International Collaborative Activities and Studies at the National Institute of Health and Nutrition

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ABSTRACT

Objective: Mortality from noncommunicable diseases (NCDs) is increasing worldwide as well as in the Asia-Pacific region. To prevent NCDs, international collaborative activities for healthy nutrition and proper physical activities should be prioritized. This review aims to introduce international collaborative activities with Asia-Pacific countries for monitoring and evaluating national and international strategies for NCD prevention in the National Institute of Health and Nutrition (NIHN).

Methods: We reviewed activity reports from international symposia and fellowships conducted from 2004, the data of the WHO Collaborating Centres from 2014, and collaborative studies and other related activities by using internal NIHN records from 2002.

Results: The NIHN has held the Asian Network Symposium on Nutrition every other year nine times and has discussed nutrition challenges in the Asian region with invited experts. To support capacity strengthening in the surveillance of nutrition and physical activity, the NIHN started the Fellowship Program for Asian Researchers in 2004 and has invited 26 researchers from 12 countries. These continuous activities resulted in international collaborative studies with researchers in the Asia-Pacific region.

Conclusion: The international collaboration and networks on nutrition and physical activity resulted in the invitation of competent foreign researchers to the NIHN Fellowship Program for Asian Researchers at the nine-time Asian Network Symposium on Nutrition and given rise to international collaborative studies with countries in the Asia-Pacific region. The NIHN will continue these activities by monitoring and evaluating government policies for healthy food environments in the Asia-Pacific region under the Sustainable Development Goals.

Key words: international network, WHO Collaborating Centres, international symposium, fellowship program

I. Introduction

Noncommunicable diseases (NCDs) affect 41 million deaths each year, which is equivalent to 71% of all deaths globally[3]. The 57th World Health Assembly endorsed the World Health Organization (WHO) Global Strategy on Diet, Physical Activity and Health in 2004[5]. This strategy[5] addressed two of the main risk factors for NCDs, namely, diet and physical activity. According to the 2017 Vital Statistics of Japan, the top three causes of death were NCDs, malignant neoplasms, heart diseases and cerebrovascular diseases[8]. The deaths from malignant neoplasms and heart diseases have been increasing over recent decades[8].

Considering the high rates of deaths from NCDs in a super-aged society in Japan, health promotion via nutrition and physical activity is one of the significant actions that should be given priority for the prevention of NCDs. The National Institutes of Biomedical Innovation, Health and Nutrition, National Institute of Health and Nutrition (NIHN) tabulates and analyzes the annual nationwide National Health and Nutrition Survey (NHNS) and uses the Dietary Reference Intakes for Japanese with evidence from the field of “nutrition and diet” and “physical activity and exercise” to prevent NCDs.

WHO explored a global strategy for proper diet, physical activity and health owing to the rapid increase in NCD-related deaths in 2002[6]. Countries in the Asia-Pacific region were also required to develop this strategy. With the introduction of advanced research experience and skills linked to the NHNS to other countries, actions for
NCD prevention in the Asia-Pacific region would be promoted. To achieve this goal, it was necessary to build a system of mutual cooperation globally to contribute to international health promotion as a principal Japanese research institution in the field of nutrition and physical activity. The NIHN was started as an international center for industry–academia collaboration, which is the present International Center for Nutrition and Information in the NIHN, to encourage international cooperation and exchange in 2002\(^5\). This review aimed to introduce networks on “nutrition and physical activity” and international research cooperation in the NIHN.

II. Methods

We investigated the internal records and documents of the NIHN regarding the Asian Network Symposium on Nutrition\(^6,7\) and the NIHN Fellowship Program for Asian Researchers\(^8–10\) from 2004, which was the year when we started both projects, to 2019. We searched the preceding records with annual progress reports from the WHO Collaborating Centre (WHO-CC) for Nutrition and Physical Activity from 2014, which was the year when the NIHN was designated as the WHO-CC for Nutrition and Physical Activity, to 2019\(^11,12\). We also reviewed international collaborative studies\(^13–15\) and other related activities (i.e., changes in the structure of the organization and name of department) by using the annual records of NIHN from 2002 to 2018\(^16,17\).

III. Results

1. Activities of international collaboration

We present two main activities to encourage international cooperation and exchange in the NIHN.

