures 8A60 Epilepsy due to structural or metabolic conditions or diseases 8A61 Genetic or presumed genetic syndromes primarily expressed as epilepsy 8A62 Epileptic encephalopathies 8A63 Seizure due to acute causes 8A64 Single seizure due to remote causes 8A65 Single unprovoked seizure 8A66 Status epilepticus 8A67 Acute repetitive seizures 8A68 Types of seizures 8A6Y Other specified epilepsy or seizures 8A6Z Epilepsy or seizures, unspecified

(WHO, International Classification of Diseases-11th, 2019)

4) Schizophrenia

Schizophrenia is a severe mental disorder characterized by multiple psychiatric symptoms (such as, hallucinations, delusions, disorganized speech) and negative symptoms[13]. Although an exact cause of schizophrenia is unknown, risk factors associated with the development of the disorder include genetic and environmental factors[14]. Table 5 shows the details of Schizophrenia examined using ICD-11.

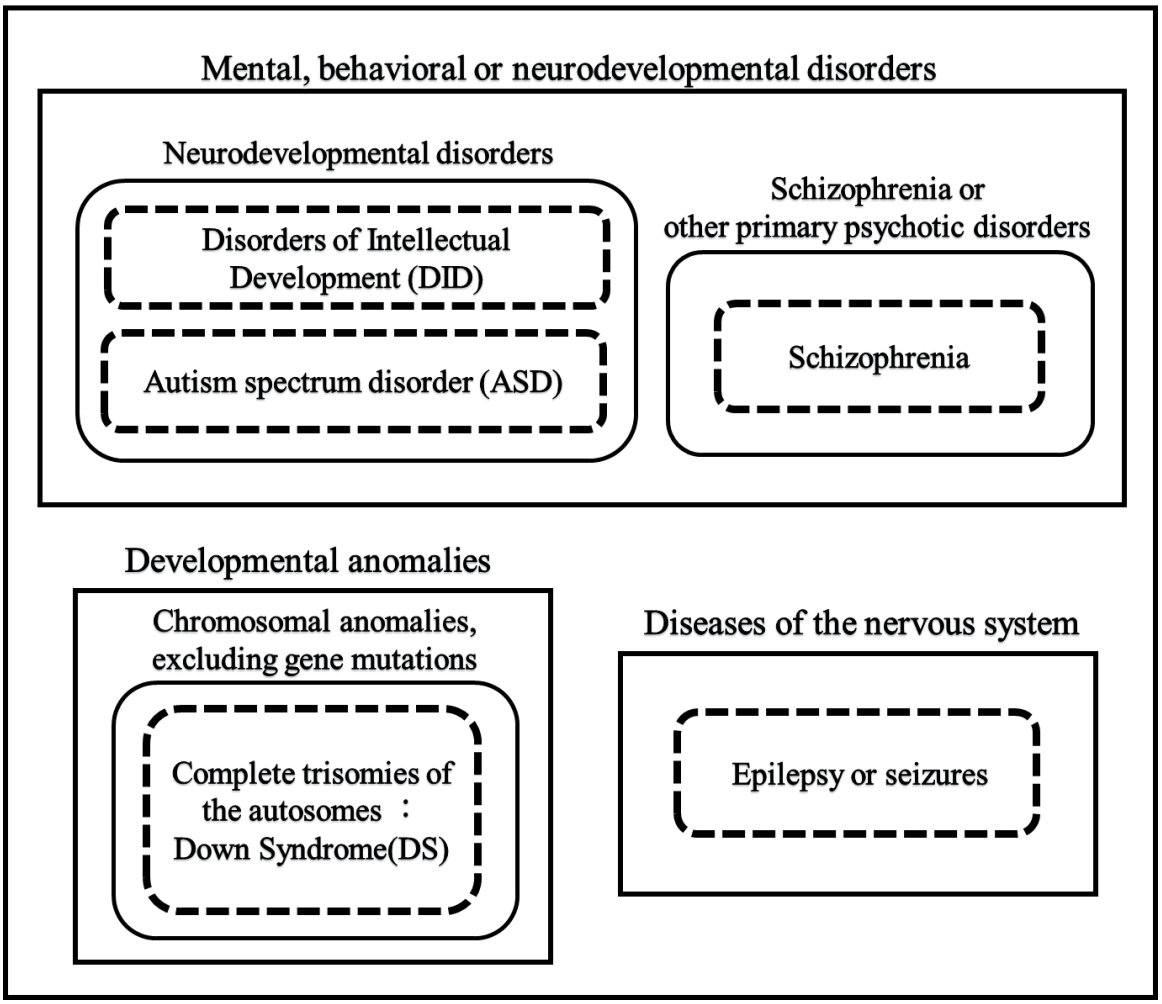
DOI: http://dx.doi.org/10.14391/ajhs.19.101
Asian Journal of Human Services, VOL.19 101-111

