

PEOPLE WITH SPECIAL NEEDS:

POLICY RECOMMENDATIONS

People with Special Needs:

Policy Recommendations

Editors:

Fransisca Endang Lestariningsih

Lukas Chrisantyo

Universitas Kristen Duta Wacana
Yogyakarta

People with Special Needs: Policy Recommendations

Editors:

Fransisca Endang Lestariningsih

Lukas Chrisantyo

Writers:

Agustina Diga Sumilat

Alexander Alvantha Sutanto

Allia Swasti

Anastasia Intan Amelia

Ariel Callista

Bara Theo

Bernadito Satriawan

Christiana Shelly Budi Suharto

David Herryanto

Dea Trikartika Indra

Dedeh Supantini

Elma Noveria Tiranda

Emmanuel Erlanda

Erison Saoloan Rajagukguk

Evelyn Darma Saputra

Felicula Cardiyanta Ellia Cohen

Ferdinand Gozales

Feren Altagracia Da Leo

Fergielah Rahel Sampelintin

Gabriel Manor Adi Pratama

Geasella

Nathania

Gian Farrel A. Eristiawan

Gracia Christiany Sembodo

Gracia Elvira Umboh

Grasyella Iga Nosakaytu

Greatavia Meanda Leslie

Hana Grace Tondang

Hanna Natasha Putri

Helena Rugun Nauli Nainggolan

I Komang Tri Adi Satriawan Giri

Ida Ayu Triastuti

Imelda Ritunga

Inne Nove Josua Sidaauruk

Jessica Caroline Graciella

Johana Puspasari Dwi Pratiwi

Julian Herlin

Kenzie Ongko Wijaya

Kevin Triantama

Lisa Jessica

Manengku Nasahu Saben Nara
Maria Vianny Citra Asri Pratiwi
Michael Leonardo
Mitra Andini Sigilipoe
Nabila Noer Setyaningrum
Octaviana
Reinhard Samuel Gultom
Riani Bernadet Matialu
Rizky Chandra Wijaya
Romamartin Parningotan
Ronald Winardi Kartika
Ruhama Jatendya
Sherin Agnes Tahulending
Simplisius Seto Windiarto

Sintha Abilia
Siska Risnuhani
Sriel Tongo Tongo
Susiana Sunjaya
The Maria Meiwati Widagdo
Tiffany Angela
Vania Valeryn
Wahyuning Angger
Winta Adhitia Guspara
Winta T. Satwikasanti
Yehezkiel Wim Utomo
Yohannes Kurniadi Risamaru
Yosua Darmadi Kosen
Yusuf Tega

ISBN

Layouter and Cover Designer:

Aristarkhus Dwiki Darmawan

Publisher:

Universitas Kristen Duta Wacana
Dr. Wahidin Sudirohusodo Street No. 5-25
Yogyakarta, Indonesia
55224

Introduction

Being able to do advocacy on health issues is a competency needed by graduates of higher education. Unfortunately, based on research, the role of advocating is considered less significant than other roles. Education in the health sector itself was also identified as providing only limited opportunities to be able to facilitate the achievement of this role. Exposure to advocacy learning requires experience initiation and service exposure in the community so that students get a broad understanding of how advocacy can be carried out. Students are expected to be able to deeply appreciate the various social determinants to develop global health advocacy skill.

One of the outcomes of formal global health advocacy is policy brief. There are various ways, challenges, and innovations in encouraging students to write policy brief. Duta Wacana Christian University School of Medicine with World Nations International collaborated in implementing the Global Health Advocacy Course. This course is expected to facilitate students to understand global health advocacy and then encourage students to make policy brief on that theme.

We thank each of the lecturers involved, namely Prof. Jeffrey W Hall, MD; Matthew Geary, PT, DPT; Mark Hacholski, MD; Matt Mattos, MSc. Production systems; Marlies Mendes, MD, Family Medicine; and Haripurnomo Kushadiwijaya, MPH, Dr.PH. Each lecture provides

insightful sharing about global health conditions both at the international and local levels, as well as the challenges therein. The exposure to real experiences that inspired the writing of this book was service learning at the State Special School 1 (SLB N 1), Bantul, Special Region of Yogyakarta. We are grateful for every valuable story we get from SLB N 1 Bantul.

This book is written by each group of participants in the Global Health Advocacy Course. We hope that this book can open up and increase our understanding of global health, with one of the characteristics of this book being inclusive to people with disability.

Yogyakarta,
December 2022

Global Health Advocacy Team

Editor's Note

This book is a compilation of ten articles written by lecturers and students of Duta Wacana Christian University, which share the same theme, education, disabilities, and the policy.

The first article written by Winta T. Satwikasanti et.al. emphasizes the needs of students with disabilities to live independently. Therefore they find it important to create an accessible environment for people with disabilities to be able to live independently and participate fully in social life. The title of the article Disabilities Education Act for Students with Visual Impairment requires it to give some recommendations to the policy makers. The teachers teaching students with visual impairments should have adequate preparation, and the curriculum should accommodate such needs of students with visual impairments.

Article two with the title Transition Education Post Covid-19 Pandemic in a Special Education written by The Maria Meiwati Widagdo et.al. highlights two issues: the distance learning barriers for students with disabilities, especially those from underprivileged families and those in rural areas, and gaps of teachers' qualifications in some areas. For that reason, the article suggests that the government should improve the access to education for students with special needs such as providing accessible

television and radio programs related to special education issues, and educating parents and teachers about special education.

Early Education and Care for Children with Hearing Loss in Yogyakarta written by Winta T. Satwikasanti et.al. argues that since many children with hearing impairments communicate with an inverted language structure that makes it difficult to communicate and interact with other people, some policies related to this issue are needed. This article recommends three policies: an introduction to national sign language, a national childcare strategy, and improving access to early childhood education and care for all children and support for deaf communities.

The fourth article, written by Mitra Andini Sigilipoe et.al., brings about the issue of public facilities access to people with disabilities. With its title the Access of People with Disabilities to Shopping Center Facilities, this article highlights the difficulties for people with disabilities to achieve their independence due to limited access in public spaces. Therefore the authors argue that the government should establish policies that protect the rights of people with disabilities so that they can live independently with various accesses that ease their burden.

The Maria Meiwati Widagdo et.al. question whether or not people with vision disabilities can access public facilities safely, comfortably, and independently. The article with the title the Implementation of Guiding Blocks in Indonesia presents the fact that about 1.5% or 4 million people of

the Indonesian population have visual impairments, however, the implementation of the existing regulations about accessibility including guiding blocks are not applied in Indonesia. Thus, the authors of this article suggest that punishments for those who block pedestrian paths should be enforced; roadside parking and putting in reklamas on guiding blocks path should be banned; and education about the importance of guiding blocks, accessibility for people with disabilities, and the inclusive design of available public facilities should be provided.

The sixth article carries the title Dental Hygiene In Children With Cerebral Palsy, written by Winta Adhitia Guspara et al., emphasizes the importance of knowledge about dental and oral hygiene, especially for children with cerebral palsy limitations. In addition to relying on support from the local government in terms of providing accessible toothbrush supply, accessible dentistry and periodical dental health maintenance programs, parents of children with special needs also need to be given an understanding of the importance of dental and oral health.

The seventh article covers the topic of sarcopenia, especially in individuals with cerebral palsy. Sarcopenia itself is a condition of loss of muscle mass and muscle strength commonly associated with aging. Johana Puspasari Dwi Pratiwi et al. in their article convey ways to prevent sarcopenia for people with cerebral palsy and people with disabilities in general, such as providing counseling through Posbindu. By conveying the importance of

regular physical exercise and consuming good nutrition, it is hoped that it can reduce the number of people with sarcopenia.

Winta Adhithia Guspara et al. in the eighth article raises a subject about how people with Autism Spectrum Disorder (ASD) can get lost very easily. Spatial navigation disorders appear in the early developmental period of a person with ASD and persist into adulthood. This article recommends three things: recall routes on a map, instruct them to move certain items to new locations, and always accompany them in unfamiliar places.

The ninth article raises a question “Are educators ready to accept children with disabilities in regular schools?”. This article was written by Dedeh Supantini et al. In this article, there are several issues about how educators in regular schools still have a lack of understanding how to deal with children with disabilities, both in terms of approaching and dealing with the diverse attitudes of students. Meanwhile, more children with disabilities are attending regular schools. Cooperation and communication with parents is one of the steps that has been done a lot, but this certainly still needs to be expanded towards active participation with the assistance of schools and the government regarding the readiness of their infrastructure.

Last but not least, Ronald Winardi Kartika et al. delivered notions about factors associated with the prevalence of Sarcopenia in elderly university workers. As previously stated, the most common cause of sarcopenia is a lack of physical activity throughout the day. University workers who

experience retirement often experience sarcopenia, because when they are still actively working as employees, they are physically less active and have less protein intake. For this reason, it is necessary to pay attention to the physical activities of university workers while they are still active and productive at work.

Table of Contents

Introduction	iv
Editor's Note	vi
Disabilities Education Act for Students with Visual Impairment.....	1
Transition Education in the Covid-19 Post Pandemic at School for Disabled Students	9
Early Education and Care for Deaf Children in Yogyakarta.....	21
The Access of People with Disabilities to Shopping Center Facilities.....	29
Implementation of Guiding Blocks in Indonesia	37
Dental Hygiene in Children with Cerebral Palsy	47
Sarcopenia in Individuals with Cerebral Palsy	63
Do You Know That People with Autism Spectrum Disorder Get Lost Very Easily?	73
Are Educators Ready to Accept Children with Disabilities in Regular Schools?	81
Factors Associated with The Prevalence of Sarcopenia in Elderly University Workers	91

Disabilities Education Act for Students with Visual Impairment

Agustina Diga Sumilat, Lisa Jessica, Inne Nove Josua Sidauruk, Bernadito
Satriawan, Yohannes Kurniadi Risamaru, Winta T. Satwikasanti

Disabilities Education Act for Students with Visual Impairment

Agustina Diga Sumilat, Lisa Jessica, Inne Nove Josua Sidauruk, Bernadito Satriawan,
Yohannes Kurniadi Risamaru, Winta T. Satwikasanti¹

¹Universitas Kristen Duta Wacana, Kedokteran, email: winta_ts@staff.ukdw.ac.id

Abstract

Students with disabilities need to live independently. Therefore it is important to create an accessible environment for people with disabilities to be able to live independently and participate fully in social life. This article gives some recommendations to the policy makers. The teachers teaching students with visual impairments should have adequate preparation, and the curriculum should accommodate such needs of students with visual impairments.

Keywords : *disabilities education, visual impairment, curriculum*

1. Introduction

Students who have disabilities have challenges with their environment of education. Components of education in Indonesia encourage the development of student's intelligence, soft skills, and also motor skills. Based on the 1945 Constitution, people with disabilities not only have the same right to get an education like other citizens, but also have the right to get a quality education. Therefore, the government should consider an

appropriate independent environment of education for students with disabilities, especially the visual impairments.

Besides education, people with disabilities also have the right to fully participate in the social life of the community. However, this can be hampered because when a person has a disability, a range of skills can be affected, and disabilities limit one's ability to be independent. These limitations can be accommodated with assistive technological tools and strategies, environmental modifications or techniques, and other alternatives. Therefore, it is important to create an accessible environment for people with disabilities to be able to live independently and participate fully in social life.

2. Overview

Education programs should provide a supportive learning environment that gives independent life skill opportunities for students with visual impairments. In some instances, it may only offer slight modifications, alternative assignments, tactile learning, and hands-on activities. Applications in the learning environment include classroom, laboratory, and non-formal environment such as

- a. Classrooms for moderate visual impairment
This includes preferential seating, provided with copies of notes, and verbalized written information.

b. Classrooms for blindness

This includes assistive technology such as accessible videos, which produce braille, and audio text as alternative formats to standard print materials; seating arrangements which allow the students to adequately hear at all times.

c. Laboratories for moderately visual impairments

This includes pairing students who are visually impaired with other students on a project, posing additional safety concerns, and being examined at an individual level to use equipment.

d. Laboratories for blindness

This includes reliance on tactile senses that are important in the learning process, modified simulated experience of laboratory activities, and repetition in hands-on learning.

e. Non-formal supports for moderate visual impairment

For example, in class trips, one should contact the event manager ahead of time to let them know that students with visual disabilities are attending the trip. In the classroom, additional printed materials and preferential seating should be provided.

f. Non-formal supports for blindness

For example, advanced orientation to bus travel and community experiences, learning life skills in effective mobility and how to learn in varying environments, helping establish job shadowing opportunities for vocational career choices, and modification of daily life skills such as using a rice cooker properly.

3. Discussion

The issue of disabilities education in Indonesia can not yet be fully addressed because there are still gaps between the issue and reality. Students with visual impairments are often under-identification because they often have other conditions which impact their ability to learn, and their visual impairment is often not identified as their primary condition. The educational trends of the last twenty years have all led to an increasing number of children with disabilities being taught within general education settings whenever possible. In reality, this issue has challenges such as teachers that are not trained properly. Teachers of students with visual impairments are responsible for providing specialized instruction and support services for these students, and this instruction should be adequate to compensate for the student's lack of visual functioning. The educational environment itself can also create a barrier for students with visual impairments since the general education classrooms are designed with sighted students in mind. The formats of the educational materials are presented in a variety of visual formats such as posters, charts, diagrams, videos, models, demonstrations, and printed materials. The students with visual impairments often have difficulty benefiting from these materials. Limited technology that provides educational programs, lack of appropriate support services, restricted access to the specialized skills that the students need, and perception of residential and special schools for children with visual impairments are too costly to improve. This condition is worsened

with lack of supplemental curriculum focusing on the needs of students with visual impairments, and teacher perceptions of these students.

Government should create environments for the delivery of services based on a continuum of placement options that would address the needs of all students with disabilities, rather than a one-size-fit-all model. They can make a civil regulation movement for special education as an issue of access to minority groups (individuals with disabilities). School environments are required to provide a “continuum of placements,” extending from the regular education classroom to residential settings, in order to accommodate the needs of all children with disabilities. This concept of the array of services increases the likelihood of children being placed appropriately in an environment that is suitable for their specific needs.