Asian Network Symposium on Nutrition

The Asian Network Symposium on Nutrition has been held every other year since 2004 to actively contribute to the resolution of health and nutrition challenges in Asia. This symposium has been held in collaboration with the nutrition officer of WHO Regional Office for the Western Pacific (WPRO) under the auspices of the Ministry of Health, Labour and Welfare of Japan, the Japan Dietetics Association and the Japanese Society of Nutrition and Dietetics. The symposium had a key theme and comprised a keynote lecture by a speaker from WPRO, country reports from four to six speakers and a discussion with two to six discussants from countries in the Asia-Pacific region, but the structure of the symposium (i.e., keynote lecture and/or invited discussant) varied according to the situation (Table 1). To deeply understand the theme, the guest speakers and discussants discussed the academically and politically related issues with experts in relevant fields invited from countries in the Asia-Pacific region including Japan. The 7th symposium in 2016 was held in conjunction with the “Informal Consultation on Childhood Obesity Surveillance in the Western Pacific” which was co-organized by WPRO. The 9th symposium, which is the latest, was entitled “Assessment and monitoring of health disparities using national nutrition surveys”\(^8\) to discuss health disparities that were one of the factors crucial to reach the United Nations Sustainable Development Goals\(^18\). According to the keynote lecture, there was a lack of regular monitoring of the target indicators by region, particularly in developing countries, because of the limited resources (fiscal, human and time) and the lack of standardized indicators when the national survey was being conducted. The data gap of the surveillance made it difficult to conduct comparisons with other regions and countries for the precise assessment of the interventions, health programs and policies that should be prioritized by governments. Speakers who remarked on research and country reports using national nutrition surveys from China, Korea, Thailand and Japan indicated the existence of regional disparities on the double burden of malnutrition (DBM). According to the country reports, they found both consistent and different results among countries. The death rates from obesity in Korea and Japan were lower than those in China and Thailand for over a decade\(^19\). In Korea, the prevalence of overweight among men in urban areas with high incomes was higher than that among their counterparts (i.e., in rural and/or with low income). Whereas, women who resided in rural areas and with low income were associated with a higher prevalence of overweight than those who lived in urban areas and with high income. A similar trend was observed in Thailand. These gender differences and geographical disparities in nutritional status might be affected by socioeconomic and cultural backgrounds. Korean and Thai speakers discussed that men with high incomes in urban
## Table 1  List of previous symposia

| No. | Date       | Theme of the symposium                                        | Title of the keynote lecture by speakers from WHO                                                                 | Other speakers/discussants and their countries                                                                 |
|-----|------------|----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| 1st | Jan. 16, 2004 | Optimizing Maternal and Child Nutrition for the Prevention of Chronic Diseases | Emerging non-communicable disease risks and the need for early interventions | 6 speakers from Indonesia, Kazakhstan, Bangladesh, and Japan (2 from NIHN among 3) and 2 discussants from Thailand and India |
| 2nd | Mar. 3, 2006 | Nutrition Reference and Dietary Recommendation in Asian Countries -from nutrition science to policy- | N/A | 6 speakers from the Philippines, Vietnam, Singapore, Korea, and Japan (1 from NIHN among 2) and 10 discussants from WHO, the United States, and Japan (3 from NIHN among 8) |
| 3rd | Mar. 1, 2008 | Nutrition Monitoring and Community Nutrition Program for National Health Promotion in Asian Countries | N/A | 5 speakers from the Philippines, Vietnam, Korea, and Japan (from NIHN) and 6 discussants from WPRO and Japan (2 from NIHN among 5) |
| 4th | Sept. 8, 2010 | Nutrition Education Program for National Health Promotion in Asian Countries: a Focus on School-based Program | N/A | 5 speakers from Korea, Taiwan, Vietnam, Singapore, and Japan (outside NIHN) and 6 discussants from WPRO, India, and Japan (1 from NIHN among 4) |
| 5th | Mar. 9, 2012 | Food Security for Maternal and Child Nutrition in Asian and Pacific Countries | Scaling up nutrition interventions | 4 speakers from Malaysia, Vietnam, Papua New Guinea, and Japan (outside NIHN) and 4 discussants from Bangladesh and Japan (1 from NIHN among 3) |
| 6th | Mar. 12, 2014 | Improvement of Social Environment for Healthy Diet | Action Plan to Reduce the Double Burden in the Western Pacific (2015-2020) – implications for changing social environments | 5 speakers from Malaysia, Vietnam, China, and Japan (none from NIHN among 2) and 4 discussants from WHO, Malaysia, and Japan (1 from NIHN among 2) |
| 7th | Mar. 23, 2016 | Strategies for Obesity Prevention of School Children | Ending Childhood Obesity: What it will take | 6 speakers from Malaysia, Vietnam, Mongolia, the Philippines, Fiji, and Japan (from NIHN) and no discussant |
| 8th | Feb. 21, 2018 | Importance of Maternal and Child Nutrition Strategies towards SDGs in the Western Pacific Region | Regional strategies and action plan for improvement of maternal and child nutrition in the Western Pacific Region | 5 speakers from Malaysia, Hong Kong, Lao, Fiji, and Japan (outside NIHN) and no discussant |
| 9th | Feb. 18, 2020a | Assessment and monitoring of health disparities using national nutrition surveys | Strategy and progress in reducing the double burden of malnutrition in the Western Pacific Region | 5 speakers from China, Korea, Thailand, and Japan (both 2 from NIHN) and 2 discussants from Japan (none from NIHN among 2) |

