



Spring 2023

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### Recommended Citation

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*Physician Assistant Scholarly Project Posters*. 261.  
<https://commons.und.edu/pas-grad-posters/261>

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# Home-Based Cardiac Rehab vs. Center-Based Cardiac Rehab in Rural Areas

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## Abstract

Cardiac rehabilitation in rural areas can present unique challenges. The main challenge is the locations patients must travel to receive such care. Some patients are expected to travel more than an hour away, on multiple occasions during the week, to undergo their therapy. A literature review was done to see if there was a safe and effective alternative to the traditional center-based cardiac rehabilitation. The electronic search databases PubMed, Embase and CINAHL Complete were utilized to search for articles that addressed the four main topics of the paper. Dalal et al. (2019) found that home-based cardiac rehabilitation was as safe and effective as the traditional approach and was a more affordable model. Antoniou et al. (2022) stated that “home-based cardiac rehabilitation interventions using wearable sensors can be as effective as center-based cardiac rehabilitation.” Banner et al. (2015) stated that the patients who underwent home-based cardiac rehabilitation “demonstrated statistically significant improvement in exercise capacity, along with total cholesterol, LDL and saturated fat intake,” to that of the traditional approach. Overall, home-based cardiac rehabilitation could be a safe an effective alternative to the center-based approach and is something that should be researched further.

## Introduction

- Currently, there are an estimated 2.3 million individuals in the United States that are participating in a cardiac rehabilitation program.
- The traditional method has been having the patients go to a rehabilitation facility to participate; with the facilities typically being in the clinical or hospital setting. In rural America this has become an issue due to the distance some have to travel to participate.
- Home-based cardiac rehabilitation is completed in the patient’s own home. This is completed by using different technology to ensure that the patient is meeting health criteria and is always monitored by trained professionals.

## Statement of the Problem

Cardiac rehabilitation is a crucial step in the treatment of patients with previous heart history; however, access to the traditional rehabilitation centers, in the rural setting, is a significant barrier for many. This is a grave concern for compliance in the completion of such programs. A safe and effective alternative to the traditional approach that provides a safe and effective outcome within a patient’s home, then the overall compliance can be increased.

## Research Question

For patients in rural areas with coronary artery disease, is home-based cardiac rehab an effective and safe alternative to in-person, center-based cardiac rehab?

## Literature Review

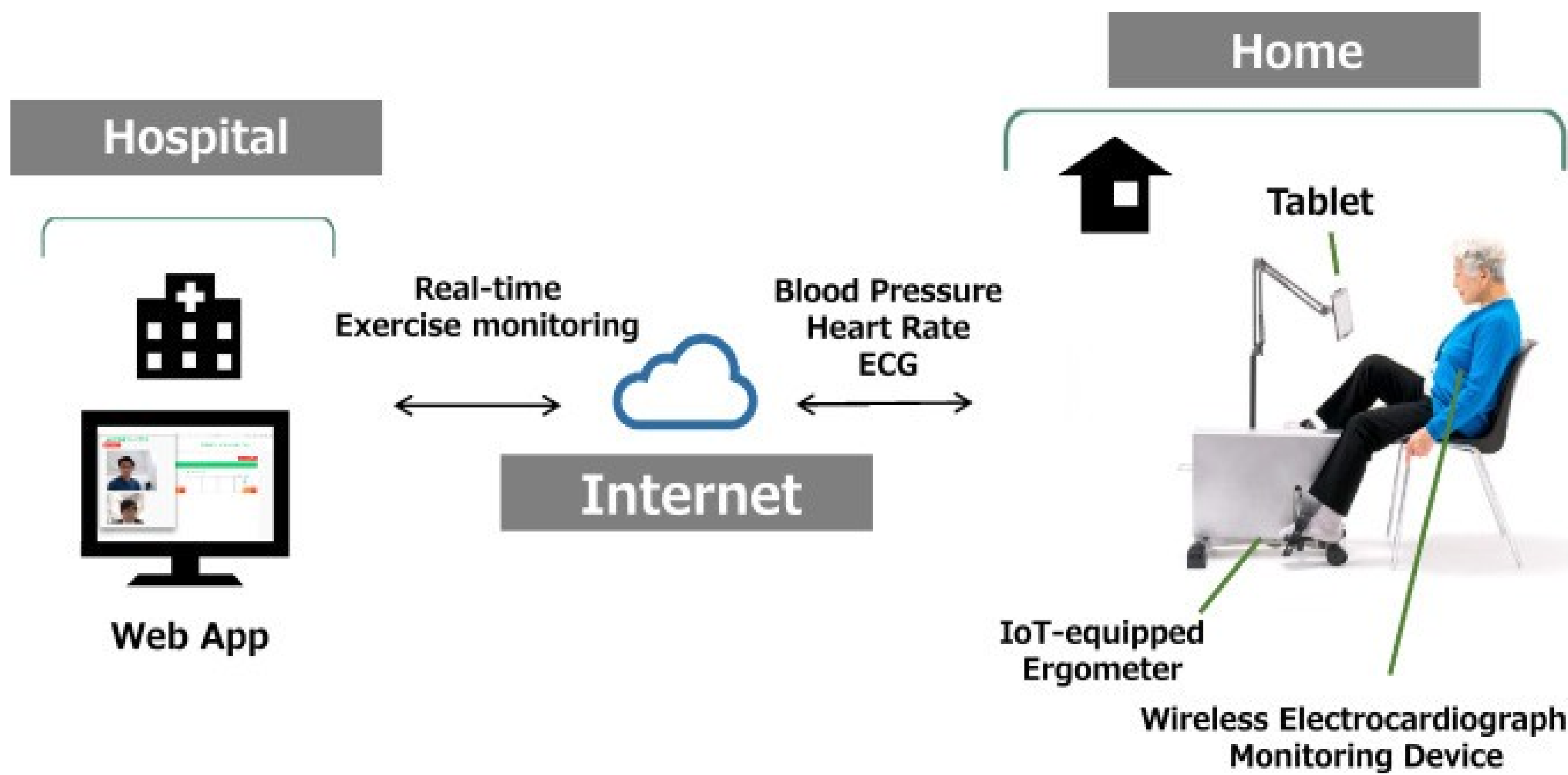
- Bravo-Escobar et al. (2017) “Cardiovascular diseases are the main causes of mortality in today’s society and the primary cause of hospital admissions”
- Dalal et al. (2019) believed that “the benefits of an affordable, novel home-based cardiac rehabilitation intervention that offers patients, clinicians and healthcare commissioners an additional option to center-based cardiac rehabilitation is important and home-based cardiac rehabilitation is a suitable option.”

