

Global Nursing Research Center : Past, Present, and Future

Director,
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Introduction

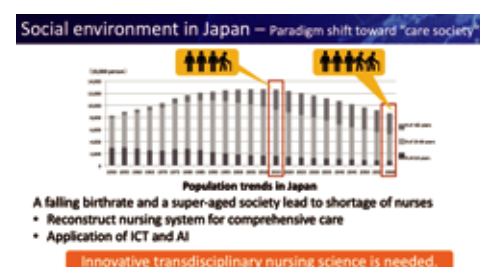
Thank you very much for joining us today! My name is Hiromi Sanada, the director and professor of the Global Nursing Research Center since its establishment back in 2017. I am greatly honored to be here to share our experience at Global Nursing Research Center; our past, present, and future.

First of all, and most important of all, I would like to express my sincere condolences to those who have lost loved ones or whose family members have been affected by COVID-19. I would also like to express my deep gratitude to each one of the frontline healthcare professionals including my nurse colleagues. With your continuous effort and tremendous sacrifice, thousands of patients and families are being benefited and protected. We can never thank you enough.

The Past

First, I'm going to talk about our past and why the global nursing research center was needed. One of the reasons is the change in the Japanese society we have been experiencing. As the number of older people grows, the number of younger people has been decreasing. Japan is facing a paradigm shift towards supportive medical care, or a care society. In 2015, we had one senior citizen for every three adults. However, in 2060 we will have two senior citizens for every three adults, which means supporting the elderly will require a two-fold effort.

In this super-aging society with a falling birthrate, we will experience a shortage of nurses. . Therefore, we need to reconstruct the nursing system towards comprehensive care. For this, we should apply ICT and AI technologies and innovative transdisciplinary nursing science is needed.



Academics in Japan

Looking at nursing academic programs in Japan, there has been a rapid increase in the number of universities which provide both undergraduate and post-graduate nursing programs.

In 2019, there were 272 universities with 180 master courses and 99 doctoral courses in Japan. This dramatic increase means young faculty members are facing a need to engage in more clinical practice training for undergraduates and have less opportunities for conducting research after completing their postgraduate courses.

So, we believed that more research opportunities for young researchers with PhDs were urgently needed.



QS Ranking

I believe that the quality of nursing care in Japan is one of the best in the world, and we should disseminate what we have built to the world. One way to do that is to be recognized in the QS World University Rankings. Let's look at our situation from this global perspective. This shows the QS world university ranking in nursing in 2017. The top university in nursing was The University of Pennsylvania in the US, and The University of Tokyo Nursing was, unfortunately, ranked between 51 and 100.



Ranking indicators include overall score, citations per paper, h-Index citations, academic reputation, and employer reputation. We have much to improve, especially in the quality of our papers. Enhancing this quality is urgently needed in our school and other universities in Japan as well.

Publishing Papers

We all know the importance of disseminating our achievements globally. So, let's look at how we Japanese nursing researchers are doing.

This paper was published in Nurse Education Today in 2016 by previous Prof. Kameoka from Tohoku University on the number of papers written in English by nursing faculty members at national universities which had doctoral programs in Japan.

The figure shows the number of papers from 42 national universities. You can see that there is disparity among the universities. In order to spread the knowledge of our quality Japanese nursing care and system to the world, it is our priority to train young researchers who can actively publish papers in English. Enhancing this potential of young researchers is crucial for activating the research productivity of nursing science as a whole.



The Present

Next, the present. I would like to share how we have been fostering young nurse scientists. Based on the challenges we have been facing recently, we have established the Global Nursing Research Center in 2017 with this vision: “We promote nursing science research through transdisciplinary innovation.”

Our strategies include building-up programs for postdoctoral researchers, inviting young researchers from other universities for training, developing physical research institutions, and inviting active foreign researchers.



Organization

Currently we have one assistant professor and three post-doctoral fellows including two from overseas who are fully involved in this center. We have two divisions: the Division of Care Innovation and the Division of Nursing Systems Development.

In the Division of Care Innovation, we have four departments: Robotics Nursing, Biological Nursing, Visualized Nursing, and Clinical Nursing Technology. The Division of Nursing Systems Development includes the Health Quality and Outcome Research Department and the Care Quality Management Department.