NIHN: National Institute of Health and Nutrition

*a The symposium was not open to the public, and three speakers from China, Korea, and Thailand participated online owing to the outbreak of the coronavirus disease (COVID-19).
areas might consume their preferred food regardless of price. Women in rural areas might not care about their health control compared to urban women who usually place importance on body shape and beauty. The high prevalence of overweight/obesity among women residing in rural areas might be promoted by urbanization because residents can easily obtain unhealthy but savory food at a cheap price. On the other hand, the Chinese speaker indicated that there exist cultural differences in China between women in urban areas and women in rural areas who have difficulty achieving healthy diets because their social status is the lowest in their families.

NIHN Fellowship Program for Asian Researchers

The aim of the NIHN Fellowship Program for Asian Researchers is to provide technical support for nutrition and physical activity surveillance-related training, capac-

| Fiscal year | Countries | Months |
|-------------|-----------|--------|
| 2004        | Korea     | 3      |
| 2005        | India     | 5      |
|             | Nepal     | 6      |
| 2006        | Mongolia  | 4      |
|             | Turkey    | 3      |
| 2007        | Bangladesh| 3      |
|             | Malaysia  | 4      |
|             | Malaysia  | 3      |
| 2008        | Vietnam   | 5      |
| 2009        | China     | 4      |
|             | Korea     | 6      |
| 2010        | China     | 3      |
|             | Malaysia  | 3      |
| 2011        | Malaysia  | 3      |
| 2012        | Indonesia | 3      |
| 2013        | Malaysia  | 3      |
|             | Vietnam   | 3      |
| 2014        | Malaysia  | 3      |
|             | Mongolia  | 3      |
| 2015        | Vietnam   | 3      |
| 2016        | China     | 3      |
|             | Thailand  | 3      |
| 2017        | Malaysia  | 3      |
|             | Vietnam   | 3      |
| 2018        | Philippines| 3      |
| 2019        | Thailand  | 3      |

The numbers on the map show the number of fellows.
ity-building activities and nutrition research so that a research network with inviting one or two foreign researchers for a period of 6 months or less can be established. Since 2018, when the NIHN was redesignated the WHO-CC, at least one place in the NIHN Fellowship Program for Asian Researchers has been offered annually to member states, as requested by WHO, to strengthen nutrition and physical activity surveillance for researchers. The NIHN invited the first researcher from Korea in 2004 on the fellowship program. Since 2004, the NIHN has invited 26 researchers from 12 countries (Figure 1). The NIHN invited fellows for three to six months in 2004–2009 and for three months from 2010 and arranged this fellowship according to the experience of researchers and what they wanted to study during their stay. The NIHN has appropriate funding for the provision of financial support for collaborative research (within one million yen/research/year). This support is given to researchers who finish this fellowship before one year as a follow-up project. Among the previous fellows, one fellow in the fiscal year 2018 published a research article in cooperation with NIHN researchers on the system of the Philippine National Nutrition Survey and reported the nutritional characteristics of Philippine nationals. Recently, the NIHN invited one Thai fellow from the Institute of Nutrition of Mahidol University in 2019. The fellow investigated the latest good practices on policies related to the food environment in Thailand in accordance with a previous report. Thereafter, the fellow compared the implementation level of policies on the food environment of Thailand with those of Japan using the same evaluation index. The fellow found positive policy interventions for the reduction of salt intake in both Thailand and Japan. Specifically, Thailand set the goal of reducing salt and sodium consumption by 30% from 2016 to 2025. In Japan, a 10-year national health promotion strategy called Health Japan 21 (the second term) set a mean salt intake target of 8 g or below until 2022. However, the fellow reported that this policy system faces challenges in Thailand because the process of developing and implementing policies in Japan, which involves the Health Promotion Act and the Basic Law on Shokuiku, was different from that in Thailand. Finally, the fellow provided other NIHN researchers with a summary of her investigations and had discussions with them. The fellow finally provided her research report to the NIHN.

