

Nursing Research Contributes to Changes in Clinical Practice

Makoto Oe^{1*}

¹*Institute of Medical, Pharmaceutical and Health Sciences, Kanazawa University, Kanazawa, Japan*

*Corresponding author: moe-ky@umin.ac.jp

Received August 27, 2024

Revised August 27, 2024

Accepted August 27, 2024

Available online August 27, 2024

Through my experience visiting Hasanuddin University and touring the hospitals in Makassar, I reconsidered the role of nursing research in developing nursing technology. It will be increasingly important to train professionals to provide quality care, develop new nursing techniques through interdisciplinary study and industry-academia collaboration, and establish evidence regarding insurance reimbursement.

Introduction

During my stay in Makassar, August 13-16, 2024, I had the opportunity to visit Hasanuddin University to discuss our respective research and tour the facilities. In addition, I had the chance to visit the University Hospital, Ministry of Health Hospital, a Private Clinic, and a Public Health Center. Through these experiences, I was impressed to learn of the excellent work being done in Makassar, including the provision of advanced, high-quality nursing care by specialists, the execution of high-quality, clinically-based research, and internationalization efforts in research and education. However, I was impressed by a case in which a patient with edema of the lower extremities could not receive compression therapy due to insurance limitations. The inability to provide the best care due to insurance reimbursement issues is often experienced in Japan. How can we, as nursing researchers, contribute to resolving this clinical dilemma?

Development of Professional Nurses

In nursing science, which is a practical science, it is essential to have personnel who can provide professional, high-quality nursing care. This is also important for nursing research to extract pertinent clinical questions and correctly provide patients with new findings resulting from research. In both Indonesia and Japan, a system of nursing specialists is already in place, and many specialists are active in clinical and research settings.

Development of Nursing Technologies

The solutions to clinical questions often require the development of new nursing technologies. Here, I would like to introduce the concept of bioengineering nursing (Sanada et al., 2014). Clinical questions in clinical practice are first identified by clinical nursing research. Next, the mechanism of a specific question is elucidated by biological nursing research. Then, products and technologies are developed through engineering nursing research, and their effectiveness is evaluated through clinical nursing research. As an example of bioengineering nursing research, a project on lower limb pressure ulcers will be presented. In clinical nursing research, it was found that one of the factors

causing pressure ulcers on the lower limbs of bedridden elderly patients was reduced blood flow (Okuwa et al., 2006). Vibration was focused on as a seed to increase blood flow, and it was confirmed that blood flow was increased by applying vibration to the earlobes of nude mice (Nakagami et al., 2007). Furthermore, animal experiments showed that NO contributes to the increase in blood flow caused by vibration (Ichioka et al., 2011). Based on these mechanistic findings, a vibrator was developed together with a company, and its effectiveness and adverse events were verified in healthy subjects' lower limbs (Urasaki et al., 2007) and then in patients with lower limb pressure ulcers (Arashi et al., 2010). Thus, the development of new nursing technologies requires interdisciplinary research and industry-academia collaboration.

Introduction of Insurance and Evidence

Neither great specialists nor newly developed nursing techniques will solve clinical questions unless they are introduced into clinical practice. One sure way to ensure this is through their inclusion in the insurance system, which must be cost-effective. I would like to introduce an additional reimbursement for the care of patients with high-risk pressure ulcers introduced in Japan in 2006. This reimbursement includes the following requirements: full-time staffed by certified nurses certified by the Japan Nurses Association for Wound, Ostomy and Continence Nursing and patients with high-risk pressure ulcers such as patients in shock; patients with severe peripheral circulatory failure are identified from among all hospitalized patients, appropriate care plans are developed, and a team approach is taken. If the above requirements are met, the hospital can add 5,000 yen/patient.

The prospective study found that the 39 facilities that were covered by this insurance program had statistically significantly lower DESIGN scores than the 20 facilities that were not, meaning that pressure ulcers were less severe and that the cost to reduce DESIGN scores by one point was about half (Sanada et al., 2010). This study will contribute to the recognition of the care provided by specialists, leading to the hiring of specialists, further ensuring that quality care is provided to patients, and reducing the impact on healthcare economics.

