Letter to the Editor



# Addressing nursing shortages in Japan: toward quality and quantity enhancement

**Yudai Kaneda[1]^, Akimi Yamashiro[2]**

[1]School of Medicine, Hokkaido University, Sapporo, Japan; [2]Department of Nutrition Science, Shokei Gakuin University, Natori, Japan
*Correspondence to:* Yudai Kaneda. School of Medicine, Hokkaido University, Kita-ku, Kita15, Nishi7, Sapporo 0608638, Japan.
Email: nature271828@gmail.com.

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In recent years, the importance of securing healthcare workers other than physicians has been highlighted as the shortage of healthcare workers contributes to high patient mortality rates (1). Especially, the nursing shortage in Japan's medical sector has become increasingly severe, driven by factors such as the progression of a declining birthrate and aging population, as well as burnout among healthcare workers due to the coronavirus disease 2019 (COVID-19). In fact, the average nurse-to-bed ratio in Japan was 0.52 in 2017, significantly below the world average of 1.39, and the Ministry of Health, Labor, and Welfare (MHLW) has warned that there could be a shortage of 60,000 to 270,000 nurses by 2025 (2). Although the turnover rate is not exceedingly high compared to other professions, at around 10% for newly graduated nurses and approximately 15% for experienced ones, the nursing workforce in Japan is overwhelmingly female, accounting for more than 90%, and many struggle to balance a demanding work schedule, which often includes night shifts, with lifestyle changes such as marriage and childbirth (2). In addition, nurses working on the frontline often face psychological barriers to taking time off due to the nature of their work, which is closely tied to daily life. This can lead to reduced direct engagement with patients, a loss of motivation to continue nursing, and a failure to engage in self-care, resulting in a nursing shortage.

In response to this issue, the Japanese government has implemented various measures to address the shortage of nurses. For instance, the MHLW has increased financial support for nurse dispatching. Specifically, in the 2006 medical fee revision, a '7 to 1 inpatient basic fee' was introduced, providing supplementary medical fees to hospitals that allocate at least one nurse to seven inpatients (2). However, considering previous research suggests that ideally, one nurse should be assigned to every four patients and that a shortage of nurses increases the likelihood of medical errors (3), the response of the MHLW may not be sufficient. Furthermore, as part of the current work style reform, the government is focusing on improving the working conditions of nurses, which emphasizes providing work-life balance and opportunities for career advancement (2). This also includes reviewing shift systems, enhancing childcare support, and fostering a culture that aids in returning to work post-maternity leave, thereby working to improve the nursing work environment (2). While such work style reforms are significant, the urgent task for Japan lies in exploring fundamental solutions that strengthen both the quantity and quality of nurses.

Firstly, an urgent measure to mitigate the shortage of nurses is to resolve the uneven distribution of nurses. This variation is evident in the 2020 statistics, where the number of working nurses per 100,000 people varies widely across prefectures. Kochi Prefecture has the highest ratio, with 1,623.4 nurses, followed by Kagoshima and Saga prefectures, with over 1,400 (2). In contrast, Saitama Prefecture has the lowest with 736.9, with Chiba and Kanagawa prefectures also in the 700s (2), demonstrating a more than twofold difference. A report suggests that many nurses prefer to work in their hometowns (4), making attracting nurses from other regions challenging. Indeed,

^ ORCID: 0000-0001-8302-9439.

previous efforts, such as those in Iwate Prefecture, aimed to recruit nurses from other areas but its effectiveness has not been well reported. Therefore, a potential solution may be to prioritize the establishment of nursing departments, particularly in areas where the shortage of nurses is most severe. Although some difficulties exist in terms of securing faculty, the university's nursing faculty is not currently under capacity, so it is necessary to discuss ways to create a locally-based environment for training nurses.