2. **WHO Collaborating Centre for Nutrition and Physical Activity**

WHO works with WHO-CCs to create a network for developing capacities in research, training and facilitating coordination because it pertains to the needs of developing countries in the implementation of the strategy. Among the six regions, Japan belongs to the Western Pacific region (WPR), and over 30 WHO-CCs are designated for contribution to international health promotion in each field. To date, Japan, New Zealand and Australia have built a WHO-CC on nutrition and/or physical activity in the WPR, and the NIHN in Japan is the only WHO-CC for Nutrition and Physical Activity in East Asia. The International Center for Nutrition and Information in the NIHN plays a key role and aims to contribute internationally in the field of “nutrition and diet” and “physical activity and exercise” by cooperating with the Department of Nutritional Epidemiology and Shokuiku, the Department of Physical Activity Research and the Department of Nutrition and Metabolism. The NIHN has been working on the second term of this unit from March 2018 to achieve the following two activities of terms of references, which are updated every four years.

**Activity 1.** To work with WHO in providing technical support to WPR countries in the implementation of Regional Nutrition and NCDs strategies and action plans as well as the WHO Comprehensive Implementation Plan on Maternal, Infant and Young Child Nutrition, toward global and regional nutrition targets.

**Activity 2.** To support capacity strengthening in nutrition surveillance and physical activity surveillance through the NIHN Fellowship Programme.

The NIHN has contributed to a periodical revision of the Dietary Reference Intakes for Japanese (2005/2010/2015) and is currently working on the 2020 edition by considering the results of the analyses on the NHNS. In addition, the NIHN was involved in the evaluation and revision of Health Japan 21 in 2002 and Health Japan 21 (the second term) in 2013. By using these experiences, the NIHN agreed with WPRO to perform three specific activities. First, the NIHN provides support for developing and strengthening national nutrition surveillance systems in WPR countries in agreement with WPRO. The NIHN shares technical information regarding planning, partici-
pant selection, implementation, data processing and professional advice with countries that are planning to conduct national surveys and surveillance. Second, the NIHN provides support for conducting physical activity surveys by using and adapting the Global Physical Activity Questionnaire (GPAQ) which was developed with special consideration to key physical activity domains in developing countries. The NIHN provides technical support for adapting GPAQ to WPR countries including its translation. Third, the NIHN provides support for adapting and translating WHO guidelines on dietary goals and the WHO Global Action Plan on Physical Activity to facilitate their implementation in WPR countries. By using the experience to contribute to the national guidelines of diet and physical activities, the NIHN works with WHO not only to analyze and interpret the survey results but also to review and improve data collection systems on the nutritional status of nationals of all generations. If requested, the NIHN will support WPR countries in the implementation of regional nutrition and NCD strategies and action plans with consideration to the respective situation in the country. The specific activities of Activity 2 are described in the section on the NIHN Fellowship Program for Asian Researchers. The Asian Network Symposium on Nutrition and the NIHN Fellowship Program for Asian Researchers have been performed under the terms of references of Activities 1 and 2, respectively, since the NIHN was designated as a WHO-CC in 2014. As reported in the 2018~2020 results, the NIHN supported the development of the action framework to protect against the harmful effects of food marketing on children published by WHO, published the English version of Health Japan 21 (the second term), and provided evidence on physical activity. The researchers in the International Center for Nutrition and Information are currently working on a study that assesses Japanese policies on the food environment in collaboration with the International Network for Food and Obesity/NCDs Research, Monitoring and Action Support (INFORMAS). The food environment contributes to dietary habits and behaviors at the community and individual levels. Effective action for a healthy food environment is essential to prevent obesity, diet-related NCDs, frailty for older people and health inequalities according to Health Japan 21 (the second term). Eleven countries across six regions were used to assess the effective policies of the food environment by using the Healthy Food Environment Policy Index which was developed by the international research group to assess the extent of implementation of food environment policies. However, there is a lack of reports from East Asian countries, including Japan, on the comprehensive assessment of food environmental policy. Therefore, the NIHN researchers investigated the implementation level of Japanese policies on the food environment by obtaining ratings from experts who participated in this study. The principal researcher adapted the international protocol to the Japanese context by discussing with relevant researchers from INFORMAS.
IV. Discussion

The international cooperation and networks on nutrition and physical activity encouraged the invitation of 26 researchers on the NIH Fellowship Program for Asian Researchers, the 9th Asian Network Symposium on Nutrition and the collaborative studies with Asian and Pacific countries. These activities were promoted under the terms of references of WHO-CC.

