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## Effect of Poor Nutrition on Patient With Cerebral Palsy

Putu Aryani<sup>1</sup>, I Nengah Gandi Karyadi<sup>2</sup>, Dyah Kanyawati<sup>3</sup>

<sup>1</sup> Department of Public Health and Preventive Medicine; Faculty of Medicine; University of Udayana; Indonesia

<sup>2</sup> Puskesmas Bebandem; Karangasem; Bali; Indonesia

<sup>3</sup> Department of Pediatrics; Faculty of Medicine; Universitas Udayana/Sanglah Hospital Denpasar; Indonesia

Corresponding Author:

Putu Aryani: Department of Public Health and Preventive Medicine; Faculty of Medicine; Universitas Udayana, Jl. P.B. Sudirman, Dangan Puri Klod, Kec. Denpasar Bar., Kota Denpasar, Bali - 80232, Indonesia

E-mail: [aryanicomprev@gmail.com](mailto:aryanicomprev@gmail.com)

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### CASE REPORT

A 3-year-old boy was taken to a health center (Puskesmas) in the Karangasem regency, Bali, by his parents with complaints from the previous two weeks that the child could not sleep well, and grew fussy because of the relapse of seizures. Parents also complained that their child did not want to eat so he was getting thinner. Patient had been recorded since a year before to be suffering from malnutrition associated with the developmental disability, namely cerebral palsy (CP). The patient was diagnosed with CP since birth, when the patient was born with a twin, with very low birth weight (under 2500 grams), but his twin brother died at birth. Since then, the patient has been monitored by the Puskesmas Nutrition Program Holder with weight that never increased.

The patient is the first and only surviving child. The patient's father is 24 years old, only graduated from junior high school and works daily as a laborer with irregular income. Meanwhile, the mother is 21 years old and could not work because she has to look after and care for the patient. In the family of both the father and mother, there was no history of CP, but it was discovered that in the father's family there was mental illness, but it was not clear what kind of mental disorder is meant by the patient's family. From the history, it is known that during pregnancy, the patient's mother first had prenatal exam of the womb for the first time at the age of 6 months of pregnancy, on the grounds that they had not been officially married so that she was embarrassed to have a pregnancy checked by a health worker. Patient's parents were married when the gestational age was approaching 6 months.

Since the family's economic condition is very lacking, the

patient was only given whatever food they had. His parents said it was very rare to buy milk, while breastfeeding while still a baby was not optimal. Often, the patient was only given rice boiled water left over when cooking, in Bali known as "yeh titisan". This water is trusted by old people to be used like healthy food for babies and toddlers.

During a patient visit to the Puskesmas, a thorough physical examination was conducted, in which the body weight was 7.2 kg, height 72 cm (body mass index (BMI) = 16), head circumference 39 cm and upper arm circumference 12 cm. Vital signs such as temperature, pulse, blood pressure were still within normal limits. The respiratory system and other internal organs were within normal limits. Baby teeth have grown quite well. On examination of the extremities, hypotrophy of the muscles was found, both in the upper and lower extremities. Muscle movement was very weak, so the patient has not been able to sit nor stand alone. Every day the patient must be carried like a baby. On nerve examination, weak physiological reflexes were found and pathological reflexes were present. The response to sound was quite good, but the patient has not been able to speak and has not been able to interact normally with people around him. According to his parents, the patient can only respond by crying and laughing.

At the time of the home visit, 3 days after the patient came to the Puskesmas, it was discovered that the patient lived at a home in a rural environment with banana, coffee and coconut gardens around his house. Patient and their parents live in 1 room measuring 3x3 meters with brick walls with a combination of bamboo wall, ceramic floor, and an asbestos roof without a ceiling. Air ventilation and lighting in the room is very lacking because even though

there is a window, it is very rarely opened on the grounds that the dust of the yard enters the room. The mattress that the patient and his family slept on was kapok mattress and looked dirty without bed linen. The house was built on a garden land belonging to the boss of the patient's grandfather. The patient and his parents live in one yard with extended family, with his grandfather, grandmother and also his father's brother.