Children with visual impairments have specific needs and should be educated through a holistic team approach. Students with visual impairments are often unaware of activities going on around them and are often limited from acquiring information through incidental learning. These students often must learn through alternate media, using his or her other senses. Effective teachers of students with visual impairments employ strategies that support the child's multisensory capabilities (visual, auditory, and tactile) in the classroom environment. The enhancement of visual information and alternative forms of presenting visual information using auditory or tactile means are two widely used strategies that are effective to convey concepts to students with visual impairments.

4. Recommendations

This issue can be more effectively addressed with some methods,

- a. Making adequate preparations for teachers of students with visual impairments that require certain skills in their teachers and are qualified to provide, and training staff to provide specialized services that addresses the academic and non-academic curriculum.
- b. Creating applicable and adequate instruction for “independent” daily life skills provided in curriculum areas. Experts suggest the chances of the student having appropriate educational opportunities, identify educational models for students who have visual impairments that demonstrate evidence-based outcomes for these individuals.

References

Alicyn Ferrell, K. A. (2006). Evidence-Based Practices for Students With Visual Disabilities. *Communication Disorders Quarterly*, 28(1), 42–48.

<https://doi.org/10.1177/15257401060280010701>

Hinderaker, I. (1943). *Administrative Districts and Field Offices of the Minnesota State Government*. University of Minnesota Press.

<https://doi.org/10.5749/j.cttts72q>

Hodge, S. R., Murata, N. M., Block, M. E., & Lieberman, L. J. (2017). *Case Studies in Adapted Physical Education*. Routledge.
<https://doi.org/10.4324/9781315136035>

Janae, K., & Jones, J. (2017). Educating Students with Visual Impairments in the General Education Setting. *Graduate School of The University of Southern Mississippi*, 11.
<https://aquila.usm.edu/cgi/viewcontent.cgi?article=2328&context=dissertations>.

Willings, C. (2016). *Guiding Principles for Teaching Students Who Are Blind or Visually Impaired*. <https://www.teachingvisuallyimpaired.com/guiding-principles-of-concept-development.html>

Transition Education in the Covid-19 Post Pandemic at School for Disabled Students

Evelyn Darma Saputra, Romamartin Parningotan, Reinhard Samuel Gultom, Julian Herlin, Yehezkiel Wim Utomo, Erison Saoloan Rajagukguk, Sriel Tongo Tongo, The Maria Meiwati Widagdo

Transition Education in the Covid-19 Post Pandemic at School for Disabled Students

Evelyn Darma Saputra, Romamartin Parningotan, Reinhard Samuel Gultom, Julian Herlin,
Yehezkiel Wim Utomo, Erison Saoloan Rajagukguk, Sriel Tongo Tongo, The Maria Meiwati
Widagdo¹

¹Universitas Kristen Duta Wacana, Kedokteran, email: maria_widagdo@staff.ukdw.ac.id

Abstract

People with vision disabilities can barely access public facilities safely, comfortably, and independently. This article presents the fact that about 1.5% or 4 million people of the Indonesian population have visual impairments, however, the implementation of the existing regulations about accessibility including guiding blocks are not applied in Indonesia. Thus, this article suggests that punishments for those who block pedestrian paths should be enforced; roadside parking and putting in reklamas on guiding blocks path should be banned; and education about the importance of guiding blocks, accessibility for people with disabilities, and the inclusive design of available public facilities should be provided.

Keywords : *People with vision disabilities, punishments, inclusive designs*

1. Introduction

In the COVID-19 pandemic, it was found that many sectors have an impact, one of which is education. By being given a policy in tackling the

transmission rate in school residents, the government applies blended learning. Thus there is a transition to the education system experienced by all students. In particular, this impact occurs for students with disabilities or children with special needs at a special school (SLB).

The government has launched a new curriculum, namely *Kurikulum Merdeka* (*Merdeka Curriculum*). In concept, this curriculum is good, but there are a number of gaps. The gaps are in terms of education staff who experience gaps between one another, limited use of technology for students with disabilities, parents who do not understand how to provide education to their children, and uneven distribution of teachers in Indonesia.

Therefore, in solving the problem, collaborations with various parties are carried out, such as more collaboration between parents and teachers, equal distribution of information technology with television broadcasts, delivery of information from one another, teacher certification in resolving gaps between teacher quality, and use of radio in conveying information about education.

The education sector has been hit hard by the COVID-19 pandemic, due to changes in the learning systems that students and teachers should deal with. The learning system was originally from face-to-face learning directly (in a pre-pandemic state), then changed to a blended learning system or adaptation of a face-to-face learning system combined with distance learning (Natsir, 2021).

In this blended learning system, it is hoped that schools work hand in hand with parents to teach their children as a substitute for "teachers" at home. The materials are provided by the teachers to students through parents in the hope that they could be well-delivered and taught. The obstacle that arises is that parents certainly cannot accompany the child in learning because there are separate activities. Parents also have difficulty in teaching the child due to differences in understanding of the material (Faturohman and Gunawan, 2021).

Another obstacle arises when the students are children with disabilities. Since teachers cannot be directly involved in delivering the materials, it is difficult for the children with disabilities to understand the materials. Research shows that students with disabilities are characterized by limited intelligence and barriers in social communication so that educational transitions during this pandemic are a little more difficult for special schools (Maulani Nurul Sofyan, M. Muktiarni and Jonah Mupita, 2021).

The limited features of the technology used can also affect the learning process of the students. Limitations in information technology make it difficult for students with disabilities who are used to using skills-based learning systems to apply them (Kementerian Pendidikan dan Kebudayaan, 2020). Before the pandemic occurred, students were able to carry out skill activities at school. However, when the COVID-19 pandemic occurs, students cannot do skill activities and are limited in time (Rifai and Humaedi, 2020).

This situation will result in a decrease in the skills of students with disabilities which causes these students to go up to a higher level. These students cannot perform well in basic skills. Therefore, in the educational transition in the post-COVID-19 pandemic with the implementation of the Merdeka curriculum, we can catch up and create a enjoyable learning environment and atmosphere for teachers, education staff and students (Kemdikbud-Ristekdikti., 2021).

2. Overview

The Indonesian Government through the Ministry of Education, Culture, Research and Technology has launched a curriculum, namely the "Kurikulum Merdeka". In this curriculum, it is considered to have a more flexible structure in lesson hours and it focuses on a one-year outcome (Kemdikbud-Ristekdikti., 2021). In addition, this curriculum also has a focus on essential materials and teachers are free to use teaching tools tailored to students' needs (Asfiati and Mahdi, 2020).

Then, in the aspect of cooperation between parents and the school it is more applied and it becomes a key part of success in this running curriculum. Parents can access books related or needed materials for their children through the available website, namely Buku.kemdikbud.go.id (Kemendikbudristek, 2022). This innovative curriculum is also adapted to the needs of the school because each school has different problems in educating its students. It is unavoided that technological advances are parts

of the implementation of this renewable curriculum (World Bank Group, 2020).

Through this independent learning curriculum, the implementation of the National-Based School Examination was changed to an assessment organized by the teacher. In the self-assessment, it includes a portfolio assessment that is assessed by each teacher and this is in the form of written works given to students. In addition, teachers can assess students during learning so that they can provide periodic evaluations and innovative learning for every competency assessment and reflection produced by students (Kementerian Pendidikan dan Kebudayaan, 2020; Kemdikbud-Ristekdikti., 2021).

The results of a study conducted by Asfiati and Mahdi (2020) at an SLB in Indonesia indicates that the facilities, infrastructure and learning media are very helpful in the teaching and learning process and assist in the assessment of minimum competency assessments and character assessments (Asfiati and Mahdi, 2020).

A study conducted by Ramadhani, Laurens, Molle and Sapulette in an elementary school in Indonesia resulted in implementing the Kemendikbud program for independent learning in school where as many as 56% answered strongly and 44 percent agreed. These results indicate that the school expects an independent learning program at the school. Related to whether or not teachers could develop learning media in teaching, 33%

agreed and 67% strongly agreed. From these results it can be concluded that the teachers at the school can develop learning media in teaching (Ramadhani et al., 2021). The application of this interactive learning media will help children with disabilities to understand and practice it in a skill-based learning even to theory (Yuliati, 2019).

Unlike the results of research conducted by Ramadhani, Laurens, Molle and Sapulette found that only 31.3% knew the number of episodes in independent learning. To launch the independent learning program, the government held online seminars and training for teachers. The study found 52.5% of teachers rarely attended the seminar and trained consciously and independently. In this study, 56.3% answered that they were happy when doing online learning, but 41.3% of students still did not have adequate tools to participate in online learning. Not only that, as many as 43.8% of teachers said that the internet conditions in their area was not smooth and unstable, so it greatly hampered the implementation of online learning (Ramadhani et al., 2021).

3. Discussion

The independent curriculum concept is more modern and better, because it is more adaptable to the needs of the students themselves and teachers can innovate in terms of teaching and learning according to the needs of these students to the fullest. However, the distribution of teachers who provide special education is still lacking and it is not evenly distributed between

regions. This will affect students with disabilities (Kementerian Pendidikan dan Kebudayaan, 2020).

The use of information technology in the independent curriculum is expected to be used properly in the teaching and learning process so that students and teachers can explore their teaching and learning needs. However, looking at the situation of special schools, which is still inadequate, especially in supporting the needs of schools, it can affect the teaching and learning process, especially in educating students' skills. Also, it is unfortunate that there are still many areas in Indonesia that have adequate devices to access internet technology (Rifai and Humaedi, 2020)

4. Policy Recommendations

Learning problems that are carried out in a blended manner to minimize the number of cases of COVID-19 that occur in schools with special needs in Indonesia has not been resolved optimally. This is due to the fact that there is still a gap in government policy, where it is still necessary to consider the implementation of distance learning that is adapted to the different characteristics of regions in Indonesia (Maulani Nurul Sofyan, M. Muktiarni and Jonah Mupita, 2021). Distance learning adds to the barriers for students with disabilities, especially those from underprivileged families and those in rural areas. Under normal conditions they already face barriers to accessing education, and now they need to face additional barriers that

arise due to inequality in accessing technology infrastructure (Afroh Nailil Hikmah, 2020).

Another gap is in teacher qualifications and the quality of education in all regions in Indonesia, especially between Java and outside Java. The socio-economic conditions and the lack of ICT skills are also vulnerable in distance learning initiatives in Indonesia (Azzizah, 2015). The existence of this gap requires diversification of delivery media other than the internet to be considered.

Access to education for children with disabilities after the COVID-19 pandemic also needs to be considered, namely when they meet face-to-face between teachers, education staff, and students. Access that can be provided is the availability of more about health facilities in schools, access to information technology and facilities in accessing platforms for special education needed, and the use of interactive media that is tailored to the age and needs of students (Fatikhah, 2022).

The alternative given to deal with this gap is to provide radio programs, or TVRI programs that broadcast education as has been done in other countries such as Argentina and Fiji, which facilitates seven hours of radio hosted by experienced teachers via radio networks or such as Fiji. Fiji works with two radio stations to provide reading and arithmetic lessons as well as for early childhood education (World Bank Group, 2020). Another alternative is to use the postal service where the Indonesian government can also work with

PT Pos Indonesia to help teachers distribute worksheets and modules to students, and this practice draws on the positive experience in France for areas with low connectivity (AFP, 2020)

In addition, parents of students with disabilities also need to be given teaching / learning guidelines by teachers / education personnel for their children so that students do not experience delays in their skill abilities. Then, parents need to facilitate their children according to their abilities and limitations so that the children do not experience being left behind in a material/skill when advancing to an advanced level (Maulani Nurul Sofyan, M. Muktiarni and Jonah Mupita, 2021). The research was conducted to determine the effect of online learning on children with special needs on the ability to develop mental self more easily controlled by the family or parents themselves.

References

- AFP. (2020). *School Dropout : We have lost between 5-8% of students” says Blanquer. Le Figaro.* https://etudiant.lefigaro.fr/article/decrochage-scolaire-nous-avons-perdu-entre-5-et-8-des-eleves-affirme-blanquer_fd76d3fc-7324-11ea-94e3-c0cc05dea6b9/
- Asfiati, A., & Mahdi, N. I. (2020). Merdeka Belajar bagi Anak Kebutuhan Khusus di SLB Kumala Indah Padangsidimpuan. *KINDERGARTEN: Journal of Islamic Early Childhood Education*, 3(1), 59.
<https://doi.org/10.24014/kjiece.v3i1.9620>

- Azzizah, Y. (2015). Socio-Economic Factors on Indonesia Education Disparity. *International Education Studies*, 8(12), 218.
<https://doi.org/10.5539/ies.v8n12p218>
- Basuki, B. et al. (2020). *Panduan Pembelajaran bagi Peserta Didik Penyandang Disabilitas Selama Masa Pandemi Covid 19*.
- Fatikhah, M. al. (2022). Evaluation of Implementation of Adaptive Physical Education Learning During the Covid-19 Pandemic in SLB Yogyakarta City. *International Journal of Multidisciplinary Research and Analysis*, 05(05).
<https://doi.org/10.47191/ijmra/v5-i2-38>
- Faturohman, N., & Gunawan, A. (2021). Tantangan Lembaga Pendidikan Dasar dalam Penyelenggaraan Pendidikan Pasca Pandemi COVID-19 di Kabupaten Serang. *Geneologi PAI: Jurnal Pendidikan Agama Islam*, 8(2), 433–442.
- Hikmah, A. N., & Chudzaifah, I. (2020). Blanded Learning: Solusi Model Pembelajaran Pasca Pandemi Covid-19. *Al-Fikr: Jurnal Pendidikan Islam*, 6(2), 83–94. <https://doi.org/10.32489/alfikr.v6i2.84>
- Kemendikbudristek. (2021). *Merdeka Belajar Episode Kelima Belas: Kurikulum Merdeka dan Platform Merdeka Mengajar*. Humas Kemendikbudristek.
- Kemendikbudristek. (2022). *Buku Saku: Tanya Jawab Kurikulum Merdeka*. ult.kemdikbud.go.id
- Natsir, E. (2021). Problematika Guru dan Siswa dalam Proses Pembelajaran Daring pada Masa Pandemi Covid-19 di UPTD SMP Negeri 1 Parepare. *Alma 'Arief: Jurnal Pendidikan Sosial Dan Budaya*, 3(2), 101–110.
- Rahmani, A., & Yuliyati. (2019). Implementasi Program Transisi bagi Siswa Tunarungu. *Jurnal Pendidikan Khusus*, 1–18.

