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# Geographical distribution and regional characteristics of dental laboratories and dental clinics in Taiwan

## KEYWORDS

Dental laboratory;  
Dental clinics;  
Dentist;  
Certified dental technician;  
Region

The dental clinics are the sites where the dentists perform their oral diagnoses and treatments. However, most dental restorations are mainly fabricated by the dental technicians in dental laboratories.<sup>1</sup> Therefore, the cooperative relationship between the dental clinics and dental laboratories is quite close.<sup>2</sup> This study cross-sectionally described the distribution of the numbers of dental clinics, dental laboratories, and population in different regions of Taiwan. The 22 counties and cities of Taiwan were divided into five regions: northern (including Taipei City, New Taipei City, Keelung City, Hsinchu City, Taoyuan City, Hsinchu County, and Yilan County), central (including Taichung City, Miaoli County, Changhua County, Nantou County, and Yunlin County), southern (including Kaohsiung City, Tainan City, Chiayi City, Chiayi County, and Pingtung County), eastern (including Hualien County and Taitung County), and outlying islands (including Penghu County, Kinmen County, and Lienchiang County). The data on registered and qualified dental clinics and dental laboratories were obtained through the Medical Inquiry System of the Ministry of Health and Welfare of Taiwan in 2024.<sup>3</sup> The population distribution data in 2024 were obtained from the demographic information of the Department of Household Affairs of Taiwan.<sup>4</sup>

The results showed that there were a total of 1052 dental laboratories in Taiwan, with 526 concentrated in the northern region, accounting for 50.0 % of all dental laboratories

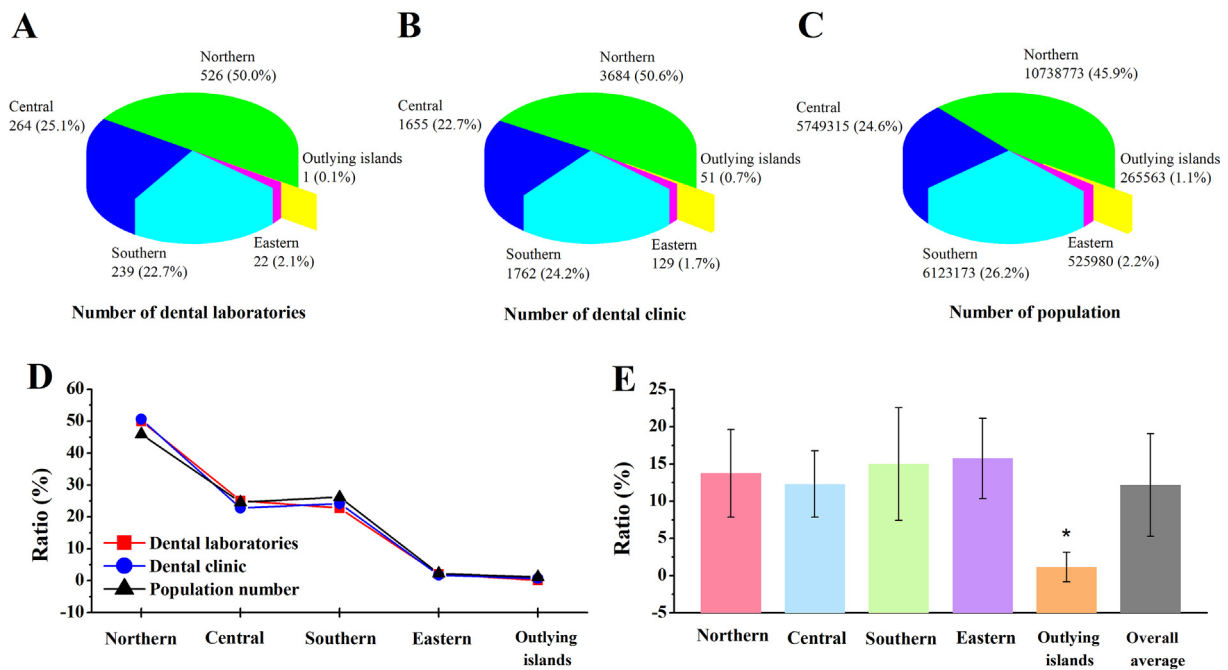
(Fig. 1A). There were a total of 7281 dental clinics in Taiwan, with 3684 located in the northern region, accounting for 50.6 % of all dental clinics (Fig. 1B). The total population of Taiwan was 23,402,804 people, with 10,738,773 residing in the northern region, accounting for 45.8 % of the total population (Fig. 1C). These results indicate that the distribution of population numbers is a factor influencing the number of dental clinics and dental laboratories. Naturally, the greater the population, the more dental clinics were needed to provide oral healthcare and dental care services. This indirectly increased the number of dental laboratories responsible for the fabrication of dental prostheses. Comparing the trends of dental laboratories, dental clinics, and population numbers shows the similar distribution results (Fig. 1D). However, the dental laboratories accounted for only about  $12.16 \pm 6.91$  % of the dental clinics (Fig. 1E), with the outlying islands having only  $1.15 \pm 1.99$  % of the dental clinics. The fabrication of dental restorations was complex and required a significant amount of time and cost from dental technicians.<sup>5</sup> Therefore, the dentists needed the sufficient dental laboratories and dental technicians to help improve the efficiency of dental restoration production and reduce the waiting time.

The limitation of this study was that it only explored the dental laboratories and dental clinics. In fact, the number of medical personnel in each dental healthcare facility may still be further investigated. This included an analysis of the situation in different countries.

Based on the results of this study, there is still room for improvement in expanding the number of dental laboratories. The dental healthcare resources are mostly concentrated in the more populous northern region of Taiwan. Therefore, how to provide better-quality oral healthcare in less-populated areas of Taiwan will be a clinical issue that needs consideration. This results of this study provide the useful information for the United Nations sustainable development goals (SDGs) on good health and well-being.

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**Figure 1** Overview of dental laboratories, dental clinics and population in different regions of Taiwan. (A) The number and percentage of dental laboratories across different regions. (B) The number and percentage of dental clinic across different regions. (C) The number and percentage of population across different regions. (D) The percentage trends of dental laboratories, dental clinics, and population across different regions. (E) The proportion of dental laboratories compared to dental clinics in different regions. \* Indicates a significant difference ( $P < 0.05$ ).

## Declaration of competing interest

The authors have no conflicts of interest relevant to this article.

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