INVITED COMMENTARY

Institution building and leadership in nutrition in Indonesia up to the 1980s -- A historical note

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A Report on "Indonesian Nutrition Capacity Assessment" for the World Public Health Nutrition Association (WPHNA) stated that "nutrition status in Indonesia has improved markedly the decades leading up to 2000, to the point that UNICEF has concluded that Indonesia is likely to reach the nutrition target in MDG" (1). Articles in other international nutrition journals had similar conclusions. Indonesia was considered to be a success story in nutrition programs in the 1980s (2,3,4,5).

By that time, some publications of the UN Sub-Committee of Nutrition discussed the issues on success in nutrition programming related to nutrition capacity and institution building in developing countries. For instance, in a meeting in Geneva in 1986, Nevin Scrimshaw, the president of the UN University in Tokyo, in a paper entitled 'Infrastructure and institutional building for nutrition,' emphasised the importance of nutrition research and manpower training institutions with competent management and leadership. He gave as examples INCAP (the Institute of Nutrition of Central America and Panama), established in 1946; NIN (the National Institute of Nutrition in India), established around 1910s; and the Institute of Nutrition, Mahidol University, Thailand, established in 1950. These nutrition institutions and others are well developed with well-trained nutrition professionals. Thus, in some developing countries, nutrition started with a strong research institution with leaders and professionals.

This paper will outline the history of the development of nutrition institutions and the leaders who led the nutrition institutions in Indonesia developed in the colonial time and continuing to develop in the independence period since 1945. As an Indonesian who has been living with and for nutrition for more than a half century since 1960, I have witnessed the ups and downs of nutrition programs in Indonesia in the 1980s referred to in the nutrition journals mentioned above.

There have been creative, visionary thinkers doing innovative work for nutrition innovation in Indonesia whom I knew. Steve Jobs stipulated that "Creativity is just connecting things. When you ask creative people how they did something, they feel little guilty because they didn't really do it'. Isaac Newton wrote in 1675, "If I have seen further, it is by standing on the shoulder of giants."

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To my knowledge, there have been three 'giants of nutrition' in Indonesia who have been behind much of the history of nutrition in the country. They are Christiaan Eijkman (1858-1930), Nobel Laurette in 1929, who discovered vitamin B1 in Batavia (now Jakarta); Poerwo Soedarmo (1904-2003), the 'father of nutrition in Indonesia'; and Widjojo Nitisastro (1927-2012), the main architect of the Indonesian economy during the President Soeharto era and the first Minister for National Development Planning (1971-1983), who for the first time explicitly linked the National Food Policy with Nutrition in the Five-Year National Development Plan/REPELITA (1969-1998).

Christiaan Eijkman

According to Mozaffarian et al. (6), modern nutrition science is young. It is less than one century since the first vitamin was isolated 1926 in the Dutch Medical Laboratory in what is now Jakarta. Eijkman was the first director of the Medical Laboratory established in Jakarta in 1888.

The laboratory was the first of its kind in the world. It investigated beriberi, and was successful in discovering the cause. beriberi was rampant in South Asia including Indonesia during the colonial times. There had been rebellion from the indigenous Indonesians against the Dutch in several regions in and outside of Java, one of which was the Aceh War. Quite number of the Dutch soldiers died, not because of the war, but from beriberi. In 1886 an offensive against the Sultanes of Aceh was suspended in response to the alarming increase in cases of beriberi among Dutch soldiers and sailors. When the campaign resumed, beriberi continued to decimate the troops (8). In his Noble Lecture, Eijkman said about the Aceh War, "An army doctor at that time mentions that at his hospital 18 soldiers died of beriberi in one day" (16).

In response to this, in 1886 the colonial government of the Netherlands established a commission to investigate beriberi. It was led by Pekelharing and Winkler, with Eijkman as assistant. Pekelharing was a pathologist, Winkler a neurologist, and Eijkmn a physiologist. They all at one time had met Louis Pasteur and Robert Koch, in Berlin. In 1887, Pekelharing and Winkler were recalled, and the Medical Laboratory was established in 1888 with Eijkman as the Director (16)(17).

