



The Growing Problem of Radiologist Shortage: Vietnam's Perspectives

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Workforce challenges are becoming more prevalent across all sectors, including the medical field, particularly during the COVID-19 pandemic. There is a convergence of factors, including an increasing demand for imaging studies and COVID-related burnout. Radiology has trouble maintaining workforce at current levels and attracting new talent because of a lack of qualified candidates in a variety of professions and modalities.

According to new data published by the Association of American Medical Colleges, the United States could see an estimated shortage of between 54100 and 139000 physicians, including shortfalls in both primary and specialty care, by 2033 [1]. In the UK, this situation is equally tight. Only 2% of radiology departments fulfill their imaging reporting requirements within the contracted hours [2]. The demand for diagnostic activity is rising by over 5% annually and by approximately 4% for interventional radiology (IR) services. By 2027, an additional 3365 clinical radiologists will be required to meet the demand for services [3].

In Vietnam, the radiology society faces the same problem. Every year, approximately 1500–2000 radiologists are trained in this field. Table 1 lists the number of radiologists trained annually at the top nine Vietnamese medical universities.

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In 2022–2023, we will have 1708 trainees, of which 1140 will be junior radiologists, including basic radiology and residents. Similar to other Asian countries, the number of radiologists in the workforce is not growing as rapidly as the population and demand for imaging examinations. There are several reasons for this shortage of radiologists in Vietnam.

First, the average salary of doctors in public areas is much lower than doctors in other countries. In Hanoi and Ho Chi Minh City, the two largest cities in Vietnam, the average salary of a radiologist is approximately 500–800 USD per month [4,5], which is insufficient for their families. Doctors must work overtime or do additional work to earn a second income. Doctors who work in private hospitals or clinics earn higher incomes. Thus, the number of doctors moving from public to private hospitals has increased. Along with the development of the Vietnamese economy, the increasing number of private hospitals has greatly affected the workforce. According to data from the General Statistics Office, in 2019, Vietnam had 96229 doctors, including 74347 state physicians and 21882 private doctors [6]. In 2022, thousands of radiologists moved from public to private hospitals [7].

Second, the requirement for intense development necessitates hiring additional radiologists with specialized training in the following areas: IR, neurology, thoracic, cardiology, gastrointestinal, urological, musculoskeletal, and breast cancer. However, because more time and money are required to acquire specialized expertise, most radiologists still practice as general radiologists and lack a sufficient depth of understanding in any major discipline. As a result, the supply of radiologists in specialized domains is limited.

Third, several specialized radiology, such as IR, musculoskeletal ultrasonography, and cardiology, frequently involve clinical physicians. This trend can be explained by the fact that the patients were initially examined and then

Table 1. The number of radiologists trained at the top nine Vietnamese medical universities in 2022–2023

| University | Basic radiology | Radiology specialist (Level I) | Radiology specialist (Level II) | Master radiologist | Radiology residents | City |
|---|-----------------|--------------------------------|---------------------------------|--------------------|---------------------|-------------|
| Hanoi Medical University | 200 | 95 | 11 | 20 | 30 | Ha Noi |
| Haiphong University of Medicine and Pharmacy | 62 | 34 | 0 | 0 | 0 | Hai Phong |
| Thai Nguyen University of Medicine and Pharmacy | 60 | 34 | 0 | 0 | 6 | Thai Nguyen |
| Thai Binh University of Medicine and Pharmacy | 50 | 0 | 0 | 0 | 0 | Thai Binh |
| Ho Chi Minh University of Medicine and Pharmacy | 190 | 60 | 5 | 10 | 15 | Ho Chi Minh |
| Hue University of Medicine and Pharmacy | 150 | 33 | 6 | 17 | 14 | Hue |
| Pham Ngoc Thach University of Medicine | 180 | 76 | 29 | 2 | 14 | Ho Chi Minh |
| Can Tho University of Medicine and Pharmacy | 150 | 96 | 5 | 0 | 10 | Can Tho |
| Vietnam Military Medical University | 0 | 15 | 5 | 15 | 9 | Ha Noi |
| Total (n = 1708) | 1042 | 443 | 61 | 64 | 98 | |

admitted to the hospital for follow-up in clinical units. Clinical doctors learn more about radiology related to their specialty and can examine their patients without needing radiologists. Thus, radiologists do not get the opportunity to learn about these diseases and are unable to advance their skills.

Additionally, certain medical words, such as those used in cardiovascular imaging, musculoskeletal system, and otorhinolaryngology, are exceedingly challenging for radiologists to comprehend and make proper diagnoses. It takes years to acquire this information completely; thus, radiologists require extensive training and subsequent studies in these domains.

Fourth, IR now covers a wide range of procedures and is rapidly increasing across boards in the healthcare system. Since IR procedures are more affordable, less invasive, and can be performed outside the hospital, physicians and patients employ them more frequently. Consequently, the need for interventional radiologists has increased significantly.

However, interventional radiologists face significant pressure and challenges when completing their tasks. For example, intervention radiologists must spend long hours treating emergencies, such as acute ischemic stroke and hemorrhage. To be a professional in this sector, radiologists must also have high abilities and knowledge, which means that learning and practice take much time. In addition, interventional radiologists might experience negative consequences on their personal lives and health because of high radiation exposure. Therefore, IR studies among physicians are lacking. We regret seeing highly qualified interventional radiologists being transferred to other clinical specialties.

Fifth, the highest number of radiologists may have been found in large cities. Statistics from 2018 show an average of one doctor per 1000 people in Vietnam, indicating hospital overload and enormous pressure on the medical system [8].

Additionally, the distribution of this human resource across regions is uneven, contributing to a growing divide in the standards of medical examination and care between rural and urban areas, particularly in remote locations where there are few radiologists. In terms of physicians per 10000 people, Ho Chi Minh City has 13.1, and Hanoi has 10.9. In rural areas (such as Quang Nam, Khanh Hoa, Kien Giang), there are less than three doctors for every ten thousand people [8]. Attracting radiologists to practice in remote areas is challenging because of their lower salaries, greater isolation, and fewer professional opportunities.

We are working on projects in Vietnam to regulate medical practices and create associated regulations and standards to attract more radiologists to rural areas. By reading imaging examinations from larger places with higher demand, teleradiology may be an efficient option and a method to augment income. Some strategies have been used to draw in and retain radiology trainees, such as inviting them to attend an annual congress with free registration, raising awareness about the specialty, improving income at public hospitals, and creating a better workplace environment. Moreover, artificial intelligence in collaboration with radiologists will become a solution to meet the increasing demand for imaging examinations.

Conflicts of Interest

The authors have no potential conflicts of interest to disclose.

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