Moreover, it is worth noting that the shortage of nurses is particularly pronounced in urban areas. In these areas, the number of hospital beds is high, increasing the need for more nurses. Given the higher population of foreign residents in these areas, recruiting foreign personnel may be a potential solution. As of the beginning of 2023, about 500 foreign and licensed practical nurses are working in medical institutions across Japan. There are methods to support foreign nationals working as nursing assistants, including obtaining qualifications in Japan, taking the national nursing certification examination, acquiring the specified skill care worker visa, passing the Japanese Language Proficiency Test N4 or above, and the 'Care Skill Evaluation Test'. Indeed, the introduction of medical translation services like mediPhone has lowered communication barriers between healthcare providers in Japan and their foreign patients. However, having healthcare personnel available to consult in their native language still contributes to patient comfort and safety. Therefore, considering the expected increase in immigrants in Japan, cultivating a culture conducive to the active participation of foreign personnel, with a focus on nurturing diverse talent, would be a practical approach.

Focusing on qualitative issues related to nursing education and practice is also crucial. There is evidence that in surgical and emergency wards, a 10% increase in the number of nurses with a bachelor's degree results in a 5% reduction in patient mortality rates (5). This suggests that the level of education has a more substantial influence on medical safety than the number of years of experience as a nurse. While the number of universities with nursing departments has increased, only around 30% of Japanese nurses hold a bachelor's degree (2). Thus, enhancing educational programs to increase this percentage, such as implementing a system similar to the Nurse Practitioner (NP) program in the United States, could potentially lower patient mortality rates and contribute to long-term improvements in medical outcomes. Since 2011, the NP Graduate Council in Japan has been conducting NP certification examinations, establishing a framework for providing equitable and timely healthcare by expanding the scope of discretion in tasks. However, discussions concerning legislation and similar issues remain insufficient. In fact, with nurses' authority remaining limited, patients' conditions deteriorate in the form of medication errors and delays in initiating treatment due to a lack of timely instructions from physicians (3). In particular, establishing systems that allow for uninterrupted learning throughout their career can also contribute to the prevention of nurses leaving their profession. As the aging society advances and the demand for home healthcare increases, the NP system should be regarded as a promising pathway for future growth in nursing.

Considering the factors mentioned above, Japan's nursing shortage and uneven distribution may be addressed innovatively through the integration of artificial intelligence (AI) technology like ChatGPT. Indeed, our previous research has elucidated that ChatGPT exhibits sufficient performance, surpassing the passing score in the Japanese national nursing examination (6). By leveraging ChatGPT's individualized and instantaneous response capabilities, it offers personalized care support, real-time assistance with medical administrative tasks, and educational tools for the development of nursing staff. Furthermore, ChatGPT's faculty for understanding and translating multiple languages can mitigate communication barriers within medical institutions, thereby affording foreign nurses immediate support in comprehending and engaging with Japanese-speaking patients and peers. Such technology aligns with existing measures to enhance the quality and quantity of nursing care and its versatility in addressing various facets of the nursing crisis holds potential for leading to a more resilient healthcare system for all citizens of Japan. Therefore, the urgent need to discuss how to implement ChatGPT technology in the nursing field, with an understanding of its risk of generating erroneous information and recognizing its limitations (7), is an essential theme that transcends domestic and international boundaries, particularly in medical settings demanding operational efficiency, requiring the prompt establishment of clear guidelines (8).

In conclusion, addressing Japan's nursing shortage requires a comprehensive approach, encompassing both immediate efforts and long-term strategies. Enhancing social awareness of the crisis and expanding governmental support for life events like marriage and pregnancy can promote sustainable working conditions for nurses. Simultaneously, we must consider the use of innovative

solutions like AI integration through ChatGPT not only to enhance individualized care and real-time support but also to foster global collaboration, enriching both the quality and quantity of nurses. Given that the shortage of medical personnel in Japan is not limited to physicians and nurses, it is important to broaden these discussions to other paramedical contexts and establish a reliable healthcare system for all Japanese citizens.

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