Eijkman had difficulty in starting his job at the Laboratory because Pekelharing and Winkler believed that beriberi was due to poisonous rice or a lack of protein and fat in the diet, but these failed to be validated. Only a serendipitous event ended the conflict. Some chickens in the Eijkman laboratory suddenly suffered from polyneuritis, a beriberi-like disease, and died. Other chickens recovered due to accidently being fed with brown rice instead of white rice. This accident convinced Eijkman that there was something in the outer layer of unhusked or brown rice known as the "silver skin" that cured their polyneuritis. Eijkman tried to validate this observation by observing beriberi cases in prisoners who normally had had their rations with white rice replaced with brown rice. Vonderman, a civilian medical inspector for the island of Java, was instructed by Eijkman to record beriberi cases in the prison. From Vonderman's experiment in 101 prisons with almost 300,000 inmates, Eijkman noted that "where polished rice was the staple food, the beriberi cases were 300 times greater than in those where rough unhusked rice was used." Vonderman's remarkable results were received with scepticism and adverse criticism. "And the nutritional experiments on which I had already embarked were discontinued," said Eijkman. He then mentioned that, "New encouragement then came from British India and the Far Eastern Association of Tropical Medicine in Manila stating that sufficient evidence has now been produced

in support of the view that beriberi is associated with the continuous consumption of white-polished rice as the staple diet, and that the Association accordingly desires to bring this matter to the notice of the various governments concerned." Eijkman also mentioned 10 countries in Asia in 1912 that supported the validity of his research (16).

In the Medical Laboratory in Jakarta, Eijkman, later assisted by Grijns, for the first time in 1899 found the nutritional factor involved in the relationship between polyneuritis, beriberi-like in chickens and machine-polished white rice. This finding led to the isolation of crystalline Vitamin B1 in 1926 by Eijkman's successors Grijns, Jansen, Donath, and van Veen that is credited as leading to the development of modern nutrition science (16) (17).

In 1929, Christiaan Eijkman was awarded the Nobel Prize together with Sir Frederick Gowland Hopkins, for Physiology or Medicine. Eijkman discovered vitamin B1 that cured beriberi; Hopkins discovered what he called a growth-stimulating vitamin.

Eijkman died in 1930. To commemorate him, the Medical Laboratory in Jakarta was renamed the Eijkman Institute in 1938. At Indonesian independence in 1945, the Institute was transferred to the Government under the Ministry of Health. In 1960, the Institute was closed. In 1992 President Soeharto revived it as the Eijkman Institute for Molecular Biology, under JB Habibi, the Minister of Research and Technology, with Prof. Sangkot Marzuki, as the first Director (1992-2014). He is a molecular biology scientist and holder of the Country Medal of Honour ("Bintang Mahaputra Utama") from President Soeharto for his academic endeavours to return the Eijkman Institute as a world-class research institute. In 2021, the Eijkman Institute was reorganized under the National Research and Innovation Agency (BRIN) as The Molecular Biology Research Centre (CNN Indonesia). Sangkot Marzuki stated that Eijkman's discovery of vitamin B-1 is, "*a story about how serendipity – observation of beriberi-like signs in chicken, in an experiment to find the disease-causing bacteria -- and the sharp scientific detective mind of Christiaan Eijkman in deducing the association of the pathology with the use of polished rice in feeding, has led to the foundation of the modern science of vitamins. It is a story that brings us to colonial settings of Jakarta at the turn of the 19th century, as the backdrop to the cynical response of its scientific community to what Gerrit Grijns as Eijkman's successor called 'partial hunger' as the cause of the disease. Only 35 years later was he awarded the Nobel Prize awarded to the discovery of Vitamin B1, the first one for any vitamins, in 1929. A story that went in parallel with the development of most distinguished research institute in Indonesia, the Eijkman Institute, that has contributed so much to the science of tropical medicine and nutrition" (9).*

Poerwo Soedarno

This section is mostly excerpted from Poerwo Soedarmo's biography in Indonesian "Gizi dan Saya" [Nutrition and Me] (10), and from the Directorate of Nutrition's "Sejarah Perkembangan Gizi di Indonesia" [History of Nutrition in Indonesia 1951-2018] (11).

