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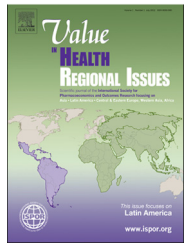

Exploring Product-Specific Attributes of a Community Cardiac Rehabilitation Program in an Asian Urban City

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ABSTRACT

Background: Cardiac rehabilitation (CR) has been proven to improve long-term outcomes for patients. Despite its benefits, its uptake throughout the world is poor. Factors affecting the motivation and barriers impeding an individual from participating in a CR program have been extensively studied. Nevertheless, knowledge of product-specific factors in affecting participation is lacking. **Objectives:** To find out cultural-specific product attributes that are important to those contemplating participation in a community-based CR program using Consolidated criteria for Reporting Qualitative research (COREQ) as an anchor. **Methods:** Participants were recruited from attendees of the CR program at the Singapore Heart Foundation. A literature review was done to identify product-specific attributes that affected participation in CR programs. An interview guide was developed on the basis of the list of product attributes. The analysis was done by two independent analysts using NVivo version 11 (QSR International, Melbourne, Australia) via an inductive approach. Data analysis was carried out with recruitment and interviews ongoing until thematic saturation was reached. **Results:** In total, 13 male and 9 female participants (16 Chinese, 4 Indian, 1 Malay, and 1 Eurasian) aged between 47 and 89 years were interviewed. A total of 8 categories (System, Infrastructure, Environment, Monitoring, Activity, Program, Staff, and Companionship) with 30 subcategories were identified. New themes that have not been explored by previous studies were discovered under five different categories: System, Infrastructure, Environment, Program, and Companionship. **Conclusions:** This study allows a better understanding of product-specific factors affecting participation in CR programs and serves as a springboard for further research to improve participation in community-based CR programs.

Keywords: cardiac rehabilitation, community, product-specific attributes, qualitative, Singapore.

Introduction

Cardiovascular disease (CVD) is the top killer in the world [1]. With an aging population, the disease burden of CVD is increasing [2]. Many ways have been proposed to control the rise of CVD, one of which is cardiac rehabilitation (CR). CR aims to optimize the recovery of patients both physically and psychologically as well as reduce the risk of another cardiac event. It has been proven that CR improves long-term outcomes for patients [3]. One study has shown that participants of CR programs had better long-term control of certain risk factors, such as lower total cholesterol levels, compared with nonparticipants [3]. Another study found that it is cost-effective from both the perspective of the community and that of the patients [4]. Despite these benefits, the uptake of CR throughout the world is poor [5].

The focus of CR has been to maximize the health of an individual. Nevertheless, there may be other features of this program that an individual may consider before participating in it, such as those 1) affecting accessibility, namely, transport, traveling distance, and availability of parking spaces [6,7]; 2) surrounding an individual's autonomy, namely, the ability to set own goals, choose preferred exercise regimes, and flexible hours [6]; and 3) determining the amount of support and assurance, namely, encouragement from program staff and monitoring of parameters such as the heart rate [8]. The low rate of CR uptake was more apparent in the hospital settings when patients had to travel long distances and when hospital programs were available only during office hours [9]. Another option is a community-based CR that is in the vicinity of home or workplace with more flexible schedules.

Factors affecting motivation and barriers impeding an individual from participating in CR programs have been extensively studied [9]. Nevertheless, knowledge of product-specific factors in affecting participation is lacking. Hence, this study aimed to

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identify and understand the cultural-specific product attributes that are important for a patient who is keen on participating in a community-based CR program using the Consolidated criteria for Reporting Qualitative research (COREQ) as an anchor.

Methods

Study Population and Sampling

Inclusion criteria for the study were participants who were 1) older than 21 years, 2) attending the community-based CR program at the Singapore Heart Foundation as either cardiac patients or preventive clients, 3) English-speaking, and 4) able to speak coherently and provide written informed consent. Data analysis was carried out with recruitment and interviews ongoing until thematic saturation was reached.

Literature Review to Develop Interview Guide

A literature review was done to identify product-specific attributes that affected participation in CR programs. PubMed® and ScienceDirect® were searched using first-level search terms (preferences, perceptions, product attributes) combined with a second-level search term (cardiac rehabilitation). Articles that discussed about product-specific attributes affecting participation or adherence to CR programs were included. From the literature review, a comprehensive list of product attributes was derived. An interview guide, as presented in Appendix Table S2 in Supplemental Materials found at http://dx.doi.org/10.1016/j.vhri.2017.03.008, was developed on the basis of the list of product attributes.