<Table 5> ICD-11(International Classification of Diseases- 11th version) for Schizophrenia

Description for Schizophrenia	Schizophrenia is characterised by disturbances in multiple mental modalities. 1) Thinking (e.g., delusions, disorganisation in the form of thought), 2) Perception (e.g., hallucinations), 3) Self-experience (e.g., the experience that one's feelings, impulses, thoughts, or behavior are under the control of an external force), 4) cognition (e.g., impaired attention, verbal memory, and social cognition), 5) Volition (e.g., loss of motivation), 6) Affect (e.g., blunted emotional expression), 7) Behavior (e.g., behavior that appears bizarre or purposeless, unpredictable, or inappropriate emotional responses that interfere with the organization of behavior). 8) Psychomotor disturbances, including catatonia, may be present. Persistent delusions, persistent hallucinations, thought disorder, and experiences of influence, passivity, or control are considered core symptoms. Symptoms must have persisted for at least one month in order for a diagnosis of schizophrenia to be assigned. The symptoms are not a manifestation of another health condition (e.g., a brain tumor) and are not due to the effect of a substance or medication on the central nervous system (e.g., corticosteroids), including withdrawal (e.g., alcohol withdrawal).
Division for Schizophrenia	06 Diseases of the nervous system ≫Schizophrenia or other primary psychotic disorders 6A20 Schizophrenia

(WHO, International Classification of Diseases-11th, 2019)

DOI: http://dx.doi.org/10.14391/ajhs.19.101
Asian Journal of Human Services, VOL.19 101-111



Edited and Adapted from ICD-11(WHO, International Classification of Diseases-11th,2019)

＜Figure 1＞ Summary of Diseases based on ICD-11

Figure 1 shows the summary results for disease (Epilepsy or seizures) and disorder (DID, ASD, Schizophrenia, Complete trisomies of the autosomes; DS) at ICD-11. In summary, one of the neurodevelopmental disorders include intellectual disability and autism spectrum disorder (ASD). Schizophrenia, Epilepsy and DS are separate categories and are not included in intellectual disability (Figure1).

IV. Conclusion

According to the classification of ICD-11, intellectual disability as a neurodevelopmental disorder has no physiological or pathological diagnostic criteria and is diagnosed by psychological intelligence tests and behavioral evaluation. Therefore, the

DOI: http://dx.doi.org/10.14391/ajhs.19.101
Asian Journal of Human Services, VOL.19 101-111

low intellectual function found in some people with Down Syndrome or epilepsy should not be equated with intellectual disability as a neurodevelopmental disorder. Similarly, educating children of different backgrounds in the same way is inconsistent with the idea of special education to provide education tailored to individual educational needs. In order to understand the educational needs of children enrolled in special needs schools for intellectual disabilities, it is necessary to have a physiological / pathological understanding of the causative diseases and disorders that cause the decline in intellectual function. And it will be necessary to provide educational support according to the intellectual and adaptive functions of each child. When special needs education targeted developmental disabilities, Japanese special needs schools changed their policy to accept all types of disabilities. If children with various disabilities are enrolled in one school, their educational needs will also diversify. In Japan, intellectual disability is centrally defined by the decline in intellectual function. In order to promote special needs education in the future, it will be necessary for teachers to understand the diseases and disorders of children physiologically / pathologically.

