Geographical Access of the Elderly to Health Care Centers During a 20-Year Period (1996–2016): a Case Study of Kermanshah, Iran

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INTRODUCTION

The growing population of the elderly is a global challenge; 10% of the world's population is over 65 years of age and is expected to double in the next 40 years.¹ In developing countries, poor service delivery and inappropriate distribution of health care centers (HCC) is common. The equitable access of all members of society (especially the elderly) to health services can promote health, improve outcomes, and reduce hospitalization. However, imbalance in the geographical distribution of health care centers can lead to the inefficiencies in service delivery and access inequality, and could be one of the causes of health inequity. Our study purpose was to assess walk-time accessibility of elderly patients to HCC.²

METHODS

Our descriptive cross-sectional study sample included all elderly (65 years and older) people in the Kermanshah metropolis area. Using Iranian Statistical Center and Kermanshah Health Center data, we used Geographic Information System (GIS) to assess walking time from the subject's home to the nearest HCC. Given that 750 m is a considered standard distance for access in Iran^{2,3} and that a person's walking speed is normally 0.75 to 1.25 m/s, this translates to 12.5 min of walking time as being geographically accessible. We calculat-

ed these boundaries through real passages using the Network Analysis tool.

RESULTS

In 1996, Kermanshah metropolis had a population of 693,157 people with 29 health centers; 32,729 elders and 48.15% did not have proper access to HCC. Between 2006 and 2016, the population and number of HCC increased with a smaller percentage of adults living more than 12.5 min from the nearest HCC (Table 1). Figure 1 shows the coverage and spatial distribution of health centers at these three time periods. According to the results of the SDE test, the trend of expansion of the city has been to the north-east and south-west while the trend of expansion of HCC has been towards the north-west and west. At the same time, the trend of expansion of the aging population was to the south and central parts of the Kermanshah metropolis.

DISCUSSION

We found that walk times to the nearest health center decreased during 1996 to 2016, though by 2016, more than 30% of the elderly lived farther than 12.5 min from the nearest health center. These results are consistent with other reports,^{3,4} though focused on a different population, the elderly. While walk times have improved, health policies and programs, there are still significant portions of the elderly that have inadequate access to HCC. Elderly people face physical, economic, and discriminatory restrictions as well as lower web-based literacy

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Table 1 Comparison of Appropriate and Inappropriate Access in Elderly Men and Women of Kermanshah During 1996 to 2016

		1996		2006		2016	
		<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Total population	Population with appropriate access	16,971	51.85	20,231	52.15	36,866	63.88
	Population with inappropriate access	15,758	48.15	18,561	47.85	20,841	36.12
	Total	32,729	100	38,792	100	57,707	100

Figure 1 Coverage and spatial distribution of HCC during the period of 1996–2016

compared with the other age groups, which reduces their access to HCC and can lead to poor health.⁵ This is even more important when the elderly live alone and are socially isolated.⁶ Research is needed on the health impact of longer walk times as well as to other groups such as children or those with disabilities.

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Compliance with Ethical Standards:

Conflict of Interest: The authors declare that they do not have a conflict of interest.

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