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ORIGINAL RESEARCH

Availability and characteristics of cardiac rehabilitation programs in one Brazilian state: a cross-sectional study

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Abstract
Background: Cardiac rehabilitation (CR) is a recommended model of care for cardiovascular diseases; however, is not widely available and is underutilized, especially in low- and middle-income countries.
Objectives: To identify the CR programs available in one Brazilian state (Minas Gerais; MG) and describe their characteristics by funding type.
Methods: In this multi-center descriptive study, CR programs were identified in four MG regions and 41 CR coordinators were sent a survey to report the characteristics of their programs, including CR components described in guidelines and barriers to patients' participation. Descriptive and comparative analysis between public and private programs were carried out.
Results: Forty-one CR programs were identified, only 21.9% public. Nineteen completed the survey. The majority of CR programs offered initial assessment and physical training. Components of comprehensive CR programs that were rarely offered included treatment of tobacco dependence, psychological support and lipid control. Physical therapists were present in all CR programs. The six-minute walk test was used in most programs to assess functional capacity. Programs were located intra-hospital only in public hospitals. Phase 2 (initial outpatient) and phase 4 (maintenance) were offered significantly more in private programs when compared to public ones. The main barrier for CR participation was the lack of referral.

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Conclusions: The availability of CR programs in MG state is low, especially public programs. Most programs do not offer all core components of CR.

Introduction

Cardiovascular diseases (CVDs) are among the leading cause of morbidity and mortality worldwide, with 80% of deaths occurring in low- and middle-income countries, such as Brazil.[1] The CVD mortality rate in Brazil in 2013 was 168.9 per 100,000 inhabitants.[2] There have been significant advances in acute treatment for patients with CVDs. Thus, many individuals are still living in poor health due to the morbidity of this chronic condition, which requires comprehensive management.

Cardiac rehabilitation (CR) is the recommended model of care for these patients.[3–8] It consists of internationally-agreed core components (including physical training), delivered by a multidisciplinary team.[3] CR participation has numerous benefits[9] – including reductions in hospital readmissions rates up to 25%[1,10] and in long-term cardiovascular mortality.[10]

Recently, the Brazilian Ministry of Health issued the Ordinance no. 483, which redefines the healthcare network for people with chronic diseases (including CVD) treated by the Brazilian Unified Health System and establishes guidelines for the participants care. Rehabilitation was included in these recommendations for all chronic diseases.[11] However, it is known that most Brazilians do not have access to CR programs and resources for prevention of cardiovascular diseases are insufficient across the country.[12,13] Indeed, data on the availability and characteristics of CR programs in Brazil are scarce[14] and there is no national or state registry.[15] It is important to show the reality of CR in Brazil, which will contribute to CR advocacy.

Therefore, the primary objective of this study was to identify CR programs available in the Brazilian State of Minas Gerais (MG) and describe their characteristics. The secondary objective was to compare these CR programs by funding source (public vs. private). The state of MG was chosen because it is geographically extensive and has socioeconomic variation consistent with Brazil more broadly. We hypothesized that few CR programs would be identified in MG, and most of these services would be exercise-based. In addition, we also hypothesized that there would be significant differences between public and private programs regarding prescription, intensity and monitoring of exercise in the different phases of the CR.

Methods

Study design and procedure

This is multi-center, cross-sectional survey study. It was registered in the Brazilian Ethics Platform of Universidade Federal de Minas Gerais, Belo Horizonte, Minas Gerais, Brazil (CAAE: 37156614.8.1001.5149) and approved by the Ethic Committees of all participating centers. The availability of CR programs was assessed through contact with clinical directors of hospitals and coordinators of state and municipal Cardiology departments, as well as through electronic searches in the Google® platform using keywords such as CR and the name of each MG municipality with a population of more than 45,000 inhabitants. CR programs coordinators were recruited by e-mail between February 2015 and November 2016. All participants signed an electronic or consent form. Participants chose between an electronic survey (via Survey Monkey®) or to complete printed copies. Ten days after receiving the survey, non-responding participants were contacted by telephone and via e-mail to request their participation. If they failed to complete the survey after 5 attempts they were excluded. All participants received an identification number to ensure their anonymity.

Setting

In order to facilitate data collection, the state of MG was divided into 4 regions based on the Health Regionalization Master Plan of the State Health Department, as follows: (1) Central (population: 5,056,252; human development index – an index that include health, education and income in its calculation)[16]: 0.810); (2) South and Southeast (population: 1,262,176; human development index: 0.778); (3) Northwestern and MG Triangle (population: 1,144,807; human development index: 0.772); and, (4) North and Northeast (population: 587.885; human development index: 0.716). Data collection was carried out from February 2015 to September 2017. A local researcher coordinated the data collection following the same protocol in each region.

Sample

All CR program coordinators identified were invited to participate in the research, regardless of whether the program was comprehensive (including all core CR components) or based only in physical exercise (exercise-based CR). CR programs are divided into four phases: phase 1 (in-hospital), phases 2 (initial outpatient) and 3 (outpatient) and phase 4 (maintenance).[17] There were no exclusion criteria.

Measures

The characteristics of CR programs was evaluated by a Portuguese version of the ''Current Status of Cardiac Rehabilitation Programs in Latin America Survey'' developed by Cortes-Bergoderi[14] and cross-culturally adapted into the

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