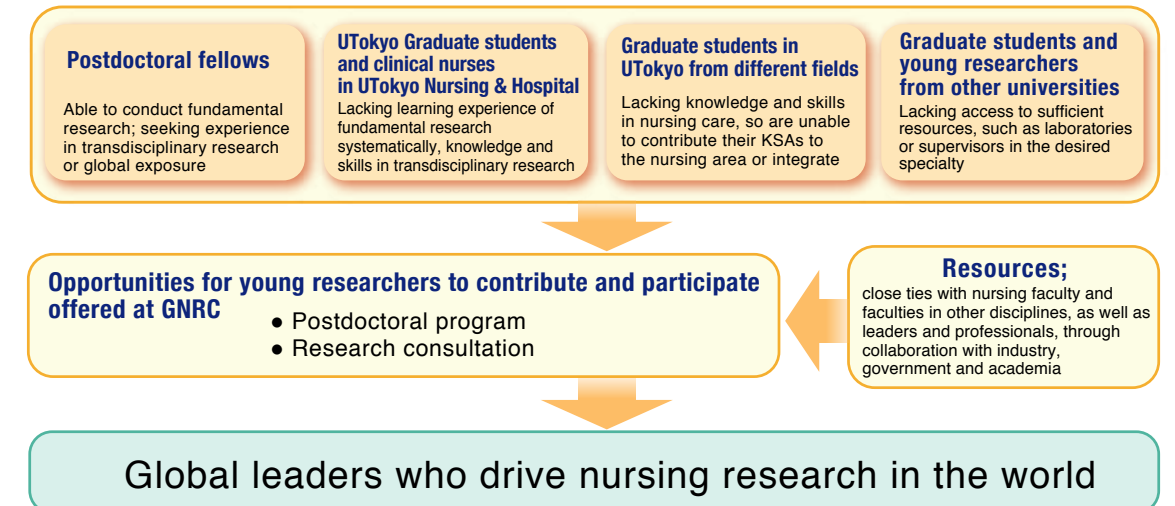


Build-up Programs

We offer building-up programs for not only post-doctoral researchers, but also graduate students in nursing or different fields. We even include students or young faculty members, such as assistant professors, from other universities. We provide seminars for learning transdisciplinary research methodologies, English paper writing, and industry-government-academia collaboration. Of course, we also provide individual in-person research training for each post-doctoral fellow.

This training system is provided by our nursing faculty, researchers from other scientific fields, or personnel from other parties, such as nursing association, government, or industries. By establishing this educational and training program, we have fostered many global leaders who are driving nursing research.

◀ Description of Global Nursing Research Center Activities ▶



◀ Postdoctoral Programs ▶

GNRC provides an environment for postdocs to concentrate on their research and to develop their ability to disseminate the results in scientific papers and international academic conferences globally. Postdoctoral programs, including the following GNRC seminars, are available to help postdocs and young researchers learn research methodologies and acquire leadership and communication skills to lead future nursing research in the world.

Some of the GNRC seminars offered *(open to the public)*:

Leadership in nursing research

Qualitative research methods seminar

Health Quality Outcome Research seminar

Introductory Seminar on Nursing Science and Engineering

How to write a research paper in English

◀ Research consultation for young researchers ▶

Global Nursing Research Center provides the following support for young researchers to assist them with their innovative transdisciplinary nursing research.

Research consultation

Use of laboratories

Skills training

Distinguished Researchers

We have had three distinguished researchers assigned as Project Professors by the University of Tokyo: Prof. Claudia Lai and Prof. Edward Ko Ling Chan from the Hong Kong Polytech. University. Currently, Prof. Ardith Doorenbos from the University of Illinois Chicago has been giving research consultation to our post-doctoral fellows, post-graduate students, and faculty members.

We also asked Dr. Patricia Grady, director emeritus at the National Institute of Nursing Research at National Institute of Health in the United States, to advise us about how we can foster our young nursing research scientists.



International Collaborations

In order to further facilitate English writing, in 2019 and 2020 we invited two distinguished professors: Prof. Weller from the Monash University who gave 'systematic and scoping review' seminars; and Prof. Yeo from the University of North Carolina, Chapel Hill who gave 'logical writing for nursing scientists' seminars. In 2020, we had to change them to online due to the covid-19 pandemic. However, these seminars helped many master and Ph.D. students and post-doctoral fellows to write and submit 12 papers; 4 of which have already been accepted.