Poerwo Soedarmo was a medical doctor graduated from the Dutch Medical School STOVIA in Jakarta in 1927. During the Dutch colonial time and Japanese occupation (1942-45), 'Pak' Poerwo (most Indonesian called him) was employed as a physician in government and private hospitals and as a residential health officer, mostly in West Java. When independence was proclaimed in 1945, he reported to the new Minister of Health, Dr. J. Leimena. He was ready to work for the

country. However, institutionally, the country was not ready. During the transition period (1945-1950), most Indonesian institutions, including the Ministry of Health, had not been functioning.

Pak Poerwo worked as ship's physician for 6 months to the Netherland and then to London in 1949. This was the turning point in his life to the 'world' of nutrition. He learned about the nutrition issues when he accidently read the Colombo Daily Newspaper during his voyage to Amsterdam. He was startled to learn that the developing world, including Indonesia, was starving and malnourished. He was sad reading that the situation in Indonesia was among the worst. (10)

When he arrived in Amsterdam, he met some nutrition experts who used to work at the Eijkman Institute Jakarta until 1945 -- van Veen, Terra, Postma, Jansen, and Groen, the director of a school of dietetics in Amsterdam. They were biochemist, agriculturist, medical doctor, and nutritionist. They had done agricultural and food and nutrition studies in some villages in Central Java when they were at the Eijkman Institute.

Pak Poerwo then visited a Post Graduate Institute in London. He was supposed to study Malaria and Tuberculosis under Prof. Mc Donald. It ended up, however, that he studied more on nutrition at the Nutrition Science Department. In December 1949, pak Poerwo was back to Jakarta and reported to the Minister of Health, Dr. J. Leimena, how serious the nutrition problems were in Indonesia then. The Minister told him that the Eijkman Institute with its Institute of People's Food (known in Dutch as "Het instituut voor Volks Voeding" -- IVV) had been transferred to the Ministry of Health. The Minister assigned Poerwo Soedarmo as the Director of this institute (11).

In 1950 the institute changed into the Indonesian "Lembaga Makanan Rakyat" (LMR). Poerwo Soedarmo was the first Director (1950-1958), with main tasks to develop nutrition institutions for manpower training, food and nutrition research, and nutrition actions including nutrition education. LMR was the first nutrition institution in Indonesia.

Later, Poerwo he had a short training at the Harvard Nutrition Department of the School of Public Health with Prof. Stare, and, in the 1960s, at the Columbia University Institute of Nutrition Sciences New York with Prof. Sebrell (10).

Starting in the 1950s and 1960s, Poerwo Soedarmo accomplished his three missions:

First, he established two nutrition training institutions. The Senior High School for Nutrition Assistance known as SPAG (Sekolah Pembantu Ahli Gizi), and the Bachelor of Science level nutritionist and dietitian training at the Academy of Nutrition well known as "Akademi Gizi" -- AG, both in Jakarta. In the Five-Year Development Plans (REPELITA) 1970s - 1980s with funding from World Bank nutrition projects, the AG and SPAG were expanded from only one each in Jakarta to training institutions in 12 of the 27 provinces. This was the second World Bank loan for nutrition after Brazil in 1976 (4).

If there were about 325 nutritionists in 1973, by the 1980s there were more than one thousand nutritionists in Indonesia in the 12 provinces to back up the community-based nutrition program -- the National Family Nutrition Improvement Program -- well known as the UPGK (2).

As a lecturer, Poerwo also succeeded in introducing nutrition science in the medical school at the University of Indonesia Jakarta. In 1958, a Nutrition Department was established at the Faculty of

Medicine, with pak Poerwo as the head of the Department, the first Nutrition Professor at the University of Indonesia. This was followed by the Bogor Agriculture University (IPB) and Faculty of Public Health, University of Indonesia; some other universities in other provinces also began to offer nutrition courses in their curriculum (10).