The family kitchen is still joined by path where it is located separately from the bedroom building. Whereas there are no bathrooms nor toilets, so when taking a bath and defecating, the family relies on public baths which are located quite far from their homes, or use gutters near the garden. The source of clean water comes from the village spring that is stored in the water tower, which is then flowed by pipes for drinking, cooking and other purposes. Around the yard, there are several flower plants, and in one corner of the yard, there is a grandmother's pig cage. In addition, in the yard, there are also several family pet chickens hanging around. In general, it appears that the patient's living environment is not clean, where the yard is in the form of dry land. As a result, during the summer, dust and dirt can easily get into the house.

When asked more about ownership of health insurance, the patient's parents stated that he did not have any insurance. During this time the patient's parents knew that their child should be referred to the hospital to get better care, but due to the absence of medical expenses, transportation and accommodation costs at the hospital, the patient's parents chose to give up trying and only relied on services from the Puskesmas.

There were no further investigations done when the patient came to the Puskesmas or during follow-up.

### **Biological Diagnosis and Psychosocial Diagnosis**

Based on the results of the history and physical examination it can be concluded that the biological diagnosis of patient is toddler with poor nutrition and congenital defects of Cerebral Palsy. Psychologically, patient experiences developmental barriers because he cannot speak and the ability to interact with those around them is still not well developed. Patient's socio-economic life can be said to be very lacking, because their parents do not have a regular income to support their daily family needs, moreover the poor patient does not have health insurance.

### **PROBLEM COMPLEXITY**

Patient has several complex problems related to the health and socio-economic conditions. Patient suffers from congenital defects, namely CP, which is one of the congenital diseases without any cure. CP sufferers are quite often experiencing malnutrition as a result of the failure of organ development. In addition, the family's socio-economic problems also cause the provision of nutrients that are not optimal, which is exacerbated by the inability to access better health services. In addition, the situation in the home environment that allows the patient to experience infections such as respiratory infections, diarrhea, and other infections, further aggravates the patient's health. The level

of education of the patient's parents, especially the father and mother who are low is also one of the factors that play a role in the feasibility of care received by the patient. The level of knowledge of parents is low, causing the patient to only be given food that has very little nutritional value. In addition, parents' knowledge about the availability of free insurance for underprivileged people is still lacking, and so far, the patient has not received proper treatment.

### **DISCUSSION**

Cerebral Palsy (CP) is a major cause of malnutrition in this patient. CP is paralysis, weakness, or lack of muscle control in every movement or even uncontrolled. Brain damage affects the organ systems, especially the muscles so that children have poor coordination, poor balance, abnormal movement patterns or a combination of these characters. According to Dag Moster, CP is the most common cause of physical disability in childhood, with limitations that persist for the entire life. CP is characterized by a disruption of nonprogressive movements and posture, thought to be the result of a deviation from the brain during the development of the fetus or the beginning of a child's life<sup>1</sup>. Over 25% of normal children and 80% of children with developmental disorders reported experiencing difficulties in providing food intake. Disorders of motor neurons in children with CP cause them to have difficulty swallowing food which ultimately causes a state of malnutrition<sup>2</sup>.

To deal with the problems of these patient, doctors, and other health workers on duty at the Puskesmas, as primary service centers have sought to provide comprehensive and holistic services. A comprehensive approach as a characteristic of primary care physician services includes: promotive, preventive, curative and rehabilitative services and even palliative if needed<sup>3</sup>. General doctor and health staff at the Puskesmas try to improve patient management by applying the principles of family medicine and interprofessional collaboration, which include: patient-centered; family focus; and community oriented help<sup>3,4,5,6</sup>.

#### **1. Patient-Centered Care**

Patient management includes promotive-preventive efforts and curative efforts. Promotive-preventive efforts, in this case, are giving explanations to parents of patient regarding nutritional problems, especially related to CP disease, complications and possible deterioration experienced if not handled properly. Parents are also advised to take care of BPJS insurance, whose premiums are paid by the government (as recipients of contribution assistance), so patient can go to the hospital. Promotive efforts are also aimed at extended families of patient when home visits are carried out, where health center officials explain how to maintain environmental cleanliness and its impact on health. Patient's parents are also explained about a healthy lifestyle to prevent transmission of other diseases to patient who have indeed experienced a decline in the immune system due to malnutrition suffered. Patient's parents are advised to open ventilation more frequently, clean rooms and beds regularly, thereby reducing the chance of respiratory infections and transmission of other dangerous diseases such as tuberculosis and mosquito and fly vector-related diseases.