- Ramadhani, W. et al. (2021). Pelatihan Pengembangan Media Pembelajaran Berorientasi Merdeka Belajar. *Pengabdian Kepada Masyarakat*, 1(1), 1–8.
- Rifai, A. A., & Humaedi, S. (2020). Inklusi Penyandang Disabilitas dalam Situasi Pandemi Covid-19 dalam Perspektif Sustainable Development Goals (SDGs). *Prosiding Penelitian dan Pengabdian Kepada Masyarakat*, 7(2), 449.
<https://doi.org/10.24198/jppm.v7i2.28872>
- Sofyan, M. N., Muktiarni, M., & Mupita, J. (2021). Analysis of the Impact of Online Learning on Self-Development Students with Intellectual Disability in Family Perspective. *Jurnal Asesmen dan Intervensi Anak Berkebutuhan Khusus*, 22, 61–68.
- World Bank Group. (2020). *How Countries are Using Edtech (Including Online Learning, Radio, Television, Texting) to Support Access to Remote Learning During the COVID-19 Pandemic*. The World Bank.
<https://www.worldbank.org/en/topic/edutech/brief/how-countries-are-using-edtech-to-support-remote-learning-during-the-Covid-19-pandemic>

Early Education and Care for Deaf Children in Yogyakarta

I Komang Tri Adi Satriawan Giri, Grasyella Iga Nosakaytu, Manengku Nasahu Saben Nara, Bara Theo, Ruhama Jatendya, Gabriel Manor Adi Pratama, Michael Leonardo, Ariel Callista, Winta T. Satwikasanti

Early Education and Care for Deaf Children in Yogyakarta

I Komang Tri Adi Satriawan Giri, Grasyella Iga Nosakaytu, Manengku Nasahu Saben Nara,
Bara Theo, Ruhama Jatendya, Gabriel Manor Adi Pratama, Michael Leonardo, Ariel
Callista, Winta T. Satwikasanti¹

¹Universitas Kristen Duta Wacana, Kedokteran, email: winta_ts@staff.ukdw.ac.id

Abstract

Since many children with hearing impairments communicate with an inverted language structure that makes it difficult to communicate and interact with other people, some policies related to this issue are needed. This article recommends three policies: an introduction to national sign language, a national childcare strategy, and improving access to early childhood education and care for all children and support for deaf communities.

Keywords : *early education, childcare strategies, national sign language*

1. Introduction

Language skills in primary school children who are deaf in Indonesia are still low due to limited language access. Sign language used in communicating for the deaf and people with normal hearing to get equal rights is important, so there is a need for recommendations for schools to make policies regarding language learning in schools.

Sign language is the language used by people with hearing impairments. Sign language is used as a means of communication to get education, work and equal rights which are also important for people with normal hearing. Based on research conducted by Devani Gumulya in 2019 many deaf children communicate with an inverted language structure, making it difficult to communicate and interact with other people. Such a condition leads to an emerging need for a school curriculum policy that covers sign language using technology-based oral education such as cochlear implants (Bowman-Smart, 2019).

2. Overview

Only a small proportion of children who are deaf and/or have hearing impairment have access to official sign languages such as the Indonesian Sign Language System (SIBI) or Indonesian Sign Language (BISINDO). Deaf children and their caregivers do not have comprehensive access to the sign language services they need for optimal development. As a result, parents such as those mentioned above do not get adequate help to learn sign language. Inclusion does not involve placing children in situations where they can only partially participate or where they have to conform. It is very important for deaf children to have access to the national sign language from the moment they are born. All deaf children have the right to learn sign language, which means they should be allowed to do so starting in childhood and throughout their lives.

According to the Ministry of Education and Research, sign language learning is still for children with special needs or people with disabilities, and it has not been expanded. (Nua, 2021)

The Ministry supports and provides opportunities for people with disabilities to improve their competence. For this reason, the use and teaching of sign language is important for these special schools. Other education levels do not teach sign language as part of the teaching material. Showing empathy for people with disabilities does not mean that sign language material must also be taught. Respect or empathy for people with disabilities can be implemented in character education. There the values and norms of nationality need to be strengthened to become the provision of the nation's generation. The Ministry of Education and Culture supports in terms of providing learning opportunities to deliver people with disabilities to achieve independence and increase competence as a provision for their lives. (Nua, 2021).

3. Discussion

In Indonesia, the activity of doing or learning sign language is only carried out in certain places. One example is the School for Disabled Students (SLB), a place for guidance or sign language learning exercises. Limited people study sign language, such as people with hearing problems, the deaf, and volunteers. However, only a small part of the population can receive this sign language training assistance at these learning sites. On the one

hand, it may seem like Sign Language training is a normal thing. On the other hand learning and practicing using Sign Language can greatly assist communication between normal people and people with disabilities, especially the deaf.

Sign language education has several benefits. By learning sign language, people's communication with the deaf will run smoothly. They can ask and answer questions about activities in everyday life without having to write what they want to say (Azzahra, 2021).

In addition, sign language education is beneficial for brain development, especially in children. Sign language tends to have better reading skills than those who do not master it (Daniels, 1995).

In addition to the ability to read, mastery of sign language can improve cognitive skills that affect the increase in IQ. Researcher Michele Cooke from the University of Massachusetts Amherst states that people who master sign language have good spatial reasoning skills. He conducted experiments by providing an understanding of the concept of structural geography. This concept does require good visualization and spatial reasoning skills. He gave an understanding of the concept to special high schools for deaf students and college students. The experiment yielded surprising results (Azzahra, 2021).

In addition, Michele Cooke also discussed several advantages of being a writer, one of which is that deaf people are known to be transparent. Very few people understand the importance of learning sign language. Sign language is not only for the deaf but also for the wider community. If the introduction of sign language is delayed for a long time, eventually there will be more victims of the deaf, because they do not get equal rights especially in mental health psychology. (Wijaya, 2018).

4. Recommendations

The need for early education and care for deaf children requires collaboration with various parties, including training of educators for early deaf children who can provide bilingual bimodal programs, and support for the deaf community to provide services. This brief review examines access and quality from the point of view of deaf children and their families. We also want to draw attention to the many other children who have faced exclusion and discrimination from an early age in education and care in Yogyakarta. We, therefore recommend

- a. An introduction to national sign language is needed in order to ensure that child care is inclusive of deaf children and maximize access to comprehensive sign language programs and services that meet the needs of children and families. Both bilingual/bimodal early years programs and sign language programs for families must be adequately funded.

- b. Deafness is intersectional; an inclusive national childcare strategy will recognize the language rights of deaf children. It will also recognize the intersectional identities of deaf children, ensuring access to national sign language programs and services, while protecting their other identities
- c. Inclusion means ensuring access to early childhood education and care for all children and support for deaf communities. The organization of services presents normative values, which may be perpetuating audism and ableism throughout the early years of systems.

References

- Azzahra, S. N. (2021). *Pentingnya Pendidikan Bahasa Isyarat bagi Pelajar Indonesia*. Kompasiana.
<https://www.kompasiana.com/searra08668/610371ad06310e1f5267fa02/pentingnya-pendidikan-bahasa-isyarat-bagi-pelajar-indonesia>
- Bowman-Smart, H., Gygell, C., Morgan, A., & Savulescu, J. (2019). The moral case for sign language education. *Monash Bioethics Review*, 37(3–4), 94–110.
<https://doi.org/10.1007/s40592-019-00101-0>
- Daniels, M. (1994). The Effect of Sign Language on Hearing Children's Language Development. *Communication Education*, 43(4), 291–298.
<https://doi.org/10.1080/03634529409378987>
- Gumulya, D., & Ho, F. (2019). Penelitian Perancangan Sarana Bantu Belajar Bahasa untuk Anak Tunarungu dengan Pendekatan Participatory Design. *Productum*:

Jurnal Desain Produk (Pengetahuan Dan Perancangan Produk), 3(6), 197–206. <https://doi.org/10.24821/productum.v3i6.2265>

Michele. (2018). *Deaf Gain -> Diverse and Stronger Research*. The Mind Hears. <https://themindhears.org/2018/12/04/deaf-gain-in-research/>

Nua, F. (2021). *Kemendikbud: Pembelajaran Bahasa Isyarat Masih untuk Anak Berkebutuhan Khusus Sumber:* <https://mediaindonesia.com/humaniora/451834/kemendikbud-pembelajaran-bahasa-isyarat-masih-untuk-anak-berkebutuhan-khusus>. Media Indonesia. <https://mediaindonesia.com/humaniora/451834/kemendikbud-pembelajaran-bahasa-isyarat-masih-untuk-anak-berkebutuhan-khusus>

Wijaya, L. L. (2017). *Role Shifting in Jakarta Sign Language: Subject-Constructed Actions Reference Sequence and Reference Function*. Bachelor of Art Thesis. *The Chinese University of Hong Kong*.

Wijaya, L. L. (2018). *Bahasa Isyarat Indonesia sebagai Panduan Kehidupan bagi Tuli*. *Badan Pengembangan dan Pembinaan Bahasa*.

The Access of People with Disabilities to Shopping Center Facilities

Siska Risnuhani, Feren Altagracia Da Leo, Kenzie Ongko Wijaya,
Felicula Cardiyanta Ellia Cohen, Gian Farrel A. Eristiawan, Dea
Trikartika Indra, Mitra Andini Sigilipoe1, Ida Ayu Triastuti

The Access of People with Disabilities to Shopping Center Facilities

Siska Risnuhani, Feren Altagracia Da Leo, Kenzie Ongko Wijaya, Felicula Cardiyanta Ellia Cohen, Gian Farrel A. Eristiawan, Dea Trikartika Indra, Mitra Andini Sigilipoe¹, Ida Ayu Triastuti

¹Universitas Kristen Duta Wacana, Kedokteran, email: dr_mitra@staff.ukdw.ac.id

Abstract

For people with disabilities, living in today's society is not easy. People have their own view of a person with disabilities and it is still unable to fulfill the rights for people with disabilities. The amount of discrimination and limited access in many ways build the difficulties for people with disabilities to achieve their independence. This can also be seen from the role of the government, which does not issue a firm policy to fulfill the rights of people with disabilities, especially in terms of accessibility. The government should establish policies that protect the rights of people with disabilities so that they can live independently with various accesses that ease the burden of people with disabilities.

Keywords : *disability, accessibility, disabled support facilities*

1. Introduction

People with disabilities are people who have limitations in physical, intellectual, mental, and sensory for a long time. Thus, they have obstacles in daily life, such as difficulty interacting actively in the community. This

is because people with disabilities are often underestimated from the public. They are considered different or even considered as a strange person. This causes people with disabilities to be often discriminated against so that many things are difficult (Thohari, S., 2014). One of the problems is related to infrastructure facilities in shopping centers. A person with a disability has the same right to be able to visit a shopping center. Shopping center facilities do not support disabled people. Many shopping centers provide escalators, while disabled people preferred to use travelators rather than escalators. The walking guides and emergency stairs are not accessible for the blind. Public facilities in this mall are still not accessible to persons with disabilities.

Based on data owned by the World Health Organization, people with disabilities in the world range from 15% of the world's population. In Indonesia, the number of people with disabilities from 2004-2011 experienced a significant increase, the number being amounting 34,670,000. This figure is estimated to come from people with disabilities who live with their families, not including those who live in orphanages. Most of them still do not get basic rights, especially in the fields of education, work, and accessibility. Things that are considered trivial by people, but are very important for people with disabilities, are actually very mandatory to be enforced so that people with disabilities can still live independently like other people. With this, it is important for the government to provide accessible facilities in the form of infrastructure in public spaces to achieve one aspect of independence.

2. Overview

An explanation of the right of access for people with disabilities has been regulated by Law no. 8 of 2016 Article 1 paragraph 8 which mandates accessibility for people with disabilities is intended so that they have the same opportunities as the general public. The issue of adequate accommodation is also regulated in article 9. This article said that adequate accommodation for people with disabilities are the result of appropriate modifications and adjustments so that they can be used comfortably in accordance with fundamental freedoms for people with disabilities on an equal basis.

In addition to being regulated by Law no. 8 of 2016 concerning People with Disabilities, there are other regulations that regulate the rights that must be granted to people with disabilities. These regulations include the 1945 Constitution of the Republic of Indonesia, Law Number 39 of 1999 concerning Human Rights, and Government Regulation of the Republic of Indonesia Number 39 of 2020 concerning Adequate Accommodation for Persons with Disabilities in the Judicial Process. In these regulations it has been explained in detail and clearly that everyone belonging to a vulnerable group of people has the right to obtain protection that is more in line with their needs. Related to this, Indonesia already has a convention on the rights of people with disabilities (Convention on the Rights of Persons with Disabilities) which provides provisions that people with disabilities have

rights, therefore the state has an obligation to fulfill their rights by using positive measures

3. Discussion

People with disabilities have the same right to access facilities provided to the public. This includes the use of lifts, escalators, and emergency stairs. In Indonesia, most elevators do not have braille for the blind, nor voice information for the deaf. The elevator number button is also still too high to be accessible for wheelchair users. In addition to elevators, malls tend to use escalators instead of traveling (a means of ascending with a sloping shape). In addition, malls have not provided guiding blocks or road facilities that can guide the blind walking in the mall. In the Regulation of the Minister of Public Works number 30 of 2006 concerning Technical Guidelines for Facilities and Accessibility in Buildings and the Environment, it is explained that facilities are all or part of the completeness of infrastructure and facilities in buildings and their environment so that they can be accessed and utilized by all people, including people with disabilities and elderly. The use of elevator buttons in braille, additional voices, and number buttons that can be reached by wheelchair users is one way that can be used to achieve equality. However, the obstacle that occurs in Indonesia is that the elevator is still only accessible for people without disabilities or even worse, in front of the elevator button there is a trash can, making it difficult for wheelchair users to press the button.