Second, with assistance from WHO and FAO consultants, Poerwo established a Food and Nutrition Research Unit by reactivating and updating the old Eijkman laboratory. This in turn was the embryo of a bigger Centre for Research and Development of Food and Nutrition (CRDN) developed and upgraded during REPELITA together with the Food Technology Development Center (FTDC) and the Department of Family Nutrition at the Bogor Agriculture University (IPB) Bogor. All were funded from a similar World Bank nutrition loan as the one that funded the Akademi Gizi. One of the CRDN's outstanding research outputs in the 1980s was the famous Aceh Vitamin A Study in cooperation with John Hopkins University that contributed to the WHO global policy on high-dose vitamin A capsule supplementation (12). The first director of CRDN was the late Prof. Darwin Karyadi who was Pak Poerwo's student at the University of Indonesia. In 2005, he was the second nutritionist after Poerwo Soedarmo to receive the Country Medal of Honour from President Susilo Bambang Yudoyono. He died in 2014 at 80 years of age. The Spirit of Helen Keller Medal was awarded to President Soeharto in 1994 for the success of the Indonesian nutrition program in eradicating blindness due to Vitamin A deficiency.

Third, public nutrition education. In 1950 pak Poerwo created the Indonesian Basic Four Food Guide type poster. Its slogan is well-known up to the present as the *"Empat Sehat Lima Semprna-ESLS"* (Four Food Groups is Healthy and Five, Adding Milk, is Perfect). Despite the new and updated Food Guides 2013, most people, even government officials, still remember Poerwo Soedarmo's ESLS created in 1950. Thus, although there was never any scientific study on the effectiveness of ESLS in changing people's food consumption behaviour, Poerwo's ESLS has remained popular in Indonesia up to the present.

As the LMR Director, he learnt from his predecessors at Eijkman IVV that their studies did not deal only with medical and clinical problems of malnutrition, but also the socio economic and agricultural aspects of the nutrition problems. He was aware that he had to broaden his networking beyond the health sector. Although he was a bureaucrat, he built connections with academicians of various disciplines. One important meeting he attended was the First National Congress of the National Institute of Sciences (LIPI) in Malang, East Java in 1958. As lecturer and director of Akademi Gizi, in his lectures he began summarizing what he learned from this and later meetings, especially on food system issues. From these meetings, he had an opportunity to meet officials from the National Development Planning Ministry (BAPPENAS), and learned from them about food policy. Before he retired, pak Poerwo had an opportunity to be a member of preparatory team for the First National Workshop on Food and Nutrition (WNPG) organized by BAPPENAS, LIPI, and the US National Academic of Sciences in 1968. WNPG was then help each five years from 1968-2006 as a national conference organized by BAPPENAS and LIPI to discuss and conceptualize the integration nutrition into food policy within each REPELITA. The Presidents of Indonesia always gave the opening address at these conferences. For a more complete report of what was accomplished in the development of nutrition institutions during the Pak Poerwo era (1950-1970), see reference (18).

From 1960, pak Poerwo was a full-time Professor at the University of Indonesia, and the Directorate of Nutrition ("Direktorat Gizi" -- ex Lebaga Makanan Rakyat) was under Prof. Drajat Prawiranegara. For his dedication in introducing and pioneering the development of nutrition in Indonesia, the Indonesian Nutrition Association (PERSAGI) awarded him an honour as the "Father of Nutrition of Indonesia." In 1992, President Soeharto awarded him with the Country Medal of Honour ("Bintang Mahaputra"). Pak Poerwo died in 2003 at the age of 99 and was buried at the Jakarta National Hero Cemetery.

Widjojo Nitisastro

Widjojo Nitisastro was an internationally well-known professor of economics, the main architect of the Indonesian economy during the president Soeharto era, and the first Minister BAPPENAS. He, for the first time, explicitly integrated Nutrition into the National Food Policy in REPELITA.

The following information is mostly excerpted from my paper about Widjojo Nitisastro entitled 'Convinced from the Start that National Development is Not Synonymous with Economic Development' in his Testimonial Book (13).

I came to know Prof. Widjojo Nitisastro, known as Pak Widjojo, in 1976 when I was seconded from the Ministry of Health to BAPPENAS from 1976 to 1996. He was the Minister of BAPPENAS, then Coordinating Minister of Economic Affairs (including BAPPENAS). I only had direct interaction with him starting 1988 when I was the Deputy of Social and Cultural Affairs. Prior to that I knew him when I was Bureau of Health's staff under Prof. HAR Tilaar (I called him Pak Tilaar) as the Bureau Chief.