The steps of curative intervention carried out by clinicians and other health workers are:

- Initial treatment for fever and seizures experienced by patient when taken to the Puskesmas with antipyretic and anti-seizure medications.
- Provision of supplementary food in the form of milk packages, biscuits and eggs from the Puskesmas accompanied by an explanation of how to cook the right food for toddlers with CP, which requires foods with a liquid texture, with the aim of improving the nutritional status of patient.

## 2. Family Focus

In dealing with CP cases, the family plays a very important role, especially in treating a CP patient with poor nutritional conditions. The Puskesmas doctor should try to explore the health history of the patient's parents, where there is no specific history of illness related to his child's disability. In addition, diseases were also found in the extended family of the patient, where the grandmother and siblings of the patient's parents experienced mild mental disorders, but the exact mental disorder was not known. History of infectious and degenerative diseases has not been in the patient's family recollection.

Patient's parents, especially the mother, are advised to prepare themselves more if they want to have more children. It is recommended that before planning a pregnancy, the mother should have her health checked and screen for TORCH disease and other infections related to the reproductive tract. Thus, it is expected to prevent the occurrence of disability in babies conceived later. In addition, the mother was also explained the importance of paying attention to nutrition if she wants to prepare for the next pregnancy.

During a home visit, the entire extended family of patient was explained the patient's illness, factors that can affect the deterioration of the patient's nutritional status and suggested preventive measures that can be taken to reduce the possibility of complications of other diseases. The family was given the understanding that the disease suffered by the patient is not contagious so that the whole family can play a role to support the improvement of the patient's condition. The family was also explained how to provide stimulation for the patient's growth and development.

Extended family support is also needed to reduce the psychological burden of parents of patient, especially the biological mother, who daily has to care for their children without being able to do other things. However, the health of the patient is largely determined by the determinants of factors such as family economic conditions, social support from extended families in the form of motivation and reducing the stigma of disability experienced by patient. Based on the determinant theory, toddler health is strongly related to environmental conditions, family life, parental education, and family economic conditions. All economic conditions are less influential on worsening the nutritional status of patient<sup>7</sup>.

## 3. Coordinating-Collaborative

During a home visit, the Puskesmas doctor invited Puskesmas nutrition officers, environmental health officers, and health promotion officers. Each of these staff plays their role in handling this case. Nutrition officers provide intervention by giving PMT and an explanation of how to choose and process food ingredients for the CP patient. Environmental health officers and health promotion provide counseling on how to maintain cleanliness and environmental sanitation to prevent the emergence of various infectious disease agents that can aggravate the condition of the patient and other family members.

In handling this case, the Puskesmas doctor cannot handle the patient alone in primary care considering that there have been various complications due to CP suffered by the patient. In this condition, doctors in primary care services facilitate the patient to obtain services at the secondary level by consulting with pediatricians<sup>5,6</sup>. Based on these principles, Puskesmas doctors have referred the patient to the nearest public hospital. The Puskesmas staff helped prepare the referral letter and explained to the parents of the patient the flow of making the BPJS and Bali Mandara Health Insurance card (JKBM), at which time the local government health insurance program was still valid.

## 4. Community Approach

Efforts can be made to improve the environment around the house by planning to counsel to the surrounding community regarding environmental sanitation. Most of the families around the patient do not have latrines and still keep pets around the yard, so the environment becomes increasingly slum-like. In the Puskesmas, during ANC and Posyandu services, efforts are made to provide counseling to the community of pregnant women to check their pregnancies in accordance with the rules of MCH, so that abnormalities in pregnancy can be identified earlier so that they can be treated promptly and adequately. In addition, mothers of children under five are also given counseling on how to recognize signs of child malnutrition and how to provide appropriate food for toddlers, so that the problem of malnutrition and malnutrition can be minimized in the area of the Puskesmas.

## CONCLUSIONS

The problem of malnutrition that accompanies a disability such as CP is a complex problem and requires comprehensive treatment by applying the principles of family medicine and interprofessional collaboration at the primary service level, especially at the Puskesmas.

Health workers in primary care should have the ability to screen health problems in patients, families, and communities, then provide interventions in accordance with their abilities, authority, and resources. In addition, doctors in primary services are also expected to be able to recognize the limitations they have so that they need to refer patient to higher levels of service such as hospitals and related subspecialties.

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