# Inequalities in dental care providers worldwide



## BACKGROUND

Throughout the world, oral health care is facing problems related to untreated dental caries, periodontal diseases, and tooth loss, which together cause about 15 million years of life lived with a disability. Although much of oral disease is preventable, a lack of human resources to provide the needed interventions and then to manage disease that does develop also appears to be a significant problem. The dental workforce, which may be termed human resources for oral health (HROH), was considered in a contemporary analysis that estimated its size and distribution based on World Health Organization (WHO) region and projected future growth in populations that will impact HROH needs.

## METHODS

The data were drawn from publically available data sourced from the WHO, the Central Intelligence Agency, the United Nations, the World Bank, and the United Kingdom (UK) registration body. Both population-to-dentist and dental-workforce ratios were calculated for each WHO region and for the 25 most populous countries globally. Workforce trends over time were examined for the UK.

## RESULTS

### Current Status

At least 1.6 million dentists have been identified worldwide, but their distribution is highly uneven across the 6 WHO regions. The most dentists are found in the Americas and Europe, which employ 69% of the dentists to serve just 27% of the world's population. Africa is home to just 1% of the world's dentists, who serve in population-to-dentist ratios of more than 40,000:1, compared to 1,400:1 in the Americas. Within countries, the variations in population-to-dentist ratios between urban and rural areas are most dramatic in low-income countries.

The 25 largest countries host 5.25 billion in population but have considerable variation in their need for dental care. Based on the mean levels of dental caries experience and dental-workforce capacity, some countries that have high numbers of dentists also have high levels of mid-level providers, which expand the workforce. For example, South Korea has the highest reported levels of need in a populous country, with an average of 3.1 decayed-missing-filled teeth (DMFT) in 12-year-old children and a population-to-dentist ratio of 2,043:1, that falls to 1297:1 when dental hygienists are considered. For Ethiopia, with a population-

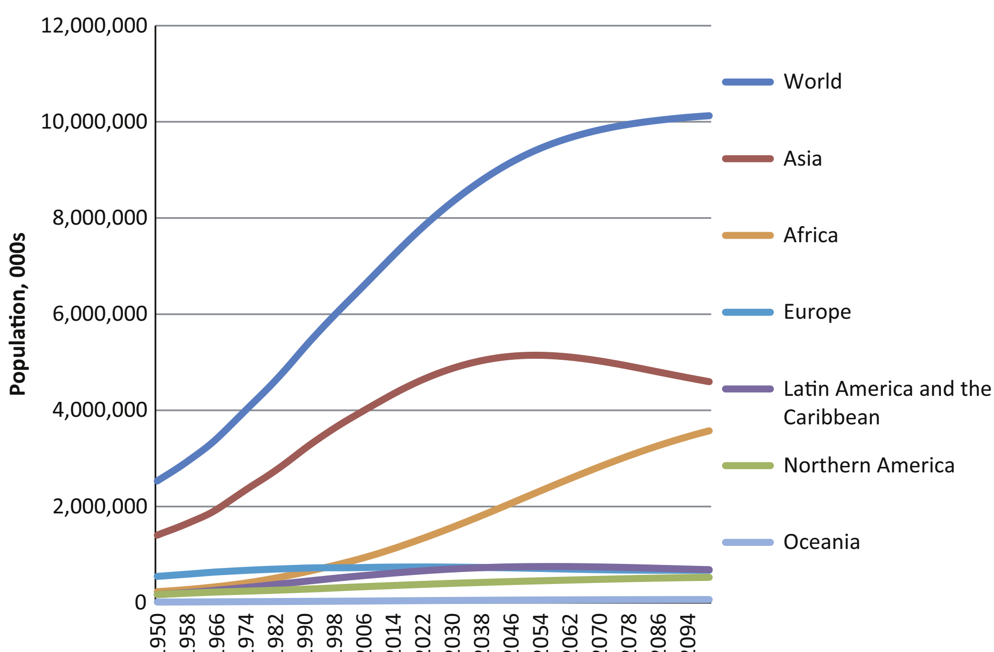


**Figure 1.** World population projections according to region and globally. Source: United Nations, Department of Economic and Social Affairs, Population Division: World Population Prospects DEMOBASE extract. 2011. (Courtesy of Gallagher JE, Hutchinson L: Analysis of human resources for oral health globally: Inequitable distribution. *Int Dent J* 68:183-189, 2018.)

to-dentist ratio of 1.5 million:1, other clinical dental personnel decrease this to just 1 million:1. As a result, most of Ethiopia's dental caries in 12-year-old children will not be addressed.

The data used span the time from 1990 to 2010 for most countries, but for 6 the data came from before 1998. Data on dentists from lower-income countries tend to be less up-to-date than those from high-income countries.

### Future Trends

Population projections from the United Nations suggest that Asia and Africa will see rapid increases in population over the next 75 years (Figure 1). These already have large population-to-dentist ratios, so inequalities are likely to increase as time passes unless there is significant growth in the dental workforce. The Americas and Europe, however, already have a low number of people per dentist and their populations are predicted to increase just slightly, whereas their dentist numbers will likely increase.

## DISCUSSION

Currently there are many inequalities in the size and distribution of the dental workforce worldwide. These inequalities are predicted to increase in the future. Over two-thirds of the world's dentists are practicing in the Americas and Europe, where just 27% of the global population lives. Given the differential population growth and the patterns of workforce education and migration, there will be a greater disparity than already exists between Africa and the rest of the world in the future.

### Clinical Significance

New models of dental care are likely to be required to address the oral health needs related to the burden of noncommunicable disease such as dental disease. Not only will an expansion of the workforce be needed, but more up-to-date and accurate data will be required to ensure that future developments are on target.

Gallagher JE, Hutchinson L: Analysis of human resources for oral health globally: Inequitable distribution. *Int Dent J* 68:183-189, 2018

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