On the other hand, the realization of Law Number 13 of 2003 concerning Manpower and supported by Law Number 8 of 2016 concerning People with Disabilities related to the rights and opportunities for people with disabilities to obtain employment can be seen in one review in Pematangsiantar City. The implementation of this law has not been carried out optimally and is even far from expectations for the fulfillment of the work rights of people with disabilities. This happens to companies in the city, both government-owned and private, and is related to the lack of stakeholder socialization in the local government. Socialization regarding Law number 13 of 2003 has been given by the Manpower Office of Pematangsiantar City but is not carried out regularly. In addition, it is not carried out thoroughly for all companies in the city. Some interviews with several parties found out that not all companies were well-informed about the rules in the Law of the Republic of Indonesia, Number 8 of 2016 (Wardani, 2021).

4. Recommendations

The government has made and ratified regulations that can help people with disabilities in living their lives normally in the context of fulfilling the rights of citizens. However, the implementation and supervision of these regulations has not been fully implemented. Implementation and supervision have not been carried out because the voices of defenders and disabilities tend to be small and have no impact on society in general. This is because most Indonesian people do not realize or ignore the existence of

people with disabilities, therefore they pay less attention to the supporting facilities, especially about public facilities. One of the causes of ignorance in the community is the absence of advocacy that introduces people with disabilities.

The government can enforce the laws and regulations that have been drafted, such as providing regulations and policies for every shopping center in Indonesia to have Braille letters in the elevator to help the blind. In addition, in shopping centers, more information boards should be provided to assist deaf people when they are in shopping centers. Therefore, there is a need for direct intervention from the government to oversee the implementation of related laws, especially in shopping centers. The government can also organize a program that targets students with the output of advocacy on disability to help people live side by side with people with disabilities.

References

- Haryadi, P. (2020). *Pedoman Pelaksanaan Pelayanan bagi Penyandang Disabilitas di Pengadilan Tinggi dan Pengadilan Negeri*.
- Peraturan Menteri Pekerjaan Umum nomor 30 Tahun 2006 tentang Pedoman Teknis Fasilitas dan Aksesibilitas pada Bangunan Gedung dan Lingkungan, (2006).
- Syafi'ie, M. (2014). Pemenuhan Aksesibilitas Bagi Penyandang Disabilitas. *Inklusi*, 1(2). <http://ejournal.uin-suka.ac.id/pusat/inklusi/article/view/010208/987>

- Thohari, S. (2014). Pandangan Disabilitas dan Aksesibilitas Fasilitas Publik bagi Penyandang Disabilitas di Kota Malang. *Indonesian Journal of Disability Studies*, 1(1). <https://www.ijds.ub.ac.id/index.php/ijds/article/view/38>
- Undang-Undang Nomor 8 Tahun 2016 Tentang Penyandang Disabilitas, Lembaran Negara Republik Indonesia (2016).
- Wardani, A. (2021). Aksesibilitas Penyandang Disabilitas dalam Memperoleh Pekerjaan di Kota Pematangsiantar. *Tesis. Fakultas Ilmu Sosial Dan Ilmu Hukum Universitas Sumatera Utara Medan*.

Implementation of Guiding Blocks in Indonesia

“Can People with Vision Impairment Access Public Places Safely, Comfortably, and Independently?”

Jessica Caroline Graciella, Nabila Noer Setyaningrum, Alexander
Alvantha Sutanto, Sherin Agnes Tahulending, Gracia Christiany
Sembodo, Gracia Elvira Umboh, Fergielah Rahel Sampelintin, The Maria
Meiwati Widagdo

Implementation of Guiding Blocks in Indonesia

“Can People with Vision Impairment Access Public Places Safely, Comfortably, and Independently?”

Jessica Caroline Graciella, Nabila Noer Setyaningrum, Alexander Alvantha Sutanto, Sherin Agnes Tahulending, Gracia Christiany Sembodo, Gracia Elvira Umboh, Fergielah Rahel Sampelintin, The Maria Meiwati Widagdo¹

¹Universitas Kristen Duta Wacana, Kedokteran, email: maria_widagdo@staff.ukdw.ac.id

Abstract

People with vision disabilities have very little access to public facilities safely, comfortably, and independently. This article presents the fact that about 1.5% or 4 million people of the Indonesian population have visual impairments, however, the implementation of the existing regulations about accessibility including guiding blocks are not yet well-applied in Indonesia. Thus, this article suggests that punishments for those who block pedestrian paths should be enforced, roadside parking and putting in reklamas on guiding blocks path should be banned, and education about the importance of guiding blocks, accessibility for people with disabilities, and the inclusive design of available public facilities should be provided.

Keywords: *people with vision disabilities, access to public facilities*

1. Introduction

People with visual impairments have equal rights in accessing public places. Guiding blocks are one of the facilities to achieve this equality. However,

problems occur in the accessibility of these facilities. There is a limited number and changes in the function of the guiding block so it cannot be used optimally as it should be. The government has tried several ways so that these guiding blocks can be useful according to the function, but there are still obstacles that occur. These problems have to be addressed and fixed to have a better society and to fulfil everyone's rights including those with disabilities. Supervision, punishment, development, and concepts change, as well as education could be a way out of these problems.



Figure1: A car parking on a guiding path

Equal opportunity to access and benefit public facilities is a right for everyone, including those with disabilities. In the regulation of the Minister of Public Works and Public Housing of the Republic of Indonesia number 14 of 2017 concerning the requirements for building facilities, it is stated that all building users have the same rights in using the building to carry out their activities safely, comfortably, easily, and independently. Guiding blocks consist of guiding and warning tiles needed by people with visual impairments to move from one place to another. Guide paths must connect between spaces and between buildings and are available in corridors, pedestrian paths, and open spaces so that people with visual impairments can feel safe, comfortable, and can easily access public spaces. Limitations and changes in functions on the use of guiding blocks are often found in Indonesia. Guide trails are not always found in public facilities even though they have been regulated in Act no. 8 of 2016 regarding persons with disabilities. Another problem was found that even though guide lanes were available, changes of function such as using guide lanes as a place for sale and parking occurred. The changes in function occur because of several factors such as economic, socio-cultural factors, and land limitations. What is meant by economic factors is for traders, pedestrian roads are strategic places and suitable for selling. This will be more disturbing if the location is a tourist location, for example on Jalan Malioboro, Yogyakarta. Limited land in various areas is also a problem because land for selling and parking cannot be immediately available and other solutions must be sought. In addition, tiles from the guide paths are found to be in a damaged or improper

condition, and sometimes obstacles such as electricity poles, billboards, or trees are found in the middle of the guide path. The occurrence of the above problems can also be caused by a lack of knowledge from the public regarding the function of the guiding block so there are still many people who deprive the blind or people with disabilities of their rights in terms of accessibility. Another problem is the application of sanctions for those who use inappropriate parking spaces. The Department of Transportation that carries out routine supervision cannot provide specific sanctions due to limited authority, where sanctions can only be applied by the police. Another problem that can be found is that there is miscommunication between the Department of Transportation who is responsible for monitoring, especially on roads. This communication is needed so that there are no violations in the construction of road equipment and public facilities, including the installation of guiding blocks. Miscommunication occurred when the guiding block was installed, the public works department did not confirm it in advance with the transportation department. All the problems above should not occur because guiding blocks are needed by at least 1.5% or about 4 million people of the Indonesian population who have visual impairments, especially those who are blind. With the availability of guiding blocks, people with visual impairments can access public facilities comfortably, easily, and independently.



Figure 2: A path without guiding blocks

2. Overview

Regulations or laws that discuss and legislate about accessibility including guiding blocks are already available in Indonesia. However, the implementation of the existing laws is not even applied in all regions in Indonesia. The government in some regions tries to find and do some effort to solve problems about guiding blocks. Some problems found in Indonesia about guiding blocks are there are some functional changes because of some reasons such as narrow streets. In Yogyakarta, the government has widened the pedestrian walk so the street vendors or those who park illegally will not

block the street, especially the guiding blocks. To prevent the guiding blocks, and to make maintenance easier, the government decides to change the materials. The government also keeps track of any activities or attempts to put reclamation to advertise so they will not block the path. And then the last problem found is the lack of knowledge about where, who, and how to complain if there is any damage in the guiding block.



Figure 3: Unmaintained guiding blocks

3. Discussion

Although there have been various efforts made by the government, the problem regarding guiding blocks is still not optimally resolved. There is still a gap between the issue and the response of the government, especially those who must be concerned about the public facility. One of the gaps in road widening projects cannot be done in all regions in Indonesia. This problem can still be found because there is still a lack of area and budget. Another gap that was found is people still put up reklamas in an improper way so sometimes the guiding block is blocked. The government also cannot respond to pulling out the advertisement banners because of the low budget, limited time, and unreachable location. Another issue that we found is that even though the government already has a special application to report or complain about guiding blocks, people still do not have proper knowledge about how to use it. Besides that, if the complaints have been made, the government cannot respond to all of them.

4. Policy Recommendations

So are there any efforts that we can make?

The Government can tighten supervision and give strict punishments for those who block pedestrian paths. Those who do illegal parking must be given a strict penalty so they will not do the same thing again. The government is also advised to provide parking spaces that are easily accessible and sufficient to accommodate motorcycles, cars, or any other

large vehicles. Another way out is a change in the parking concept to shift the parking area from the roadside to underground parking and add the parking lot. For those who want to put in advertising banners, they have to comply with the rules that the installation must be done in a certain place and not around the guiding blocks. If the reclama blocks the guiding blocks or the pedestrian paths, the government must carry out a forced revocation and the installer must be fined and then the funds can be allocated for operational costs of revocation of advertisements. For the government, it is suggested to provide a special place for street vendors to trade so the vendors' tents will not interfere with the guiding blocks. Another step that can be taken by the government is to provide education about the importance of guiding blocks, accessibility for people with disabilities, and the inclusive design of available public facilities. This is very important to do because when they know about the information people will be more alert and aware of the rights of people with disabilities and then they can implement the knowledge gained for the common good.

References

Laws of the Republic Indonesia Number 8 Year 2016 about Persons with Disabilities, (2016).

Minister of Public Works and Public Housing of the Republic of Indonesia. (2017). *Minister of Public Works and Public Housing Number 14 of 2017 Concerning the Requirements for Building Facilities.*

- Nursyamsi, F. (2020). Policy Advocay Paper: Law Number 11 Year 2020 About Creation of Work in Protection Framework and Rights Fulfilment of Person with Disabilities. *Center for Indonesian Law and Policy Studies*.
- Pratama, F. I. P., Septiani, D. R., Abduh, M., & Himawanto, D. A. (2018). Study of Guiding Block Implementation on Public Places in Indonesia. *International Journal of Humanities and Social Science*, 5(6), 59–63.
<https://doi.org/10.14445/23942703/IJHSS-V5I6P111>
- Rahayu, N. R. (2020). *Fulfilment of Accessible Public Services for People with Disabilities in Sleman District*.

Dental Hygiene in Children with Cerebral Palsy

Elma Noveria Tiranda, Sintha Abilia, David Herryanto, Hanna Natasha Putri, Rizky Chandra Wijaya, Riani Bernadet Matialu, Winta Adhithia Guspara

Dental Hygiene in Children with Cerebral Palsy

Elma Noveria Tiranda, Sintha Abilia, David Herryanto, Hanna Natasha Putri,
Rizky Chandra Wijaya, Riani Bernadet Matialu, Winta Adhitia Guspara¹

¹Universitas Kristen Duta Wacana, Desain Produk, email: guspara@staff.ukdw.ac.id

Abstract

Children with cerebral palsy have stereotypical habitual reactions. The research conducted by Research Tashkent State Institute of Dentistry Department of "Prevention of dental diseases" and Bukhara State Medical Institute on cerebral palsy children showed that cerebral palsy children have a very low level of hygiene. Therefore, it is important to give dental treatment to cerebral palsy children. There are some new policies to consider being applied especially in Indonesia: 1) to supply electronic toothbrushes with a special handle to assist cerebral palsy children so they can brush their teeth easily, 2) accessible dentistry, and 3) periodical dental health maintenance program to cerebral palsy children. The goal of recommended policies is to remove dental hygiene problems for children with cerebral palsy.

Keywords: cerebral palsy, dental hygiene

1. Introduction

Oral hygiene is a condition that can indicate the health of a person's oral cavity whether it is free from disease or not. Dental and oral hygiene is a state of the teeth and mouth free from cavities and tartar. Tartar attached to

the surface of the crown of the tooth is usually yellowish to brownish in color that can be seen by the eye.

The limitations of Cerebral Palsy (CP) children are one of the obstacles for disabled people to gain knowledge about dental and oral hygiene. Knowledge of dental and oral hygiene possessed by CP children will determine their attitudes and actions in maintaining dental and oral health. There are several classifications of CP according to K.A. Semyonova classification based on the nature of motor disorders and their prevalence (Idiev, 2020):

- a. Spasticity (increased muscle tone, the severity of which decreases with repeated movements)
- b. Athetosis (constant involuntary movements)
- c. Rigidity (dense, tense muscles that provide constant resistance to passive movements)
- d. Ataxia (imbalance with frequent falls)
- e. Tremor (tremor) of the limbs

According to B. B. Baizhanov, bad habits in children with CP have their own specific features and different pathogenesis, so it is more proper to call them stereotypical habitual reactions. Those reactions are divided into three groups (Baizhanov, 1982):

a. Stereotypical habitual reactions

The habit of sucking (fixed motor reactions due to the lack of reduction of the sucking reflex) is most often observed in children suffering from the atonic-astatic form of the disease.

b. Idiotypic habitual reactions

Recorded pathological motor reactions of the peripheral articulation apparatus is revealed to a significant extent and expressed in speech articulation disorders, incorrect swallowing, and oral breathing. Such disorders are often found in patients suffering from hyperkinetic, atonic-astatic form of CP and malocclusion.

c. Stereotypical habitual reactions

This form was especially characteristic for children with hyperkinetic CP, indicated by secondary incorrect position of the tongue and lower jaw. Hyperkinesis of the peripheral articulatory system muscles is often a factor contributing to increased erasability of hard tooth tissues, lower bite height and jaw displacement.

