Cardiovascular disease (CVD) is highly prevalent and a leading cause of death and disability globally. In 2015, there were an estimated 422.7 million cases of CVD resulting in 17.92 million deaths [1,2]. This accounts for nearly half of all non-communicable disease deaths. While there has been a decrease in cardiovascular mortality rates globally, indications are that the declines have been greater in high-income than in low- and middle-income countries [3].

Cardiac rehabilitation (CR) is a long-term medically supervised specialty with a multidisciplinary approach to deliver a comprehensive secondary prevention program that optimizes CVD risk reduction, promotes adherence to healthy lifestyle behaviors and reduces disabilities. Cardiac rehabilitation is a cost-effective treatment strategy [4]. Participation in CR reduces cardiovascular mortality and hospital admissions and is associated with improvements in quality of life [5]. As a result, CR is recommended in clinical practice guidelines for patients with CVD.

CR is a complex intervention including components of education and counseling on cardiovascular risk reduction. Guideline specific core components of CR include medical evaluation, prescribed exercise, cardiac risk factor modification, education, and behavioral counseling [6]. The complexity of the intervention and diversity of patients can make CR programming difficult to implement. Available resources determine specific CR programming for an individual program.

Ideally, all appropriate, eligible patients would be referred to CR. Unfortunately, CR is underused and not universally available. The availability of CR globally, however, has never been well defined. Moreover, there has been little study of the nature of CR programming. Two companion studies [7,8] in this issue of *EClinicalMedicine* provide insights into the availability and the characteristics CR programming globally. The authors are to be commended for an ambitious undertaking. Working with CR “champions” and networking with national professional organizations the authors attempted to identify all the existing programs globally. Identified programs were then surveyed regarding their implementation of structural and process CR specific quality indicators.

Remarkably, only half the countries in the world have any CR programs at all. It is particularly problematic that some of the areas with the highest incidences of CVD such as Ukraine, Vietnam and Ethiopia do not have any CR programs. Not surprisingly, in general, higher resource countries have the greatest availability of CR programs. When the incidence of CVD in a given country is compared to program availability, however, most programs have excess capacity (i.e. on average, program volumes were approximately 80% of annual capacity). This highlights the need to maximize referral and increase adherence to CR programming.

It is encouraging that the overall quality of CR programming was high. Despite the complex nature, on average, programs delivered interventions targeting the core components of CR. This illustrates the importance of establishing standards for the treatment of patients with CVD [6]. It is concerning, however, that programs that offered more core-components serviced fewer patients. This would suggest the possibility that more comprehensive programs are less efficient. We need to be sure that delivering high quality CR programming does not needlessly restrict program participation.

Attempting to identify every CR program in the world is an enormous challenge. While the research team took a number of steps to ensure an accurate count, the resulting estimate of program availability is most likely an underestimation. The level of resources within a given country likely influences the accuracy of the count. In addition, “ascertainment bias” or the distortion the true frequency of a measure is always a concern when data collection relies on self-report. For instance, a program is more likely to report a higher level of quality of care than is actually delivered.

These concerns notwithstanding, we now have our most accurate assessment of the quantity and quality of CR programs globally. The World Health Organization Action Plan 2013 to 2020 has identified decreasing deaths from non-communicable diseases, including CVD, as a health care imperative [9]. Presumably, given the recognized benefits and the enormous need, if greater resources existed CR programs would be more globally available. Consequently, given limited resources, alternatives to the traditional model of CR are needed. Typically, CR programs are hospital based. The use of technology and hybrid or home-based programs is needed to expand the reach of CR. Additionally, prioritizing some components of CR over others may be necessary. Cardiac rehabilitation programming in Europe (a high availability area), for example, may differ from Africa or South Asia where resources are limited. Local needs and available resources should
determine CR programming. Ultimately, the goal should be delivering the highest quality secondary prevention services to as many people as possible, regardless of where they live.

CR is proven and effective treatment strategy for patients with CVD. Unfortunately, access to quality CR programming is highly dependent on where you live. We now have a better understanding of CR program availability and quality around the world. Policies to promote the development and widespread dissemination of high quality CR programming are needed to better align program availability with the critical need for CR services.

Author contributions

Patrick D. Savage wrote this commentary.

Declaration of Competing Interests

Patrick D. Savage has nothing to disclose.

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