Procedure

To pick up product attributes from CR participants' perspectives, 22 participants from the community-based CR center were selected by purposive sampling and interviewed. Physiotherapists from the center invited the participants for the interview. As presented in Appendix Table S2 in Supplemental Materials, the interview guide was structured with a list of open-ended questions. Before the start of the interview, participants completed a questionnaire on their background information. After this, the first part of the interview began with open-ended questions about product attributes that may not have been included in the literature review. It contained questions 1) about their opinions about the CR program; 2) asking for suggestions for improvement in the program; and 3) on different aspects of the program that one would consider when deciding on taking up the program. The respondents were allowed to openly discuss the topics raised. The second part of the interview focused on exploring the importance of product attributes derived from the literature review that were not mentioned by the interviewees. The list of attributes in Appendix Table S1 in Supplemental Materials found at http://dx.doi.org/10.1016/j.vhri.2017.03.008 was used as a guide and participants were asked to elaborate on how they felt about these attributes.

The interviews were conducted in English by a female researcher trained in qualitative study. Each interview took about 30 to 45 minutes and was anonymized, audio-recorded, and transcribed for analysis. All the interviews were conducted in an enclosed room with minimal distractions. There were no repeat interviews carried out for this study.

Ethical Approval

The study has been approved by the National University of Singapore Institutional Review Board. Written informed consent was obtained from all participants before the interviews. The investigation conforms with the principle outlined in the Declaration of Helsinki.

Data Analysis

The analysis was done by two independent analysts, one male and one female who were both trained qualitative researchers, to ensure inter-researcher reliability. The researchers independently analyzed the material using NVivo version 11 (QSR International, Melbourne, Australia), a computer-assisted qualitative data analysis software. Elements of grounded theory and an inductive approach were adopted in the analysis of the data, allowing new codes and categories to emerge during the analysis of each transcript, encouraging the development of a conceptual framework from the input of participants. A code book with six fields (Categories, Definition of categories, Subcategories, Definition of subcategories, Sub-subcategories, and Definition of sub-subcategories) was generated as the analysts coded the transcripts. Discrepancies in interpretation of material were discussed and reconciled by going back to the transcript, ascertaining and identifying the codes that reflected a product-specific attribute until a list of codes that could be consistently applied was compiled. The participants' feedback for both transcripts and codes formed was not sought.

Results

Demographic Characteristics

The demographic characteristics of the participants are presented in Table 1. A total of 22 participants were interviewed (comprising 14 attending because of secondary prevention reasons): 13 males and 9 females. A total of 16 participants were Chinese, 4 were Indian, 1 was Malay, and 1 was Eurasian. In Singapore, 74.2% were Chinese, 13.3% were Malay, and 9.2% were Indian [10]. There were no rejections encountered during our purposive sampling process.

Product-Specific Attributes

Appendix Figure S1 in Supplemental Materials found at http://dx.doi.org/10.1016/j.vhri.2017.03.008 shows the 8 product-specific attribute categories with 30 subcategories derived from the analysis of the materials via inductive approach as presented in Table 2.

Under the System category (n = 22 [100.0%]), seven subcategories were derived, namely, credibility of organization (n = 1 [4.5%]), referrals (n = 4 [18.1%]), opportunity for family members (n = 8 [36.3%]), booking system (n = 3 [13.6%]), rewards (n = 7 [31.8%]), deposit (n = 14 [63.6%]), and cost (n = 13 [59.0%]).

Under the Infrastructure category (n = 16 [72.7%]), five subcategories were derived, namely, availability of equipment (n = 14 [63.6%]), types of equipment (n = 5 [22.7%]), maintenance of equipment (n = 1 [4.5%]), upgrading of equipment (n = 2 [9.0%]), and facilities (n = 2 [9.0%]).

Under the Environment category (n = 15 [68.1%]), four subcategories were derived, namely, surroundings (n = 2 [9.0%]), within the center (n = 7 [31.8%]), tokens (n = 5 [22.7%]), and crowd factor (n = 8 [36.3%]).

Under the Monitoring category (n = 22 [100.0%]), two subcategories were derived, namely, type of monitoring (n = 11 [50.0%]) and effects of monitoring (n = 22 [100.0%]). The two subcategories had a total of three and nine sub-subcategories, respectively. Under type of monitoring, the three sub-subcategories were regular reviews (n = 7 [31.8%]), baseline reviews (n = 4 [18.1%]), and feedback (n = 3 [13.6%]). Under effects of monitoring, the nine sub-subcategories were