2. Overview

A survey of parents was conducted by the Research Tashkent State Institute of Dentistry Department of "Prevention of dental diseases" and Bukhara State Medical Institute to study the risk factors for dental caries in children with CP, as well as to assess the dental care provided to children with

disabilities. At the first visits, explanatory work on the implementation of the program of children's dental examination were given to the parents, recommendations on the nutrition of children were given, professional hygiene of the oral cavity and caries was carried out. Data analysis showed that a very low level of hygiene skills was revealed in most children with caries. Only 63.8% of parents took care of their children. At the same time, only 40.0% of children were engaged in regular brushing teeth, 26.7% of them followed the rules of washing their teeth 1 time a day and 8.3% - 2 times a day. In 43.3% of children, oral care was brought to an irregular, isolated state, and in 26.7% of children, oral hygiene measures were not carried out at all. (Eronov & Mirsalikhova, 2020)

A clinical dental examination was performed by E. A. Oleynik et al. in 76 children with CP aged 7 to 15 years and 50 healthy children of the same age. Visual examination of the oral cavity revealed hyperemia, edema of the gingival mucosa, and bleeding in 51.31% of children. Based on the data of the proposed method of complex diagnostics of periodontal diseases, the prevalence of this type of dental pathology was 71.8 % in children aged 6 to 15 years. Of these, 3% of people were diagnosed with chronic generalized periodontitis of moderate to mild severity (concomitant disease-severe diabetes mellitus, hyperthyroidism). 26.9% of the examined children showed signs of hypertrophic gingivitis, and 63.4 % - catarrhal. In the control group, the incidence of gingivitis was 18% of people aged 12-15 years. Such high incidence was obtained after a full examination of the

periodontium in children using the indices of RMA, Russell extended somatoscope. (Idiev, 2020)

Moreover, treatment successness depends on cooperation and verbal and non-verbal communication between the dentist and the patient. In this case, the dentists' patience is necessarily needed in correlation to the patient's different ability. (Saputri, 2015)

Based on an interview with a teacher from SLB N 1 Bantul, there were routine dental checkups from Faculty of Dentistry, Gadjah Mada University for children with special needs. It was held by the school, from the consideration of special dental treatment needs for their student, including children with CP. (Dian, 2022)

3. Discussion

3.1. Addressing oral hygiene issues of children with CP

The approach of oral care practices for children with CP recently has been done and taken complete care of by several medical, dental health-related organizations, and several related parties. We could take an example of the evolving literacies, research, and practical guides on practising proper dental hygiene and the progressive movements due to the increasing awareness of dental hygiene in children with cerebral palsy. It has become a general issue that needs to be addressed globally and completely as every person could take part in this whole approach and intervention.

Comprehensive actions need to be taken to overcome the obstacles that came as the risk factors or predisposition and contributed to the development of dental problems. These factors take part independently or associated with one another and the lists may include prior knowledge of parents or caregivers, the children independence with CP and the parental figure influence. Teamwork and collaboration between parents or caregivers, healthcare professionals, dentists, governments, and the availability of infrastructure in the form of oral health-care products and services also delivering significant factors.

The program and guidelines to strengthen the prevention plan, such as home dental hygiene care and guidelines on the management of dental patients with special health care needs, have been promoted by dentists and healthcare professionals and it's always best advised to be exposed and promoted from early on to prevent any further complication (Jan & Jan, 2016). There are plenty of programs initiated to refer to dental issues in children with CP. The participation would require parents' or caregivers' responsibility and the right to be fully informed and to carry the information on with them by also considering the importance of oral health in children with CP and the outcomes of poor oral health. The availability of practical guidance and training becomes crucial in helping parents or caregivers gaining information on oral hygiene. Some training programs initiated by several health-related organizations are also known to bring a meaningful impact to parents or caregivers and the improvement of oral health knowledge in parents and habits in children with CP as well. This concludes

that parents' or caregivers' knowledge has been improved and evaluated by participating in training despite the prior lack of knowledge and awareness about oral health of their CP children (Hamid & Abuaffan, 2017)

Teamwork between the parents or caregivers, healthcare professionals, dentists, and governments could be more efficient in enhancing the improvement of children with CP's oral hygiene. The government will be taking part in this matter by establishing and providing services to the need of oral hygiene. But then one obstacle emerged, particularly in low- and middle-income countries. The government has yet to develop a surveillance system that is functional and adequate in building a bridge to the consistent availability of resources in meeting the need for this remaining gap of dental problems in children with CP. As is being specified, in order to eradicate the development of dental issues, the parties involved need to comprehend and resolve the problem from its roots, which includes biological, economic, cultural, environmental, and social factors. That alone explains that teamwork and collaboration are essential in establishing good oral hygiene in children with CP. This has been fully answered and purposefully addressed to children with CP and parents or caregivers. It can be shown in the outcomes of each program, research, and other agendas to bring the issue to the surface (Wyne et al., 2017)

3.2. The gaps and responses within the recent actions towards oral hygiene issues in children with CP

The measurement on how much these interventions have succeeded in reaching their purpose is by using a proper instrument that is designed to obtain data from parents or caregivers. OHRQoL (Oral Health-Related Quality of Life), for instance, has been used and defined as the standard and a reliable instrument in identifying the impact of oral health or disease on individual's daily and quality of oral hygiene and their life. OHRQoL is used to measure the impact of oral and orofacial conditions on the functional, emotional, and social factors of children. Oral health has been playing a fundamental role in children with CP's quality of life, because not only does causing dental problems, but also impacting the development of children with CP as they experience other difficulties caused by dental problems, such as difficulties in sleeping, eating, and contribute to loss of school days or other activities because they experienced pain.

Factors that cause dental caries in children with CP are mainly low levels of oral hygiene and low toothbrushing skills. This is related to the role of parents, where parents rarely teach their children how to brush their own teeth properly and cleanly. Parents also rarely supervise their children brushing their teeth more than once a day. Lots of research still revealed some visible gaps in how the underlying factors remain still and impact the oral health-related quality of life on children with CP (Ulfah & Marjianto, 2019).

As much as how children with CP have their own barriers and struggles other than oral hygiene, as the degree of CP varies with each child, this will require complete consideration and action from parents, caregivers, healthcare professionals, dentists, and even the government. This may contradict the results of studies conducted in Brazil and Japan which found the causes that lead to inefficient care of the quality of oral hygiene as indicated by findings related to difficulties, unfamiliarity, and low quality of life of parents of children with CP (Akhter et al., 2018). This proves that the implementation of oral hygiene care would still need to be improved gradually as it should evolve within the parents' or caregiver's comprehension. This era is gifted by the internet that is accessible to anyone and we have been facilitated by the practical guides, journal articles, and websites. Information is all over the internet and it would escalate as the number of research is also increasing. In 2016, the Medical Team of Gadjah Mada University Hospital held a free dental examination and medical rehabilitation for children with CP in Nanggulan, Kulon Progo. The medical team found that families and caregivers in Nanggulan showed incredible enthusiasm. The dentist on the medical team also said that it is a calling for further attention and intervention to the issue (Humas (RS UGM), 2016). It brings us to the following years, in 2020, Cobra Dental Indonesia (a dental appliances manufacturer's company) and Yakkum Rehabilitation Centre worked through social service and provided counselling for children with CP to reduce the number of dental caries among children with CP in Indonesia, which also in line with the Indonesian Ministry of Health's new

program, 'Indonesia Bebas Karies 2023'. It extends to the part where this program also involved children with CP to learn how to brush their teeth by themselves and practice it at home. As a bring home message, the parents have their mandate to team up and work together with dentists to be aware and careful about the oral hygiene of their CP children as they are at a higher risk factor of having poor oral hygiene. This is also a form of a constructed response and maintenance in family, healthcare professionals, organizations, instances, and even governments, to line up together in working through service and infrastructure to improve the oral hygiene in children with CP (Cobra Dental, 2020)

4. Policy Recommendations

Dental treatment in children with Cerebral Palsy can be done with psychological/non-pharmacological and pharmacological approaches depending on the severity of the case and it is very important to prevent dental and oral disease procedures. Most patients with CP do not show specific oral signs, but the presence of motor disturbances and involuntary movements will complicate the procedure of tooth brushing. With its limitations, it is necessary to modify the tools of a toothbrush to facilitate the procedure of brushing teeth. It is recommended to use an electric toothbrush with a special handle which is also assisted by parents or the closest person, which is no less important to always consult with speech therapy, occupational therapy physiotherapists and child neurologists. Most people with CP can be treated with simple routine care at the dentist's office.

Treatment at the dentist's practice is done by preparing a rubber mouth prop, mouth prop, bite block, and restraints. However, if the patient suffers from severe cases related to physical and mental limitations, speech disorders and there are cases on his teeth, the dentist must be more patient in dealing with CP patients. This case must also be handled in a multidisciplinary manner together with other relevant specialists, for example in a team called Special Care Dentistry (SCID), which consists of a pediatric dentist, pediatric neurologist, and anesthesiologist. In severe physical and mental cases, treatment is generally carried out with a pharmacological approach, namely general anesthesia. The important thing that must be done in patients with CP is maintaining optimal dental and oral health, because successful dental health maintenance will produce good, healthy teeth and affect food intake, speech, aesthetics, general health, and emotional development of children. Dental health maintenance is started in an early period with an emphasis on preventive procedures, including home care, fissure sealants, topical applications, and regular check-ups by dentists at 2-month intervals.

5. Summary

Dental treatment in children with Cerebral Palsy can be done with psychological/non-pharmacological and pharmacological approaches depending on the severity of the case and it is very important to prevent dental and oral disease procedures. Therefore, these are

a. Accessible Toothbrush Supply

Most patients with CP do not show specific oral signs, but the presence of motor disturbances, and involuntary movements will complicate the procedure of tooth brushing. With its limitations, it is necessary to modify the tools of a toothbrush to facilitate the procedure of brushing teeth. It is recommended to use an electric toothbrush with a special handle which is also assisted by parents or the closest person, which is no less important to always consult with speech therapy, occupational therapy physiotherapists, and child neurologists.

b. Accessible Dentistry

Most people with CP can be treated with simple routine care at the dentist's office. Treatment at the dentist's practice is performed by preparing a rubber mouth prop, mouth prop, bite block, and restraints. But if the patient experiences severe cases related to physical and mental limitations, speech disorders and cases of his teeth, the dentist must be more patient in dealing with CP patients. The cases also should be treated in a multidisciplinary manner together with other relevant specialists such as in a SCID team, which consists of pediatric dentists, pediatric neurologists, anesthesiologists. In severe physical and mental cases, treatment is generally carried out with a pharmacological approach, namely general anesthesia.

c. Periodical Dental Health Maintenance Program

The important thing that must be done in patients with CP is maintaining optimal dental and oral health, because successful dental health maintenance will produce good, healthy teeth and affect food intake, speech, aesthetics, general health, and emotional development of children. Dental health maintenance is started in an early period with an emphasis on preventive procedures, including home care, fissure sealants, topical applications, and regular check-ups by dentists at 2-month intervals.

References

- Akhter, R., Hassan, N. M. M., Nadkarni, M., F. Martin, E., & Khandaker, G. (2018). Oral Health in Children with Cerebral Palsy. In *Cerebral Palsy - Clinical and Therapeutic Aspects*. IntechOpen. <https://doi.org/10.5772/intechopen.79452>
- Baizhanov, B. B. (1982). *Dental Anomalies in Patients with Cerebral Palsy and Features of Orthodontic Care in Terms of Their Complex Treatment*.
- Cobra Dental Indonesia. (2020). *Cobra Dental Indonesia Berbagi dengan Penyandang Cerebral Palsy*. <https://cobradental.co.id/cobra-dental-indonesia-berbagi-dengan-penyandang-cerebral-palsy/>
- Dian. (2022). *Konfirmasi Kebutuhan Advokasi tentang Kesehatan Mulut bagi anak Cerebral Palsy*.