The NIH previously invited speakers from several countries in the Asia-Pacific region, but the invited speakers were still limited because of traffic accessibility and inconvenient dates. The NIH considered the latest global challenges and feasibility when selecting the theme of the symposium. Therefore, the NIH should continue to explore a better style of convening a symposium and invite various speakers in the future. The 9th symposium, which was partly held online, might be a good example of a new style. In the 9th Asian Network Symposium on Nutrition, it was found that the comparison of results of the national survey among the countries was complex because of the possibility of a data gap in both quality and quantity. To deeply understand this data gap, continuous collaborative research is important in the Asian network of nutrition.

To our knowledge, the NIH is the only institution that has conducted a fellowship program that invites Asian researchers from national institutions. The system for inviting fellows has been stable through cooperation with WPRO. A fellow from the Philippines succeeded in publishing a research article owing to her high motivation and continuous support from NIH researchers. By using a follow-up project for invited fellows, it is necessary to build an effective Asian network that enable us to conduct joint research with previous fellows and to invite such fellows to speak at symposia.

The NIH has held the Asian Network Symposium on Nutrition and the NIH Fellowship Program for Asian Researchers as one of the activities of WHO-CC for Nutrition and Physical Activity. Although the NIH has not yet locally performed joint projects with WPR countries using WHO-published guidelines or action plans, some of its contributions to the terms of references include supporting the development of the regional action framework and disseminating the results of NIH works online or at a WPRO-held conference.

According to the results of collaborative studies, the trend in obesity and underweight may be diverse and different depending on the sociocultural situation. Co-researchers who were involved in public health nutrition in their countries clarified the current characteristics of the nutritional status and provided an opportunity to consider the area-specific approach for the prevention of DBM in their own country.

Regarding the future direction of the international collaborative study for assessing Japanese policies on the food environment, the researchers in the NIH hold a workshop in which experts prioritize actions that should be implemented in the future to fill the gaps in implementation according to the rating results. It is expected that the evaluation of food policies in Japan as a developed country with a low prevalence of obesity in East Asia is an important piece of evidence for the implementation of food policies in other countries.

V. Conclusions

The NIH has enhanced international collaborations and networks on nutrition and physical activity for several decades via the NIH Fellowship Program for Asian Researchers, the Asian Network Symposium on Nutrition and international collaborative research with countries in the Asia–Pacific region. The NIH engaged in continued cooperation and encouraged the solid network with WHO, WHO-CCs and research institutions.

Conflict of Interest

There is no conflict of interest.

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国立健康・栄養研究所の国際協力と共同研究

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【目的】非感染性疾患（NCDs）による死亡率は、アジア太平洋地域だけでなく世界で増加している。健康的な栄養と適切な身体活動のための国際協力活動は、NCDs 予防のために非常に重要である。このレビューは、国立健康・栄養研究所（NIHN）で実施した NCDs 予防のための国内外の戦略をモニタリングおよび評価するために、アジア太平洋地域との国際協力活動を紹介することを目的とした。

【方法】レビューには、国際シンポジウムとフェローシップの活動報告（2004年より）、WHO 協力センターの活動報告（2014年より）、共同研究による研究報告、その他に NIHN の内部記録（2002年より）を使用した。

【結果】NIHN は隔年で 9 回にわたりアジア栄養ネットワークシンポジウムを開催し、専門家を招いてアジア地域の栄養問題について討論した。栄養と身体活動に関する調査・観察の強化のために必要な技術支援を行うために、NIHN は2004年にアジア研究者向け招へい事業を開始し、これまで12か国から26名の研究者を招へいした。このような継続的研究から、アジア太平洋地域の研究者との国際的な共同研究に発展した例がみられた。

【結論】栄養と身体活動に関する国際協力とネットワークにより、アジア研究者向け招へい事業への優秀な外国人研究者からの招待や、9 回にわたるアジア栄養ネットワークシンポジウムの開催、およびアジア太平洋諸国との国際共同研究の成果が得られた。持続可能な開発目標の下でアジア太平洋地域の健康的な食環境のための政策をモニタリングおよび評価することにより、今後もこれらの活動を継続していく。

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