Commentary

The first national anesthesia workforce survey to inform future policymaking in China

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A lack of trained anesthesia professionals is one of the most important barriers to essential anesthesia care. The shortage of anesthesia workforce can also lead to staff burnout, which has been a widely studied factor linked to poorer quality of life for anesthesia professionals and reduced quality of care for patients [1]. Healthcare professionals workforce survey and analysis is one of the most important pieces of evidence to inform policymakers on workforce trends and related issues. In *The Lancet Regional Health-Western Pacific*, Dr. Mi and colleagues performed the first nationwide anesthesia workforce survey in 31 provinces across the mainland of China [2]. The survey findings provide policymakers with important empirical data and insights for evidence-informed policymaking.

The study indicated a steady increase in the number of anesthesiologists in the Chinese mainland [2]. However, there is still a significant shortage of anesthesiologists, especially compared with the dramatic increases in the number of anesthesia cases inside or outside operating rooms. Numerous indicators identified in the survey showed the warning signs alerting high risks of staff burnout [2], such as the low ratio of number of anesthesiologists to number of operating rooms (1:1.28), low ratio of number of anesthesiologists to number of surgeons (1:5.03), and high annual average workload per anesthesiologist (496.83 anesthesia cases).

The Lancet Commission on Global Surgery (LCoGS) and World Health Organization-World Federation of Societies of Anesthesiologists (WHO-WFSA) highly recommended all countries achieve a specialist surgical workforce (anesthesiologists, surgeons, obstetricians) of at least 20 per 100,000 population by 2030 [3, 4]. Although the LCoGS and WHO-WFSA did not specify the proportions of anesthesiologists, surgeons, and obstetricians, at least ten anesthesiologists per 100,000 population are necessary to match the combined number of surgical providers (surgeons and obstetricians) and provide essential and safe anesthesia care to patients [5]. Based on the number of anesthesiologists per 100,000 population (6.7) indicated in the current study [2], we need to train and recruit additional 50,000 anesthesiologists approximately to reach the goal of the LCoGS and WHO-WFSA by 2030. However, the actual deficit is probably larger than this estimated number, due to the retirement of currently practicing anesthesiologists (i.e., 28.36% over 50 years old) [2], burnout and low satisfaction with anesthesiologists leaving their job [6], significant growth in number of anesthesia cases, and increased standards and expectations of anesthesia care. Moreover, the discipline of anaesthesiology in China has entered a rapid development phase, however, the proportion of independent anaesthesiology departments was less than 50% in mainland China hospitals [2]. These issues suggest that more experienced anesthesiologists are needed in Chinese mainland.

Disparities in number of anesthesiologists per 100,000 population existed across the provinces in the Chinese mainland. The authors also found that the above indicator was closely related to the regional GDP per capita. This result was in accordance with the findings of the WFSA global anesthesia workforce survey [5]. However, the authors identified another workforce distribution, which has not been discussed fully. In a higher tier of hospital with more bed capacity and more resources, the ratios of number of anesthesiologists to number of operating rooms and number of anesthesiologists to number of surgeons were both lower, and annual average workload per anesthesiologist was higher [2]. Further studies are warranted to explore the reasons and potential strategies, as Tier 3 hospitals are commonly the hospitals providing most of the complex surgical care. A sufficient anesthesia workforce is highly recommended to ensure the safety and high quality of anesthesia care.

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In addition to the quantity of anesthesiologists, the authors had concerns about the educational levels of anesthesiologists in the Chinese mainland [2]. The WHO-WFSA strongly recommended the anesthesia provider should have formal training in a nationally accredited postgraduate education program [4]. However, the current study identified the majority of anesthesiologists (79.54%) not having postgraduate educational level (i.e., Doctoral degree and Master degree). This phenomenon might be due to the varied training pathways of anesthesiologists across different regions and the historical development of anesthesiology in the Chinese mainland [7]. But more importantly, sufficient resources (e.g., time, facilities, financial support) need to be available for professional training, both initial and continuing, to ensure the standard of knowledge, skills, and expertise.

Nurses play an important role in patient safety and makeup nearly half of the global health workforce, with approximately 20 million nurses worldwide. The authors recognized a significant increase in the number of anesthesia nurses in the Chinese mainland, which has tripled from 9147 in 2015 to 28,200 in 2018 [2]. The professional training of anesthesia nurses has also been advanced significantly. Since the establishment of the first Chinese anesthesia nurse education program based on the International Federation of Nurse Anesthetists Standards of Education, more nurse anesthesia education programs in China have started to adopt IFNA Standards of Education and obtained recognition from the IFNA [8]. A recently published study found the introduction of anesthesia nurses under the indirect supervision of anesthesiologists in anesthesia care did not decrease patient safety and quality of care but can prevent prolonged stay in the post-anesthesia care unit and peri-anesthesia hypothermia [9]. Thus, it is crucial to unleashing the full potential of nursing in the field of nursing.

Anesthesia workforce report contributes valuable information for policymaking on workforce planning. However, the development of policies or strategies needs also to be informed based on the influencing contextual factors. Context has been defined as a set of characteristics and circumstances that consist of active and unique factors surrounding the implementation effort. Numerous studies have illustrated that the identification of contextual factors can significantly increase the likelihood of implementing complex interventions successfully [10]. Thus, future research can use mixed methods study design and include various stakeholders to understand the interconnected contextual factors, which interact, modify, and influence the development of anesthesia workforce.

In summary, Dr. Mi and colleagues contribute important updated information on the anesthesia workforce in the Chinese mainland. The findings can not only serve as a benchmark for evaluating anesthesia workforce development trends but also inform future policymaking in China.

Declaration of Competing Interest

The authors have no conflicts of interest to report with regard to this commentary.

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