- Eronov, Yo. K., & Mirsalikhova, F. (2020). Implementation of Comprehensive Prevention of Dental Caries in Children with Cerebral Palsy. *International Journal on Human Computing Studies*, 22–24.
- Hamid, H. M., & Abuaffan, A. H. (2017). Parental Oral Health Knowledge, Attitude, Practice and Caries Status of Sudanese Cerebral Palsy Children. *Pediatrics & Health Research*, 2(2). <https://doi.org/10.21767/2574-2817.100015>
- Humas RS UGM. (2016). *Pemeriksaan Gigi dan Rehabilitasi Medis Bagi Anak dengan Cerebral Palsy*. Rumah Sakit Akademik UGM.
<https://rsa.ugm.ac.id/2016/10/pemeriksaan-gigi-dan-rehabilitasi-medis-bagi-anak-dengan-cerebral-palsy/>
- Idiev, O. E. (2020). Infantile Cerebral Palsy and Dental Anomalies. *International Journal on Integrated Education*, 3(11), 212–215.
<https://doi.org/10.31149/ijie.v3i12.921>
- Jan, B. M., & Jan, M. M. (2016). Dental Health of Children with Cerebral Palsy. *Neurosciences*, 21(4), 314–318. <https://doi.org/10.17712/nsj.2016.4.20150729>
- Saputri, N. (2015). Hubungan Cerebral Palsy dengan Tingkat Kooperatif Anak dalam Perawatan Gigi dan Mulut. *Hasanuddin University*.
- Ulfah, S. F., & Marjianto, A. (2019). Dental Caries and Oral Health Related to Quality of Life of Children with Disabilities. *Indian Journal of Forensic Medicine & Toxicology*, 13(4), 1739. <https://doi.org/10.5958/0973-9130.2019.00561.9>
- Wyne, A. H., Al-Hammad, N. S., & Splieth, C. H. (2017). Oral Health Comprehension in Parents of Saudi Cerebral Palsy Children. *The Saudi Dental Journal*, 29(4), 156–160. <https://doi.org/10.1016/j.sdentj.2017.07.004>

Sarcopenia in Individuals with Cerebral Palsy

Greatavia Meanda Leslie, Christiana Shelly Budi Suharto, Tiffany Angela,
Ferdinand Gozales, Simplisius Seto Windiarto, Vania Valeryn, Anastasia
Intan Amelia, Johana Puspasari Dwi Pratiwi, Ida Ayu Triastuti

Sarcopenia in Individuals with Cerebral Palsy

Greatavia Meanda Leslie, Christiana Shelly Budi Suharto, Tiffany Angela,
Ferdinand Gozales, Simplisius Seto Windiarto, Vania Valeryn, Anastasia Intan Amelia,
Johana Puspasari Dwi Pratiwi¹, Ida Ayu Triastuti²

¹ Universitas Kristen Duta Wacana, Pendidikan Dokter, email: johana_puspasari@staff.ukdw.ac.id

² Universitas Kristen Duta Wacana, Pendidikan Dokter, email: ida_ayu@staff.ukdw.ac.id

Abstract

Cerebral palsy (CP) is a permanent body condition affecting an individual's ability to move (neuromotoric disorders). Individuals with CP have a higher risk of sarcopenia than normal individuals due to long-term inactivity. Sarcopenia is a condition of decreased muscle mass, accompanied by quality, quantity, and physical performance. Sarcopenia can cause a decrease in quality of life including loss of independence on a daily life basis. Treatment of sarcopenia is used to maximize muscle mass to improve function, strength, endurance, and general metabolic health. Therefore, the focus is not only on physiotherapy but also considering nutrients such as protein and vitamin D, which can be combined with other exercises. Some issues often found are the difficulty of patients with CP and sarcopenia in reaching health facilities that provide physiotherapy and difficulties in getting the nutrients needed. To resolve this problem/gap, several solutions can be implemented, including providing online services for physiotherapies such as foot/hand exercises and consultations, providing door-to-door visit services for patients with special needs and education/socialization, as well as providing nutritional support services for patients with disabilities and sarcopenia.

Keywords: cerebral palsy, sarcopenia, physiotherapy, nutrition

1. The Existing Background

Cerebral palsy (CP) is a permanent body abnormalities affecting the individual's movement ability and is categorized as neuromotor disorders (Hallman-Cooper & Cabrero, 2021). In Indonesia, the Ministry of Health data states that CP cases occur in 1-5 children per 1000 live births. CP has multiple levels of severity that contribute to an individual's ability to live independently daily. Approximately 70-80% of CP is of the spastic type, where there is stiffness in the locomotor muscles, either one to all four. Other types include athetoid/dyskinetic, ataxic, or mixed (Selekta, 2018). This condition is acquired from birth or immediately after birth. It cannot be cured, so the treatment that can be done for individuals with CP aims to improve the sufferers' independence daily and their quality of life.

Individuals with CP are susceptible to deconditioning syndrome, where a decrease in the body's functional capacity (physical and psychological) is caused by a decrease in chronic activity. This decrease in physical activity can cause a disorder called sarcopenia. Three main indications can describe sarcopenia: decreased muscle mass, decreased muscle quality and quantity, and poor physical performance. Sarcopenia generally appears in individuals around twenty years to the elderly (Jeon et al., 2019). However, in patients with CP, sarcopenia can appear very early, even in a child at a very young age. In general, sarcopenia can cause a decrease in the health and quality of life of the sufferer, including decreased physical performance, mobility, and functional abilities that impact the ability to live independently. Sarcopenia

is divided into two: primary sarcopenia associated with aging and secondary sarcopenia caused by long-term inactivity and malnutrition (Ardeljan & Hurezeanu, 2022).

Several studies conducted on bedrest individuals prove that there is a decrease in muscle mass as much as 40% in the first week (Parry & Puthuchear, 2015). Therefore, one of the vulnerable groups that are at risk of experiencing long-term inactivity is the quadriplegic group with total or partial limb weakness. Sarcopenia can appear with symptoms such as: unequal muscle size between the limbs (e.g., one leg is smaller than the other), total weakness to paralysis, numbness/tingling in the limbs, difficulty walking, and balance disorders. Sarcopenia, in this case, is reversible. So appropriate treatment can restore the condition of sarcopenia.

2. The Existing Solutions

Generally, sarcopenia treatment aims to maximize muscle mass to increase function, strength, endurance, and metabolic health. Therefore, this treatment is not only for physiotherapy. Fulfilling nutrition such as protein and vitamin D combined along with exercising also matters. Consuming vitamin D supplement of at least 800 IU (20 gram/day) will make individuals get a positive impact on muscle strength (Verschuren et al., 2018). Moreover, it reduces fall risk by 22% compared to those consuming calcium or placebo. In addition, combining vitamin D and the amino acid leucine can optimize the response of muscle protein synthesis. As a result,

it can increase muscle mass. The synergistic effect of protein ingestion with exercise has the potential to induce synthetic muscle responses, strengthen tissues, support balance, and muscle protein gain, thereby enabling muscle hypertrophy when exercised frequently. Regular exercise can also help normalize age-related mitochondrial dysfunction, thereby improving muscle function. Exercise combined with adequate nutrition in cerebral palsy individuals with muscle atrophy is known to increase muscle strength and function in young people and the elderly.

Apart from nutrition and exercise, the main supporting treatment is physiotherapy. Physiotherapy in cerebral palsy aims to maintain function and optimize children's abilities to improve children's quality of life by stretching muscles, strengthening muscles, and correcting posture. Muscle stretching is done to reduce muscle stiffness and prevent contractures or muscle shortening. Physiotherapy should be done regularly at least twice a week to get maximum results.

Besides, muscle atrophy can be prevented by doing passive stretching exercises (Kalkman et al., 2020). This exercise is recommended in the initial management of children with CP. Stretching performed in 6 weeks consisting of 15 minutes of stretching (10 repetitions of 60 seconds for each) four times a week can increase the structure that builds muscle units with tendons, fascicules, and tendons, causing an increase in ROM, decreasing joint stiffness and muscle stiffness.

3. The Existing Gap

- a. Difficulty reaching health facilities (geographical, independence, cost, psychological, etc.). WHO in 2014 reported that around 51-53% of persons with disabilities were dissatisfied with health facilities' services . Several influencing factors include physical barriers, lack of ability of health workers/officers to deal with people with disabilities, and government regulations that do not fully guarantee disability rights (Syukria, 2016)
- b. Difficulty in treatment due to complications of sarcopenia and associated inactivity (e.g., high risk of T2DM in long-term sarcopenia patients)
- c. Difficulty getting the nutrients needed.

4. Conclusions

Several recommended programs that can be carried out to prevent or reduce the risk of sarcopenia in CP are making disability-friendly telemedicine services, providing home visit services done by a cadre of Public Health Center or integrated training unit in educating and preventing complications related to sarcopenia as well as providing education related to nutrition to support muscle strength.

This telemedicine service is helpful for reaching individuals with disabilities who have difficulty accessing the nearest health facilities, either due to independence, psychological, geographical, or even cost factors. According to the recommendations mentioned above, one of the programs that can be implemented is making light exercise educational videos for the limbs or doing online gymnastics together for people with disabilities. This has been done for people with non-communicable diseases (PTM) in the prolanis program. Therefore, applying the same method to people with disabilities is possible. Furthermore, telemedicine services can ease the consultations for persons with certain disabilities, especially for those who require specific treatment related to complications of sarcopenia and nutritional needs that must be fulfilled.

Education related to nutrition is not only carried out by doctors or the physiotherapy department. However, other medical personnel must understand the importance of nutritional support for children with physical disabilities. Apart from preventing stunting and malnutrition, knowing the importance of nutritional education is also essential in supporting the muscle and bones development. Therefore, it is also necessary to conduct training for medical personnel to provide proper nutrition education, such as education related to fruits, vegetables, and wheat and vegetable sources that exist in nature, such as nuts, seeds, beans, and low-fat animal protein. In addition, the role of the integrated training unit (Pos Binaan Terpadu) in supporting the implementation of nutrition education needs to be held properly (Sukriya & Supriyanto, 2016).

The government has already implemented the program to realize nutritional balance for disabilities in Indonesia. Still, it can be developed more optimally. One example of the government program to achieve balanced nutrition for children with disabilities is the Social Rehabilitation Assistance (ATENSI) assistance program for 46 Beneficiaries (PM) of the Social Rehabilitation Service Unit for Children with Disabilities (ULRS APD) Balai Melati Jakarta conducted by the Ministry of Social Affairs in 2021. The assistance includes nutrition, medicine, therapeutic tools, and immunity support. This activity has a positive impact on the community of persons with disabilities. However, not all social services in all cities in Indonesia run programs like this. Most of the assistance provided by social services in Indonesian cities is only assistance for necessities. Thus, the nutrition assistance programs need to be developed by the social ministry throughout Indonesia, which can support nutrition for persons with disabilities.

Besides education, the local health center needs to hold the routine visit of Posbindu Cadres once a week. Visiting Cadres aims to reach the community more closely and provide better checking/handling and education. With direct observation accompanied by education from health workers, we hope that this effort can prevent the occurrence of sarcopenia and the risk of complications. Visiting Cadres can educate about nutrition, immunization, pharmacological therapy (drugs for muscle relaxation, anti-seizures), and physiotherapy such as speech therapy, light movement therapy, etc.

References

- Ardeljan, A. D., & Hurezeanu, R. (2021). *Sarcopenia*. National Library of Medicine. <https://www.ncbi.nlm.nih.gov/books/NBK560813/>
- Hallman-Cooper, J. L., & Cabrero, F. R. (2021). *Cerebral Palsy*. National Library of Medicine. <https://www.ncbi.nlm.nih.gov/books/NBK538147/>
- Jeon, I., Bang, M. S., Lim, J. Y., Shin, H., Leigh, J., Kim, K., Kwon, B. S., Jang, S., & Jung, S. H. (2019). Sarcopenia among Adults with Cerebral Palsy in South Korea. *PM&R*, 11(12), 1296–1301. <https://doi.org/10.1002/pmrj.12134>
- Kalkman, B. M., Bar-On, L., O'Brien, T. D., & Maganaris, C. N. (2020). Stretching Interventions in Children With Cerebral Palsy: Why Are They Ineffective in Improving Muscle Function and How Can We Better Their Outcome? *Frontiers in Physiology*, 11. <https://doi.org/10.3389/fphys.2020.00131>
- Parry, S. M., & Puthuchear, Z. A. (2015). The Impact of Extended Bed Rest on the Musculoskeletal System in the Critical Care Environment. *Extreme Physiology & Medicine*, 4(1), 16. <https://doi.org/10.1186/s13728-015-0036-7>
- Selekta, M. C. (2018). Cerebral Palsy Tipe Spastik Quadriplegi Pada Anak Usia 5 Tahun. *Jurnal Majority*, 7(3). <https://jurnal.kedokteran.unila.ac.id/index.php/majority/article/view/2074>
- Syukria, O. A., & Supriyanto, S. (2016). Determinan Pemanfaatan Puskesmas Pada Anak Penyandang Disabilitas. *Jurnal Administrasi Kesehatan Indonesia*, 4(1). <https://media.neliti.com/media/publications/72369-ID-difable-children-utilization-determinant.pdf>
- Verschuren, O., Smorenburg, A. R. P., Luiking, Y., Bell, K., Barber, L., & Peterson, M. D. (2018). Determinants of Muscle Preservation in Individuals with

Cerebral Palsy Across the Lifespan: A Narrative Review of The Literature.
Journal of Cachexia, Sarcopenia and Muscle, 9(3), 453–464.
<https://doi.org/10.1002/jcsm.12287>

Do You Know That People with Autism Spectrum Disorder Get Lost Very Easily?

Wahyuning Angger, Geasella, Nathania, Kevin Triantama, Susiana
Sunjaya, Emmanuel Erlanda, Allia Swasti, Yusuf Tegar, Winta Adhithia
Guspara

Do You Know That People with Autism Spectrum Disorder Get Lost Very Easily?

Wahyuning Angger, Geasella, Nathania, Kevin Triantama, Susiana Sunjaya,
Emmanuel Erlanda, Allia Swasti, Yusuf Tegar, Winta Adhitia Guspara¹

¹Universitas Kristen Duta Wacana, Desain Produk, email: guspara@staff.ukdw.ac.id

Abstract

Spatial navigation disorders appear in the early developmental period of a person with ASD and persist into adulthood. This article recommends three things: recall routes on a map, instruct them to move certain items to new locations, and always accompany them in unfamiliar places.

Keywords: cerebral palsy, dental hygiene

1. Introductions

1.1. What is ASD?

Autism spectrum disorder (ASD) is a developmental disorder that affects communication and behavior. ASD is characterized by a disability in communication and social interaction as well as restricted and repetitive actions. Autism is labelled as a “spectrum” disorder because the severity of each person’s symptoms is different and there is wide variation in its type. ASD symptoms typically emerge between 12 and 24 months of age.

The criteria diagnosis of ASD, based on DSM-5 (Banker et al., 2021), are:

- a. Impairment in social interaction and communication (social and emotional reciprocity, nonverbal communication, creating and maintaining relationships)
- b. Abnormal and repetitive behavior, interests, and activities (stereotyped speech and behavior, resistance to change, fixated interests, hypersensitivity or hyposensitivity to sensory input)
- c. Presentation in early childhood development
- d. Limited and hindered everyday activities

For the severity level, ASD is divided into three groups: 1) requiring support, 2) requiring substantial support, and 3) requiring very substantial support.