Conclusion

My experience in Makassar made me reconsider the role of nursing research in the development of nursing technologies. In Indonesia, the high rate of interruption of visits to private clinics is a challenge, because private clinics are not covered by insurance, and patients generally have to pay high treatment costs. In patients with diabetic foot ulcers, low monthly income is one of the main reasons for discontinuation of visits to private clinics (Supriadi et al., 2023). However, care for diabetic foot ulcers provided by specialists in private clinics is more cost-effective than care provided by general nurses in public hospitals (Jais et al., 2024). In both Indonesia and Japan, it is hoped that such evidence will be reflected in insurance reimbursement and that care will be not only based on patient needs but also cost-effective.

Conflict of interest

The author declares no conflicts of interest associated with this manuscript.

Acknowledgment

I would like to express my sincere gratitude to Dr. Saldy Yusuf, the chief editor of the Indonesian Contemporary Nursing Journal and lecturer at Hasanuddin University, and

to everyone involved for the opportunity to stay in Makassar and to write this perspective article.

Reference

- Arashi M., Sugama J., Sanada H., Konya C., Okuwa M., Nakagami G., Inoue A., & Tabata K. (2010). Vibration therapy accelerates the healing of Stage I pressure ulcers in older adult patients. *Advances in Skin and Wound Care*, 23(7), 321-327. <https://doi.org/10.1097/01.ASW.0000383752.39220.fb>.
- Ichioka S., Yokogawa H., Nakagami G., Sekiya N., & Sanada H. (2011). In vivo analysis of skin microcirculation and the role of nitric oxide during vibration. *Ostomy Wound Management*. 57(9), 40-47.
- Jais S., Oe M., Sanada H., Sasongko A., & Haryanto H. (2024). Evaluating the cost-effectiveness of diabetic foot ulcer management by wound care specialists in Indonesia. *Wound Repair and Regeneration*, 32(1), 80-89. <https://doi.org/10.1111/wrr.13147>.
- Nakagami G., Sanada H., Matsui N., Kitagawa A., Yokogawa H., Sekiya N., Ichioka S., Sugama J., & Shibata M. (2007). Effect of vibration on skin blood flow in an in vivo microcirculatory model. *BioScience Trends*, 1(3), 161-166.
- Okuwa M., Sanada H., Sugama J., Inagaki M., Konya C., Kitagawa A., & Tabata K. (2006). A prospective cohort study of lower-extremity pressure ulcer risk among bedfast older adults. *Advances in Skin and Wound Care*, 19(7):391-397. <https://doi.org/10.1097/00129334-200609000-00017>.
- Sanada H., Nakagami G., Mizokami M., Minami Y., Yamamoto A., Oe M., Kaitani T., & Iizaka S. (2010). Evaluating the effect of the new incentive system for high-risk pressure ulcer patients on wound healing and cost-effectiveness: a cohort study. *The International Journal of Nursing Studies*, 47(3), 279-286. <https://doi.org/10.1016/j.ijnurstu.2009.08.001>.
- Sanada H., & Mori T. (2014). *Bioengineering Nursing: New Horizons of Nursing research*. Nova Science Publishers, Inc. New York
- Supriadi, Suriadi, Okuwa M., Sanada H., Sugama J., & Oe M. (2023). Factors associated with the discontinuation of wound care specialist clinic visits in patients with diabetic foot ulcers. *Journal of Japanese Society Wound, Ostomy, and Continence Management*, 26(4), 335-346.
- Urasaki M., Sanada H., Tadaka E., Kitagawa A., Nakagami G., Hirota A., & Sugama J. (2007). Evaluation of the effect of vibration on blood flow in the calcaneal region. *Japanese Journal of Pressure Ulcers*. 9(2), 192-198. In Japanese