I learned from pak Tilaar that pak Widjojo planned to integrate Nutrition into food policy in the third Five-Year Development Plan known as REPELITA-III (1983-1988). One day, pak Tilaar informed me that pak Widjojo assigned me to write a Policy Paper on Food and Nutrition to be competed with a similar paper being drafted by a formal BAPPENAS committee. In a few days, pak Tilaar told me that my paper was the one accepted by Pak Widjojo. From this time, I had to be involved in the process of finalising the concept I had presented into becoming a draft document on Food Policy and Nutrition in the Third REPELITA (1983-1988).

In 1983, pak Tilaar was promoted to a higher position, and I was assigned to replace him as Bureau Chief of Health with a new name Bureau of Health and Nutrition (1983-1988), and then as the Deputy Minister for Human Development (1988-1996). After we had retired, I was invited by pak Widjojo's staff to write a testimonial for him to be included in a book being prepared by an editorial team called "Testimonial of Friends about Widjojo Nitisastro" in 2007. The following is part of what I wrote (13):

"Until the 1970s, few countries adopted nutrition as part of national development. At that time nutrition was perceived as a small part of the health problem. However, Indonesia managed to adopt nutrition as one of the priority development issues in REPELITA (five-year national development plan) III. In fact, in the budget speech of the President Soeharto, on March 11th 1978, food policy in relation to nutrition improvement was included as part of the chapter on Food and Nutrition Improvement. Of course, this resulted from the guidance and decision-making of Pak Widjojo as the Minister of National Development Planning at that time. In my opinion, his decision

to integrate food policy and nutrition as one issue in the Chapter on Food and Nutrition in REPELITA III was outstanding. This integration of food policy and nutrition into one chapter of REPELITA and into one policy was much needed, because the issue of food policy cannot be separated from nutrition. However, the relationship between the two issues was not well understood by some of the experts in the food sector. As such, in the subsequent REPELITA, various stakeholders always advocated to the successor of Prof.Widjojo to separate food and nutrition. The main reason is that food policy is perceived to be domain of economists, whereas nutrition is *the domain of social non economists, particularly in health. At that time, it was common practice to compartmentalize different sectors and their interpretation into development policies. Based on this experience, I often think that the integration of food and nutrition policies in the same chapter in the subsequent of REPELITA (through REPELITA IV) would be difficult if not founded on the REPELITA III led by Prof.Widjojo."*

The following is Pak Widjojo's view about the intersectoral nature of nutrition program, delivered in the opening of the National Conference of UPGK opened by President Soeharto in 1978 in Jakarta. (13)

Pak Widjojo emphasised that "nutrition *is not the responsibility of a single sector, it involves various sectors, various fields, and therefore requires synchronization in planning, and proper coordination in its implementation'.* Pak Widjojo also stated that managing nutrition programs such as UPGK should follow examples of the other multi-sectoral programs in REPELITA, such as the Mass Guidance and Mass Intensification in Food Production, and Family Planning Program, and Transmigration.

It is interesting to note how Pak Widjojo articulated the role of nutrition in relation to the Three Strategies of Development well known as 'Trilogy of Development' of REPELITA which are: High Economic Growth, Stability, and Equity. In all development aspects the three logically are interrelated, and all are important. Implicitly pak Widjojo comprehended the reciprocity role of nutrition in all economic growth, stability, and equity. In his speech he gave examples of how nutrition programs could create inequity. He criticised the Food Fortification program for that reason.

By the 1970s, salt and wheat flour fortification had been initiated as part of UPGK program assisted by UNICEF. Pak Widjojo well understood that fortification, including salt fortification, is important for people's health. He objected, however, if in its implementation there was a bias toward the rich salt producers. This would create inequity that is against the Trilogy Principles.

The following is an example of Pak Widjojo's quote about the role of nutrition in equity. He used salt iodization program as an example: "*The salt iodization program was started to control goitre. But there has been a problem because there are only two primary salt producers, PN Garam (a state-owned enterprise) and People Salt-Smallholders, a large group of impoverished people. It is true, it might just be simpler and easier to have iodization done by the large state-owned company. What about the salt produced by the smallholders, then? People-Salt producers are already among the poorest of the poor in Indonesia.*"

This criticism was based on an ongoing pilot project on Salt Iodization in East Java in 1970s that ignored poor People-Salt smallholders. Prof. Widjojo Nitisastro died in 2012 at 85 years old and was buried at the Jakarta National Hero cemetery.