References

1) Cabinet Office. *Annual Report on Government Measures for Persons with Disabilities (Summary) 2020*. 2020.
2) Ohtoshi T. Current status and tasks of support systems for children with developmental disorders -Focusing on recent policy progress and clinical practice-. *Journal of Allied Health Sciences*, 2016, 7(1), 11-16. DOI: https://doi.org/10.15563/jalliedhealthsci.7.11
3) Shimizu S, Kono T. An application of outside specialists to 'Jiritsu Katsudou' in the special support school. *Bulletin of the Center for Educational Research and Teacher Development Shizuoka University*, 2010, 18, 83-91.
4) World Health Organization. *International Classification of Diseases-11th*, 2019. URL:https://www.who.int/classifications/icd/en/ (3, October 2020)
5) Miyakawa J. DSM-5, Revised Diagnostic Criteria by American Psychiatric Association: Neurodevelopmental Disorders, Intellectual Disabilities, and Autism Spectrum Disorder. *Journal of the School of Education, Sugiyama Jogakuen University,* 2014*,* 7, 65-78.
6) Kumachi M, Fujii Y, Saito T, Takeda A. The Current Conditions and Issues in Children with Developmental Disorders Enrolled in Special Supports Schools but without Intellectual Retardation (5): For more active support at special support schools. *Memoirs of the Faculty of Education, Akita University. Educational science*, 2016, 71, 105-109.

DOI: http://dx.doi.org/10.14391/ajhs.19.101
Asian Journal of Human Services, VOL.19 101-111

7) Tachibana Y, Miyazaki C, Ota E, Mori R, Hwang Y, Kobayashi E et al. A systematic review and meta-analysis of comprehensive interventions for pre-school children with autism spectrum disorder (ASD). *PLoS One*. 2017, 6;12(12), e0186502. DOI: 10.1371/journal.pone.0186502
8) Arumugam A, Raja K, Venugopalan M, Chandrasekaran B, Kovanur Sampath K, Muthusamy H et al. Down syndrome - a narrative review with a focus on anatomical features. *Clin Anat*. 2016, 29(5), 568-77. DOI:10.1002/ca.22672
9) Asim A, Kumar A, Muthuswamy S, Jain S, Agarwal S. Down syndrome: an insight of the disease. *J Biomed Sci*. 2015, 22(41), 1-9. DOI:10.1186/s12929-015-0138-y
10) World Health Organization. *Epilepsy: A public health imperative*. 2019.
11) Fiest KM, Sauro KM, Wiebe S, Patten SB, Kwon CS, Dykeman J et al. Prevalence and incidence of epilepsy: A systematic review and meta-analysis of international studies. *Neurology*. 2017, 88(3), 296-303. DOI: 10.1212/WNL.0000000000003509
12) Endermann M. Rehabilitation for young adults with epilepsy and mild intellectual disabilities: Results of a prospective study with repeated measurements, *Seizure*. 2015, 26, 72-80. DOI: 10.1016/j.seizure.2015.02.002
13) Ijaz S, Bolea B, Davies S, Savović J, Richards A, Sullivan S et al. Antipsychotic polypharmacy and metabolic syndrome in schizophrenia: a review of systematic reviews. *BMC Psychiatry*. 2018, 18(1), 275. DOI: 10.1186/s12888-018-1848-y
14) Girdler SJ, Confino JE, Woesner ME. Exercise as a Treatment for Schizophrenia: A Review. *Psychopharmacol Bull*. 2019, F49(1), 56-69.

Asian Journal of Human Services

EDITORIAL BOARD

as of October 1, 2020

Asian Journal of Human Services
VOL.19 October 2020

Presidents | Masahiro KOHZUKI & LEE, Sun Woo

Publisher | Asian Society of Human Services
#1Floor Ohara Bill, 2-11-5, Takezaki-Town, Shimonoseki-City, Yamaguchi-Prefecture, 750-0025, Japan
E-mail: ashs201091@gmail.com

Production | Asian Society of Human Services Press
#1Floor Ohara Bill, 2-11-5, Takezaki-Town, Shimonoseki-City, Yamaguchi-Prefecture, 750-0025, Japan
E-mail: ashs201091@gmail.com

ASIAN JOURNAL OF HUMAN SERVICES
VOL.19 October 2020

CONTENTS

ORIGINAL ARTICLES

SHORT PAPERS

REVIEW ARTICLES

CASE REPORT & ACTIVITY REPORT

Published by
Asian Society of Human Services
Yamaguchi, Japan