Since the beginning, we have invited more than 20 outstanding foreign researchers who are actively engaged in nursing research from across the world. We have had 9 postdoctoral fellows since 2017, including three who are currently working. They have taken various GNRC seminars and have been engaged in significant research activities. Six of them have found their career path as nursing faculty members. They have published 11 original articles and many more are coming.

Seminars

So far, we have offered 29 seminars as part of the post-doctoral training program and many of them are open to the public and to undergraduate and graduate students and post-doctoral fellows from other fields and other universities. In total, over 3,300 participants joined our seminars over the last four years. Furthermore, we have accepted 44 faculty and graduate students from other universities to receive a short-term training to expand our technologies throughout this country.



I will show you two seminars by our faculty in GNRC open to the public. One of them is an introductory seminar on nursing science and engineering. During golden week in May 2020, we held this seminar online for the first time, and 780 people enrolled with an accumulative attendance of as many as 1,763.

Other GNRC seminars, such as the health quality outcome research seminar and the qualitative research methods seminar, are provided to students and researchers from The University of Tokyo and other institutions.

Summer School

Summer school is one of the activities we value. In 2018, we had a summer school for skin integrity, where more than 50 participants from 13 different countries and regions participated. Young researchers actively participated in workshops, presentations, and discussions.

In 2019, we expanded our summer school to undergraduate students in order to give them opportunities to see The University of Tokyo Nursing and to learn our transdisciplinary approach so that they will have the desire to become involved in nursing research. Twenty students participated from 5 countries who were studying at The University of Mahidol, The University of Hong Kong, The University of Pennsylvania, The Chinese University of Hong Kong, and The University of British Columbia.

Each department accepted two or three students, and they all enjoyed the research activity in GNRC. Some of them hope to study nursing science as a post-graduate student in Japan.

Going Abroad

It is important to invite researchers from abroad; however, it is more important for us to go abroad and create new opportunities for collaboration research. Before the establishment of GNRC, our faculty members visited 13 institutions in the US, UK, and Australia to learn how to establish our own research center and how to foster young researchers. They also sought opportunities for international collaboration.

In 2018, we visited four universities in Asia, and in 2019 we went to another five in Australia. We were planning to visit The UK and Sweden in 2020, but we had to cancel due to COVID-19. With these visits, we have been able to build close relationships and strong collaboration with numerous institutions.



Research Environment: New Divisions

In GNRC, a strong research environment has been established for performing transdisciplinary research. We have laboratories for Engineering Nursing, Clinical Nursing, Information Technology, Biological Nursing, and Imaging Nursing. Since these laboratories are on the same floor, collaboration is easy.

We believe that this will create another new field of nursing in the future. Based on these efforts, we have succeeded in the creation of both Care Innovations and Nursing System Development. The Division of Care Innovations has developed a wide range of innovative nursing technologies with a wide variety of researchers from various scientific specialties, including information engineers, molecular biologists, and AI engineers. The innovations include US-guided PIVC insertion, skin blotting, wound blotting, AI-assisted ultrasound observation, and Tele-nursing by avatar robot. You can find out more about this during the lab tour.

The Division of Nursing Systems Development adopts diverse approaches to make meaningful changes. Developing and evaluating intervention programs is one of our major approaches. Our community participation approach could provide insights about our innovative strategies for researchers that will be most feasible and acceptable.

In order to understand or observe phenomena around nursing practice, our study groups develop theories and scales. Big data analysis with automated data collection system is a current project that will improve interaction between the Division of Nursing Systems Department and clinical nursing institutions.



Achievements

Next, I would like to share what we have achieved through our efforts during the past 4 years since the establishment of GNRC. This graph shows our achievements in numbers under 14 key performance indicators: the red bar shows performance goal; the blue bar shows our achievement. We have published 212 original articles in English, and 11 of those articles were contributed by our post-doctoral fellows, which is phenomenal.

You can see that most of the key performance indicators have already been achieved. The five most important KPIs are underlined. Again, there are 212 English original articles, 11 of which were written by our postdocs. We have 15 industry-government-academia joint research projects, 15 international research projects, and 121 grants.

As you can see from these results, GNRC has definitely achieved our goals. We are pleased with these results and have great expectations for our young researchers in the future. We have achieved a lot in terms of transdisciplinary and international collaborations and developing skills in our young researchers. Through our efforts, we have expanded our global network and international collaboration.