1.2. What is spatial navigation?

Spatial navigation is an ability that helps to find one's way around an environment, for example, finding the way back from school (Bermudez-Contreras et al., 2020). In other words, spatial navigation is a complex behavior subject to great individual differences across typical and atypically developing people. It can be supported by external (physical maps) or internal representations generated from memory—which is called memory guided navigation. After that, spatial navigation is expected to increase self-confidence, emotion, and motor system training in autistic children (Hao et al., 2016).

An accurate navigation involves several different strategies to reach a goal location: one can follow a sensory cue that marks a goal location, one can follow a determined path to the sequence of actions (a route), or one can determine which way to proceed by following an internal representation of space (map). These mechanisms require multiple cognitive processes that involve coordination across several brain regions, including the hippocampus and entorhinal cortex for the cognitive map; parahippocampal and retrosplenial complex for scene perception; thalamus for orientation process (Smith, 2015).

2. Overview

In the previous research, 12 children and adults with ASD had significant spatial navigation impairments (Bochynska et al., 2020). From this study, we can conclude that their key factor in navigation performance was nonverbal intelligence.

Recent study was conducted on 37 men with ASD and 31 typically developing peers/counterparts. There were two types of spatial navigation researched in this study, egocentric and allocentric navigation(Ring et al., 2018). Egocentric navigation is where the route was encoded from the navigator's body or point of view, despite allocentric navigation is from a cognitive map of the environment in which relationships among locations and landmarks were encoded. Subjects with ASD found difficulties in both

types of navigation. Another study also found that people with ASD had difficulty in spatial navigation, especially in allocentric navigation.

Unfortunately, research that discusses spatial navigation impairment and ASD is still very limited. Even to date there has been no research on this topic in Indonesia.

3. Discussion

3.1. ASD and spatial navigation impairment

Spatial navigation impairments in ASD emerge relatively early in development and are long standing persisting into adulthood. Region of the brain that is critical for spatial navigation is the hippocampus, but people with ASD have an increased hippocampal shape asymmetry. The hippocampus is thought to track the spatial relationships between physical locations, allowing, for instance, a person to know where their school is located in relation to their home.

3.2. People with ASD have difficulties in spatial language

They still do not know how to use spatial terms, such as under, to the left of or in front of somewhere. The acquisition of spatial terms is strikingly consistent across languages, with in/on, up/down, here/there and over/under mastered first, followed by projective prepositions front/behind and right/left, which are not fully acquired before age 5 or 6. The difficulties in spatial terms are in low until high functioning people with ASD.

3.3. Many people still do not know about spatial navigation impairment in ASD

There is limited study about spatial navigation in people with ASD, even in Indonesia there is still no research. Hence, we can assume that many people have little knowledge about it. Some studies that have been conducted found that there is a spatial navigation impairment in ASD, especially allocentric navigation.

4. Policy Recommendations

4.1. Recall of routes on a map

It is necessary to go somewhere by using routes on a map with people with ASD. The selected routes can be tried to be differed in complexity on the basis of overall length, the number of turns and the number of decision points. Based on recent study, people with ASD have strength in learning spatial layout, perceptual distance matching, cued recall of routes on a map and encoding of route information from a map (Lind et al., 2013).

4.2. Instruct them to move certain items to new locations

For instance, we can ask them to move their pencil on the table or move their drinks next to their food. It can help them to learn about spatial terms.

4.3. Give more attention to people with ASD

People with ASD have difficulties in spatial navigation. They are easy to get lost in the middle of the road. So it is very important to be able to accompany people with ASD and not let them walk alone.

References

- Banker, S. M., Gu, X., Schiller, D., & Foss-Feig, J. H. (2021). Hippocampal Contributions to Social and Cognitive Deficits in Autism Spectrum Disorder. *Trends in Neurosciences*, 44(10), 793–807.
<https://doi.org/10.1016/j.tins.2021.08.005>
- Bermudez-Contreras, E., Clark, B. J., & Wilber, A. (2020). The Neuroscience of Spatial Navigation and the Relationship to Artificial Intelligence. *Frontiers in Computational Neuroscience*, 14. <https://doi.org/10.3389/fncom.2020.00063>
- Bochynska, A., Coventry, K. R., Vulchanov, V., & Vulchanova, M. (2020). Tell Me Where it is: Selective Difficulties in Spatial Language on the Autism Spectrum. *Autism*, 24(7), 1740–1757.
<https://doi.org/10.1177/1362361320921040>
- Hao, X., Huang, Y., Li, X., Song, Y., Kong, X., Wang, X., Yang, Z., Zhen, Z., & Liu, J. (2016). Structural and Functional Neural Correlates of Spatial Navigation: A Combined Voxel-based Morphometry and Functional Connectivity Study. *Brain and Behavior*, 6(12).
<https://doi.org/10.1002/brb3.572>
- Lind, S. E., Williams, D. M., Raber, J., Peel, A., & Bowler, D. M. (2013). Spatial Navigation Impairments Among Intellectually High-functioning Adults with

Autism Spectrum Disorder: Exploring Relations With Theory of Mind, Episodic Memory, and Episodic Future Thinking. *Journal of Abnormal Psychology*, 122(4), 1189–1199. <https://doi.org/10.1037/a0034819>

Ring, M., Gaigg, S. B., Altgassen, M., Barr, P., & Bowler, D. M. (2018). Allocentric Versus Egocentric Spatial Memory in Adults with Autism Spectrum Disorder. *Journal of Autism and Developmental Disorders*, 48(6), 2101–2111. <https://doi.org/10.1007/s10803-018-3465-5>

Smith, A. D. (2015). Spatial Navigation in Autism Spectrum Disorders: A Critical Review. *Frontiers in Psychology*, 6. <https://doi.org/10.3389/fpsyg.2015.00031>

Are Educators Ready to Accept Children with Disabilities in Regular Schools?

Yosua Darmadi Kosen, Hana Grace Tondang,
Maria Vianny Citra Asri Pratiwi, Octaviana, Dedeh Supantini

Are Educators Ready to Accept Children with Disabilities in Regular Schools?

Yosua Darmadi Kosen, Hana Grace Tondang,
Maria Vianny Citra Asri Pratiwi, Octaviena, Dedeh Supantini¹

¹Universitas Kristen Maranatha

Abstract

People with disabilities still face problems regarding basic services, especially education. Only 3.3% of children aged 5-17 are admitted to basic education in Indonesia. There are several steps to improve education for children with disabilities, including creating an inclusive learning environment, understanding real challenges, and cooperating with the parents of children with disabilities. This policy brief highlights the need for improvements in components of inclusive schools in all regions of Indonesia.

Keywords: children with disabilities, inclusive education

1. Introduction

The Department of Economic and Social Affairs, United Nations issues Sustainable Development Goals, which are 17 goals to transform the world for persons with disabilities. The fourth indicator is quality for education. In addition, in Indonesia itself, it is stated in Law Number (No.) 20 of 2003 concerning the National Education System that education is one of the basic

services that the state must fulfil because it includes the needs and rights of citizens (Undang-Undang No. 20 Tahun 2003 Tentang Sistem Pendidikan Nasional, 2003). Therefore, all citizens have the right to receive educational services without exception, including persons with disabilities

The proportion of persons with disabilities aged 5-17 years, the age of children taking primary education, in Indonesia is 3.3% of the total population. Responding to the rights of all citizens to receive good educational services, the government of Indonesia has provided facilities for people with disabilities. They are listed in the Regulation of The Ministry of Education and Culture of the Republic of Indonesia Number 70 of 2009 (Permendikbud Tentang Pendidikan Inklusif Bagi Peserta Didik Yang Memiliki Kelainan Dan Memiliki Potensi Kecerdasan Dan/Atau Bakat Istimewa, 2009). It is mentioned that inclusive education is an education system that provides opportunities for all students with disabilities and/or have the potential for intelligence and or special talents to participate in education or learning in an educational environment with students in general. This policy has taken place, namely each district or city, to appoint at least one elementary and junior high school to provide inclusive education and hence have the obligation to accept children with disabilities.

In inclusive schools, the general perception of teachers regarding teacher interactions and teaching activities is essential. The perception regarding interactions includes the relationship between teachers and students or

fellow students in schools. However, many teachers do not understand how to deal with children with disabilities, especially in approaching and dealing with the diverse attitudes of students. Likewise, among fellow students, many regular students do not know how to communicate and understand the condition of friends with disabilities. This problem can make the children with disabilities avoided or ridiculed by other students. In terms of teachers' perceptions of teaching, there are also obstacles as they do not clearly understand the difference of students' mindsets. These things result in non-optimal programs as the educators and the school communities are not ready and they seem not to accept students with special needs. Hence, the students with disabilities are affected and feel like being rejected. In the long run, this can also affect the parents of students with special needs. They may feel disappointed which affect their enthusiasm for caring children with disabilities.

For this problem, there should be special training aimed at teaching staffs. The training can be about tips for dealing with students with special needs, studying various conditions of disabilities and how that person learns and accepts things. In addition, for the environment, including school facilities and infrastructures, an explanation of the inclusive school itself can be made, so that all students understand the conditions in which they share knowledge with friends with disabilities.

2. Overview

To raise public awareness about disability and to provide support for improving the dignity, rights, and welfare of persons with disabilities, 3 December was declared as the International Day of Persons with Disabilities (IDPWD) in 1992 by the United Nations General Assembly (United Nations, n.d.). About 15 out of 100 people in the world have a disability. Between 2-4 out of 100 people have a severe disability.

Since the beginning, the Government of Indonesia has made efforts to increase understanding and awareness of persons with disabilities. As one of the signatory countries to the Convention on the Rights of Persons with Disabilities, Indonesia ratified Law Number 19 of 2011 concerning Ratification of the Convention on the Rights of Persons with Disabilities, demonstrating the commitment and seriousness of the Government of Indonesia to respect, protect, and fulfill the rights of persons with disabilities which in the end is expected to improve the welfare of persons with disabilities. Indonesia also has Law Number 8 of 2016 concerning Persons with Disabilities which replaces Law Number 4 of 1997 concerning Persons with Disabilities which is considered not to have a human rights perspective, but is more compassionate. The fulfillment of the rights of persons with disabilities is still considered a social problem whose policy to fulfill their new rights are social security, social rehabilitation, social assistance, and increasing social welfare. Persons with disabilities should

have the same opportunities to develop themselves through independence as human beings with dignity.

The Regulation of Ministry of Education and Culture of the Republic of Indonesia Number (No.) 70 of 2009 may be one of the breakthroughs made by the government in implementing inclusive education at the primary and secondary education levels. The local government is obliged to appoint one school to be an inclusive school in each district/city. However, it is needed to pay attention to the equity and improve the quality of access to inclusive education, especially from the government and the community.

There are around 32.000 regular inclusive schools in various regions in Indonesia. The large number of inclusive schools in Indonesia shows the greater need for educators and non-educators to be involved in the teaching and learning. It is necessary to hold professional development for teachers, especially in public and inclusive schools. This can be a reasonable effort in realizing the guarantee of a good education for children with disabilities as guaranteed in the national document mentioned above.

In creating an inclusive learning environment, knowing teachers' perceptions regarding aspects of inclusive education practice is an essential first step. Understanding the real conditions in the field, the challenges faced, and the expectations to be achieved is an effort to provide responses and see the distance between the initial and ideal conditions needed. The analysis in this policy brief may not equally cover all levels of education,

and aspects of inclusive education in Indonesia. The survey results above show that only 50% to 70% of the components from the inclusive aspect have met the ideal conditions of inclusive schools. This result shows the need for improvements to be made. Cooperation and communication with parents are one of the steps that has been done a lot, but this certainly still needs to be expanded towards active participation.

3. Discussion

Based on the data above, we can see that 3.3% of children aged 5-17 years old are disabled. In order to create “Quality Education”, the government has created several policies including at least one school with inclusive education that accepts children with special needs per city. Based on the data, there are 32.000 of regular primary and secondary schools with inclusive education in Indonesia. Although there is enough school for disabled children, the number of qualified educators becomes the next issue as there is no adequate training for educators to make sure that they can educate the disabled in the best way possible. Not only the educators, environment aspects are also very important to support the education for the disabled, including facilities and infrastructure of the school that has to support the disabled children to have a supportive environment to learn and study comfortably. The other important factor is other students' supportive behaviors and understanding of their mental health, because most of the time disabled children would feel insecure and lack confidence.

4. Recommendations

The issue of whether schools are ready or not to accept persons with disabilities can be resolved with cooperation from various sectors, including the government (education authorities), affiliated schools, and parents of students with disabilities. In this case, the government plays a more significant role so that this policy can be fully realized.

The schools and parents of students with disabilities could help convey this issue by doing surveys about the current implementation of inclusive schools and the qualifications of teachers and students in these schools. Then the survey result can be submitted to the government so that the submission of this issue has a solid reason to later become a policy following this issue.

To prevent gaps, the school must first understand the urgency of this issue and must be openly honest with the actual situations. There should be no manipulation to maintain the good name of the school, but it is also required to emphasize that conveying this issue is also for the advancement of the schools and the nation, Indonesia.

References

Permendikbud Tentang Pendidikan Inklusif Bagi Peserta Didik yang Memiliki Kelainan dan Memiliki Potensi Kecerdasan dan/atau Bakat Istimewa, Pub. L. No. 70 (2009).

Undang-Undang No. 20 Tahun 2003 tentang Sistem Pendidikan Nasional, Pub. L.
No. 20 1 (2003).

United Nations. (2021, December 3). *Leadership and Participation of Persons with Disabilities Toward an Inclusive, Accessible, and Sustainable Post-COVID-19 World*. International Day of Persons with Disabilities.