DISCUSSION

This paper started with UNICEF statement that nutrition status in Indonesia has improved markedly in the past few decades (1980s). Rohde et al. (2) and Jenning et al. (5) reported the success of the UPGK Community Based Nutrition Program and "Posyandu" (Growth Monitoring-Village Post). They reported the process and outputs of the program such as program components, population served, beneficiaries, and coverage. Rokx (3) and World Bank (4) highlighted more comprehensive issues on institutions, output activities, and on the reduction in the main malnutrition problems. Except for iron deficiency anaemia, the other main problems (vitamin A and iodine deficiencies, and wasted children) were improving. One example of CRDN's outstanding research output was the famous Vitamin A Aceh Study that contributed to the global policy on vitamin A supplementation for under five children that proven to be effective in eradicating blindness due to the vitamin A deficiency. President Soeharto received the Spirit of Helen Keller Medal in 1992 for this. Unfortunately, the CRDN was dissolved in 2010 by the Ministry of Health for administrative reasons.

The development of nutrition institutions has included the establishment, extension, and upgrading of the nutrition manpower training institutions, mainly the Academy of Nutrition ("Akademi Gizi") and CRDN in Bogor. One report indicated that the presence of nutritionists and assistant nutritionists in the pilot project districts of UPGK had been effective. Intersectoral coordination -- Health, Internal Affairs, Agriculture, Social Affairs, Family Planning, Religion, and National and regional Planning Agencies (BAPPENAS and BAPEDA) had been functioning well in UPGK.

On the coordination and synchronisation mechanism among sectors, there was a UPGK strategy worth noting. It was not only by meetings and workshops, but also by in-service and preservice training courses. All program personnel, including the "Bupati" (District Head) and "Camat" (Sub District Head) and "Lurah" (Village Head) went through pre- and in-service training on what Alan Berg (19) called "the what, the why and the HOW" nutrition knowledge of UPGK and POSYANDU. As a team member of UPGK Board, I visited villages in some provinces. On the road entering a village we met the Lurah. I said hello and leisurely stepping away from the car, I asked how was the general health condition was of children in his villages. To our surprise, "pak Lurah" easily mentioned numbers and percentages of children who grew well based on compilation reports from David Morley's Road to Health Card, known in Indonesia as KMS without looking at any notes. In passing some Health Centres and Posyandus in other villages, we saw mock-ups of KMS data on the walls of some Posyandus, with figures and percentages. This was how pak Lurah was able to memorize KMS derived numbers and percentages.

One of the POSYANDU missions is to monitor child growth by monthly weighing by using the KMS. The monthly reports of the weighing were not compiled only for administration statistical purposes, but also for public reports. The yearly record of the village KMS is painted on the wall of the Health Centre. Passers-by would recognize how well their children were. This was to me an effective strategy to motivate Health Centers' and Posyandus' cadres to perform well to the make UPGK program successful. The mock-up KMS was actually one of the central and provincial UPGK Board's policies for Provincial and National competitions for the best performing

Puskesmas and Puskemas' doctors, as well as Posyandus and Posyandu' Cadres. The winners were announced nationally and were received at the Presidential Palace in Jakarta on Independence Day.

It is worth asking if there are nutrition success stories published in the international nutrition literature in the post REPELITA era. I think it is timely to discuss the nutrition challenge reported in the Indonesian Nutrition Capacity Assessment 2018 by Bappenas and UNICEF (20). This report, among others, questions the weakening of nutrition institutions and nutrition leadership post REPELITA. If it is correct, this challenge is contrary to the Government ambition to "Aim High" to combat stunting (3).

What I have learned from the three "giants" in nutrition

This paper does not mean to discuss the details of the Indonesian nutrition success story, but rather to link it with the history of science. In this case nutrition science. As a nutrition lecturer for decades in Indonesia, I realize that history in general is not a popular subject, let alone science history. I do not know how many nutrition lecturers in Indonesia who began their subject with history, such as the origin of nutrition, the history of malnutrition and stunting, the history of the 1000 days of life approach, etc. One should remember what August Compte said, "to understand a science, it is necessary to know its history." Bernard Cohen: "Science thought without history is robbed."