We now have MOU and collaborative research with more than 15 countries. We hope to strengthen these links and continue our international collaborative research activities.

Prof. Kamibeppu and I were named a fellow of the American Academy of Nursing in 2019. We are the third and fourth Japanese nursing scientists to be honored. I believe the most important thing is how much you impact the community, society, and the nation through your nursing research and nursing care. We can all cooperate together by believing and trusting the great potential in each other. We are privileged to say that our organization policy has been changed. Until the end of March 2021, our center was a temporary project; however, from the beginning of April 2021, the center was set as a permanent institution which I am very excited about.

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WAGAYA

Next, I would like to discuss where we are headed. Our next challenge is to establish a 'Smart Healthcare Home' project. This project is based on the "WAGAYA" concept. WAGAYA means "my sweet home" in Japanese and stands for Wellbeing, Autonomy, Gathering, Active, Yourself, and Advanced.

This 'Smart Healthcare Home' will implement a personalized care at home while using innovative assistive technology. Our care innovation research based on nursing academia, the smart home-visiting nurses station, the home-visiting nurse, and nursing care big data, will come together to make this smart healthcare home possible.

We will make transdisciplinary innovative nursing research consortium with every stakeholder including local government, industries, and academic parties. Additionally, we will have branch offices in foreign universities to enhance the visibility and globalization of our work. To enable the WAGAYA concept, we will integrate care innovation and nursing systems development through the 'Beyond AI' project. This project is a collaborative partnership between the Softbank Group and The University of Tokyo.



The AI smart nursing system will be developed from the nursing care data platform with sensors for nursing. This will be the foundation for a new artificial intelligence prediction model, which will give AI the best care recommendation. This system can be implemented through smart visiting nursing service. We hope to use the smart AI nursing technology to achieve sustainable development goals and contribute to society. Stay tuned for our next advancements in this area.

The 'Beyond AI Initiative' was established between Dr. Gonokami, the President of The University of Tokyo and Mr. Son, the CEO of the SoftBank group thanks to donations of 200 million US dollars over the course of 10 years from the SoftBank group. The new project named 'Beyond AI' has already begun. Our plan about nursing systems and the WAGAYA project was presented and chosen to be included in the Beyond AI project. We are very thankful for this opportunity and we truly appreciate president Gonokami's support for Nursing.

This project is not going to be a walk in the park. In 2023, The University of Tokyo will rent a part of the Mejirodai campus to the Benesse Corporation to build nursing home facilities and elderly housing. The GNRC lab will be included there, and we plan to implement the smart nursing mentioned earlier.

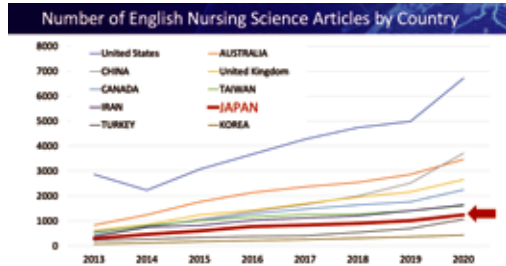


The Future

Finally, I would like to focus on nursing science in Japan in the future. This slide shows the total number of articles in nursing by each of the top 10 countries, which is increasing. Japan is now ranked at 7th.

The total number of original English articles with a Japanese nursing scientist as the first author has been gradually increasing.

Transdisciplinary research and international collaborative research by Japanese Nursing researchers are also growing in recent years.



This is again the QS world university ranking in nursing in 2020. In nursing science, our ranking is still between 51 and 100; being the only one Japanese nursing school. Looking at the sub-scores, citations per paper, and h-index citations, scores were slightly improved; however, we are still globally the middle of the road.



Final Message

Here is what we want to do next. The GNRC can be a model for promoting transdisciplinary research projects and fostering young nurse research scientists. This model can be expanded to other universities in this country.

This would enhance the nation-wide movement for promoting nursing science, which will improve the well-being of our patients and clients, and of course, will continue to grow our international collaboration.

I would like to express my deep appreciation to all those who gave us special support to prepare for this conference. Thank you for your kind attention. I hope you will enjoy the rest of the conference including the virtual lab tour.



References

- 1) Kameoka J, Iwazaki J, Takahashi F, Sato F, Sato K, Taguchi A, et al. Number of papers published in English from the nursing departments of 42 national universities in Japan in the past ten years. Nurse Educ Today. 2016;38:138-43.