Factors Associated with The Prevalence of Sarcopenia in Elderly University Workers

Ronald Winardi Kartika, Imelda Ritunga, Helena Rugun Nauli Nainggolan

Factors Associated with The Prevalence of Sarcopenia in Elderly University Workers

Ronald Winardi Kartika^{1*}, Imelda Ritunga², Helena Rugun Nauli Nainggolan³

¹ Department of Surgery, Faculty of Medicine, Krida Wacana Christian University, Jakarta

² Faculty of Medicine, Ciputra University, Surabaya

³ Faculty of Medicine, HKBP Nomensen, Medan

* Corresponding author: ronald.kartika@ukrida.ac.id

Abstract

The most common cause of sarcopenia is a lack of physical activity throughout the day. In addition, there are other possibilities that could cause this loss of muscle mass, namely: Decreased levels of certain hormones related to muscle. University workers who experience retirement often experience sarcopenia, because when they are still active, university workers are less active and have less protein intake. For this reason, it is necessary to pay attention to the activities of university workers while they are still busy and productive at work.

Keywords: sarcopenia, university workers, retirement period

1. Introduction

Sarcopenia is a condition in which the muscle mass and strength is lost with age. This condition often occurs in workers, especially educators who experience the aging process. In normal human physiology, muscle mass

constitutes 60% of body mass, but pathological changes in muscle tissue can significantly impact aging adults (Cruz-Jentoft et al., 2010). Decreased muscle mass does occur in people who are not physically active, especially in obesity. They will lose 3-5% of muscle mass every ten years after the age of 30 years. After passing the age of 30 years, the decline in muscle mass will continue to occur, not only because of the daily lifestyle, but also because of the aging process (Silventoinen et al., 2008).

Lost of muscles mass in the elderly is always accompanied by a decrease in muscle strength and ability to move. This condition will limit the daily activities and decline the quality of life of the elderly. This condition is exacerbated because the muscles have many functions for the body, such as regulating the limb system, providing posture and body shape, helping breathe and pumping blood by the skeletal muscles of the extremities. The condition of decreasing muscle mass will increase at the age of 65-70 years (the total loss of muscle mass is about 14%) and an increase in the age of 80 years and over (more than 50%) (Morley et al., 2001).

College workers, especially educators, usually work standing for hours while teaching, resulting in lack of movement. Factors that accelerate the occurrence of sarcopenia is a lack of exercise in the body's muscles (Kenny et al., 2008).

2. Cause of Sarcopenia

Some of the causes of sarcopenia is a lack of physical activity throughout the day. Many reports describe the most common causes of this loss of muscle mass, including:

- a. Decreased levels of certain hormones related to muscle.

Hormones play a role in muscle mass development and muscle strength regulation. One of the sex hormones that regulate muscle development is testosterone, which plays a central role in increasing muscle mass and activating satellite cells. Growth hormones such as Insulin Growth Factor-1 (IGF-1) affect the increase in sarcopenia. If there is insulin deficiency or insulin resistance, the development of sarcopenia will accelerate (Greising et al., 2009). Myostatin is also a protein that affects sarcopenia, where a decrease in myostatin will cause an increase in muscle mass. Previous studies have shown that antibodies to myostatin have been shown to increase muscle mass (Morley, 2013). Other hormones (such as Estrogen, Dehydroepiandrosterone / DHEA, Ghrelin, Thyroid) only play a minor role in changes in muscle mass and function associated with the aging process (Nass, 2013) (Sattler, 2013).

- b. Low calories and protein consumption each day to maintain muscle mass.

Lack of calorie and nutrient intake, especially protein and amino acids, can also be one of the triggering factors for sarcopenia.

Adequate nutrition plays an important role in forming muscle mass and tissue. However, the difficulty of the elderly is a decrease in eating patterns due to decreased sense of taste and swallowing food due to dental and oral health problems. The combination and comorbidity of these factors will increase the incidence of malnutrition and sarcopenia (Mesquita et al., 2017).

- c. The decline in the ability of the elderly to convert protein into energy.

In the process of sarcopenia, there was a relationship between low protein and muscle mass and strength. Giving protein supplements to the elderly can slow down muscle sarcopenia. However, other studies still doubt supplements' positive effects and functional benefits, because many elderly people with adequate supplementation still experience sarcopenia with unknown causes (McLean et al., 2016).

- d. Decrease of nerve cell

The number of nerve cells that send signals from the brain to the muscles decrease. From a neurological point of view, the loss of muscle strength and muscle strength in the elderly is associated with a decrease in motor units and the level of activation of antagonistic muscles. At the cellular level, aging is associated with a reduction in the conduction velocity of motor axons and the number of myelinated axons (Hickson, 2015). There was also a decrease in the number of reinnervation of motor units

after denervation, with a decline in the number of motor units and specific motor neurons of type II muscle fibers, contributing to the loss of muscle strength. In normal aging, preferential denervation of type II muscle fibers occur. These denervated fibers are then innervated by the axonal buds of slow motor neurons, called motor unit remodeling. However, if denervation exceeds reinnervation, it will result in a large number of denervated fibers will atrophy and degenerate due to loss of trophic factors. This process contributes to the loss of muscle mass at least in part by apoptosis, which is a trigger for muscle loss (Millward, 2014).

e. Body weight that affects the loss of muscle mass.

In developed and developing countries, there are now many parents who are overweight (obese). This loss of muscle mass associated with obesity in the elderly is known as obese sarcopenia. The definition of obesity sarcopenia is a condition of sarcopenia and obesity in the elderly who experience decreased muscle mass and increased fat tissue in the body. Central obesity is associated with increased visceral fat associated with increased secretion of proinflammatory cytokines (CRP, IL-6, TNF α), increased leptin, and inflammation. Low-grade inflammatory mechanisms contribute to the incidence and severity of sarcopenia (Zamboni et al., 2008). Fat accumulation between muscles significantly affects

muscle strength, especially for saturated fat. The accumulation of visceral fat increases the risk of insulin resistance, and will reduce muscle strength and function due to decreased glucose intake from muscles (Dalle et al., 2017). Sarcopenia obesity is defined as the presence of sarcopenia and obesity conditions in a person. But more specifically, this occurs when a person experiences a decrease in muscle mass and an increase in fat tissue in the body (Batsis & Villareal, 2018).

3. Activity in Elderly University Worker

Educator workers with old age are usually accompanied by low movement activity. The elderly must do at least 150 minutes of moderate-intensity aerobic physical exercise throughout the week or perform vigorous-intensity aerobic physical activity of at least 75 minutes throughout the week. This combination is equivalent to moderate and vigorous intensity activity (Nelson et al., 2007).

Physical activity and adequate protein intake can play a role in preventing sarcopenia. Physical activity (PA) has been beneficial for many diseases and health disorders, including sarcopenia. PA has a protective role in the development of sarcopenia in later life (odds ratio [OR] = 0.45; 95% confidence interval [CI] 0.37–0.55). The Positive effect of PA for the prevention of sarcopenia (Steffl et al., 2017). Protein intake plays an important role in synthesizing muscle mass, metabolism, and condition.

Another method to monitor the occurrence of sarcopenia in the elderly is the use of Muscle mass Index, which will affect the prevalence of sarcopenia. The percentage of the size of the value of muscle mass depends on height. Subjects with short height will have a better muscle mass index than tall subjects (Hall et al., 2016).

4. Latest Issue

Life expectancy in Indonesia is increasing until it reaches the age of 70 seen from the number of teaching staff who are still teaching. However, the fitness of the old-age educators is lacking, because of sarcopenia. Sarcopenia will reduce the quality of life of the old-age educators. There are still gaps between the issue and responses (risk of Sarcopenia). The educator at the university sits more for long periods and very rarely do sports activities/stretchers while working.

5. Project/Program Issue

Recently, sarcopenia cases in educators increases and the symptoms of sarcopenia manifest more quickly. It is not known at this time why some older educators experience sarcopenia more quickly, but others manifest more slowly. Our project tries to find out the risk factors for older educators who develop sarcopenia more quickly. A questionnaire to the elderly educators who experience sarcopenia and decreased fitness; what risk factors can accelerate the occurrence of sarcopenia in elderly educators with

a retrospective cohort. It is hoped that by knowing the risk factors for sarcopenia in educators, the progression of sarcopenia can be inhibited.

6. Policy Recommendations

Researchers tried to find risk factors for educators to accelerate the occurrence of sarcopenia in old age. Educators who lack activity with high teaching stress at a young age, will be at risk of sarcopenia in old age. We try to provide recommendations for educators, always carry out activities and increase relaxation exercises to prevent the acceleration of sarcopenia in old age.

7. Conclusion

Sarcopenia is a significant problem in the elderly, because it impact to the quality of life. One of the causes of sarcopenia is a lack of protein intake, obesity, and lack of physical activity. Physical activity is recommended for sarcopenia prevention assistance in university workers while they are still actively working.

References

- Batsis, J. A., & Villareal, D. T. (2018). Sarcopenic Obesity in Older Adults: Aetiology, Epidemiology and Treatment Strategies. *Nature Reviews Endocrinology*, 14(9), 513–537. <https://doi.org/10.1038/s41574-018-0062-9>
- Cruz-Jentoft, A. J., Baeyens, J. P., Bauer, J. M., Boirie, Y., Cederholm, T., Landi, F., Martin, F. C., Michel, J.-P., Rolland, Y., Schneider, S. M., Topinkova, E.,

- Vandewoude, M., & Zamboni, M. (2010). Sarcopenia: European Consensus on Definition and Diagnosis: Report of the European Working Group on Sarcopenia in Older People. *Age and Ageing*, 39(4), 412–423.
<https://doi.org/10.1093/ageing/afq034>
- Dalle, S., Rossmeislova, L., & Koppo, K. (2017). The Role of Inflammation in Age-Related Sarcopenia. *Frontiers in Physiology*, 8.
<https://doi.org/10.3389/fphys.2017.01045>
- Greising, S. M., Baltgalvis, K. A., Lowe, D. A., & Warren, G. L. (2009). Hormone Therapy and Skeletal Muscle Strength: A Meta-Analysis. *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences*, 64A(10), 1071–1081. <https://doi.org/10.1093/gerona/glp082>
- Hall, K. S., Cohen, H. J., Pieper, C. F., Fillenbaum, G. G., Kraus, W. E., Huffman, K. M., Cornish, M. A., Shiloh, A., Flynn, C., Sloane, R., Newby, L. K., & Morey, M. C. (2016). Physical Performance Across the Adult Life Span: Correlates with Age and Physical Activity. *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences*, glw120.
<https://doi.org/10.1093/gerona/glw120>
- Hickson, M. (2015). Nutritional Interventions in Sarcopenia: A Critical Review. *Proceedings of the Nutrition Society*, 74(4), 378–386.
<https://doi.org/10.1017/S0029665115002049>
- Kenny, G. P., Yardley, J. E., Martineau, L., & Jay, O. (2008). Physical Work Capacity in Older Adults: Implications for the Aging Worker. *American Journal of Industrial Medicine*, 51(8), 610–625.
<https://doi.org/10.1002/ajim.20600>

- McLean, R. R., Mangano, K. M., Hannan, M. T., Kiel, D. P., & Sahni, S. (2016). Dietary Protein Intake Is Protective Against Loss of Grip Strength Among Older Adults in the Framingham Offspring Cohort. *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences*, 71(3), 356–361. <https://doi.org/10.1093/gerona/glv184>
- Mesquita, A. F., Silva, E. C. da, Eickemberg, M., Roriz, A. K. C., Barreto-Medeiros, J. M., & Ramos, L. B. (2017). Factors Associated with Sarcopenia in Institutionalized Elderly. *Nutrición Hospitalaria*, 34(2), 345. <https://doi.org/10.20960/nh.427>
- Millward, D. J. (2014). Protein Requirements and Aging. *The American Journal of Clinical Nutrition*, 100(4), 1210–1212. <https://doi.org/10.3945/ajcn.114.089540>
- Morley, J. E. (2013). Scientific Overview of Hormone Treatment Used for Rejuvenation. *Fertility and Sterility*, 99(7), 1807–1813. <https://doi.org/10.1016/j.fertnstert.2013.04.009>
- Morley, J. E., Baumgartner, R. N., Roubenoff, R., Mayer, J., & Nair, K. S. (2001). Sarcopenia. *Journal of Laboratory and Clinical Medicine*, 137(4), 231–243. <https://doi.org/10.1067/mlc.2001.113504>
- Nass, R. (2013). Growth Hormone Axis and Aging. *Endocrinology and Metabolism Clinics of North America*, 42(2), 187–199. <https://doi.org/10.1016/j.ecl.2013.02.001>
- Nelson, M. E., Rejeski, W. J., Blair, S. N., Duncan, P. W., Judge, J. O., King, A. C., Macera, C. A., & Castaneda-Sceppa, C. (2007). Physical Activity and Public Health in Older Adults. *Medicine & Science in Sports & Exercise*, 39(8), 1435–1445. <https://doi.org/10.1249/mss.0b013e3180616aa2>

- Sattler, F. R. (2013). Growth Hormone in the Aging Male. *Best Practice & Research Clinical Endocrinology & Metabolism*, 27(4), 541–555.
<https://doi.org/10.1016/j.beem.2013.05.003>
- Silventoinen, K., Magnusson, P. K. E., Tynelius, P., Kaprio, J., & Rasmussen, F. (2008). Heritability of Body Size and Muscle Strength in Young Adulthood: A Study of One Million Swedish Men. *Genetic Epidemiology*, 32(4), 341–349.
<https://doi.org/10.1002/gepi.20308>
- Steffl, M., Bohannon, R. W., Sontakova, L., Tufano, J. J., Shiells, K., & Holmerova, I. (2017). Relationship Between Sarcopenia and Physical Activity in Older People: A Systematic Review and Meta-analysis. *Clinical Interventions in Aging*, Volume 12, 835–845. <https://doi.org/10.2147/CIA.S132940>
- Zamboni, M., Mazzali, G., Fantin, F., Rossi, A., & di Francesco, V. (2008). Sarcopenic Obesity: A New Category of Obesity in the Elderly. *Nutrition, Metabolism and Cardiovascular Diseases*, 18(5), 388–395.
<https://doi.org/10.1016/j.numecd.2007.10.002>



People with Special Needs

This book is written by each group of participants in the Global Health Advocacy Course. We hope that this book can open up and increase our understanding of global health, with one of the characteristics of this book being inclusive to people with disability.