From Eijkman:

First, research is not a "quick yielding" project, as some research funders may expect. Prof. Sangkot: "It took 35 years before the Nobel Prize was awarded for the discovery of Vitamin B1, the first one for any vitamins, in 1929" (9).

Second, research is not always "politics free." The Michigan Journal of History in 2012 published an article entitled "The Rise of beriberi and the fall of Colonialism" by Henry James Hammond (8). About the conflict between Eijkman and the Pekelharing Commission on the causes of beriberi, as reflected in his Nobel Lecture, Hammond wrote that, " *beriberi threatened colonial rule, not only because it crippled colonial military forces, thereby hindering the enforcement of colonial dominance, but also because of the epidemic, which was recognized even then as affecting primarily those integrated into the system, calling into question the belief that colonial rule improved the lives of the colonized. Ironically, the conceit of Western superiority blinded colonial scientists to beriberi's real cause, giving those scientists a false impression of their control over the disease, and prolonging the epidemic until the colonial era had already come to an end."*

Third, Eijkman revealed that Western technology for white machine-polished rice brought a new culture of food habits, with white rice as the preference, even up to the present day. White rice has been an elite rice and thought to be healthy. Only after Eijkman's Noble Prize in 1929 did the "modern" nutrition science begin in the 1930s. People are now aware that white rice is not healthy. But modern technology makes the white rice appear to be more nutritious by fortifying it with vitamins and minerals. For the poor, however, who cannot effort to buy meat, fruits and vegetables, any rice, whatever colour, unless fortified, could cause beriberi or other micronutrient deficiencies, known as hidden hunger.

From Prof. Poerwo Soedarmo and Prof. Widjojo Nitisastro

Neither was highly trained in nutrition, but they both had been leaders who made nutrition programs work, and work successfully in their time (1950-1980). This implies that nutrition programs contributed to the success of "Trylogi," namely High Economic Growth, Equity, and Stability. I witnessed that Pak Widjojo, as the main architect of Indonesian economic development, believed that nutrition should be an integral part of REPELITA. That's why he insisted that Nutrition should be integrated into the Food Policy. In the REPELITA document, it came in a Chapter "Pangan dan Gizi" (Food and Nutrition). I do not know if this policy was a positive political effect of the FAO Resolution from the World Food Conference in 1974: that all governments should *"eliminate within a decade hunger and malnutrition, formulate and integrate concerted food and nutritional plans and policies aiming at the improvement of consumption patterns in their socio-economic and agricultural planning, and for that purpose assess the character, extent and degree of malnutrition in all socio economic groups as well as the preconditions for improving their nutrition status."*

CONCLUSIONS

This article attempts to convey my view about nutrition in Indonesia that it had been inherited, innovated, developed, and expanded as an integral part of national development in REPELITA for almost a half century (1929-1980s) by three "Giants of Nutrition" in Indonesia: Prof. Christian Eijkman, Prof. Poerwo Soedarmo, and Prof. Widjojo Nitisatro.

Nutrition in Indonesia took root almost a century ago when Prof. Christian Eijkman was awarded the Noble Prize in 1929 for his discovery of the first vitamin, B1, in Jakarta. Prof Poerwo Soedarmo succeeded in taking the Institute of People's Food from Eijkman Institute into the Government of Indonesia in 1950. He updated it and expanded it into three major institutions: 1. The Directorate of Nutrition, the health sector nutrition policy institution under the Directorate General of Community Health, Ministry of Health; 2. The Centre for Research and Development for Food and Nutrition, under the National Institute of Health, Ministry of Health (dissolved in 2010); 3. Nutrition manpower training institutions, well known as Akademi Gizi, now expanding with different names. Prof Widjojo Nitisatro initiated and succeeded in integrating nutrition into the food policy within the Five-Year National Development Planning (REPELITA) from 1968-1998. It is believed that this policy resulted in the nutrition betterment of the people, in line with the improving other socio-economic indicators (15).

With this short historical note, I hope that anybody who wants to study or to be involved in nutrition would agree with what Carl Sagan said: "You have to know the past to understand the present," and to Martin Luther King, Jr.: "We are not makers of history. We are made by history" (6)...of nutrition!

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