Potential Advantages	Potential Disadvantages
Reduced enrollment delays	Lack of reimbursement
Expanded capacity/access	Less intensive exercise training
Individually tailored programs	Less social support
Flexible, convenient scheduling	Less patient accountability
Minimal travel/transportation barriers	Lack of published standards for HBCR
Greater privacy while receiving CR services	Less face-to-face monitoring and communication
Integration with regular home routine	Safety concerns for patients at higher risk

CBCR indicates center-based cardiac rehabilitation; CR, cardiac rehabilitation; and HBCR, home-based cardiac rehabilitation

- Bakhshayeh et al. (2021) found that the major barriers to center-based cardiac rehabilitation was transportation, travel costs, distance to the rehabilitation center, and overall lack of insurance coverage for the required treatment. They generally found that if a patient lived more than 30 minutes away from the rehab center, then they were less likely to attend the sessions that they needed.
- Bakhshayeh et al. (2021) stated “alternative models such as home-based cardiac rehabilitation programs, can be used to overcome these barriers”.
- Stefanakis et al. (2022) found that the home-based cardiac rehabilitation model could be an “equivalent intervention model for stable patients with coronary vascular disease at all levels of risk,” and who do not have proper access to services.
- Kikuchi et al. (2021) concluded that “home-based cardiac rehabilitation under real-time supervision was feasible and safe among elderly heart failure patients.

- Dalal et al. (2019) found the overall quality of life of patients that participated in a home-based program was increased compared to the traditional center-based approach.
- Thomas et al. (2019) stated that there are definite hurdles that must be overcome in the United States before we see large scale adoption of home-based cardiac rehabilitation. These hurdles include the overall cost and reimbursement, participation and adherence of the patient population, effective communication, and social support along with the overall standardization of care.



## Discussion

- All these studies and results point to the fact that HBCR programs are viable options in comparison to CBCR. They are as effective in overall safety and efficacy and are even found to be superior in overall patient satisfaction
- The largest hurdle in order to implement the HBCR in rural areas is for large health care entities to invest into the program and understand that initial investment upfront will have significant benefits downstream.
- By allowing patients to stay at home and be “monitored” via camera means that the overall staff needed to administer the program can downsized.
- Another area that hospitals can save money by implementing a HBCR programs, is not having to have the floor space dedicated to the traditional program; instead, they can repurpose the space.
- Proper reimbursement strategies for hospitals needs to be figured out before they will implement a program. This will be the driving factor in implementing home-based cardiac rehabilitation.
- There needs to be a push at the legislative level and a look at making changes to insurance reimbursements and Medicare.

## Applicability to Clinical Practice

The current rate of cardiac rehabilitation compliance, in rural areas of the United States, is right around 56 %. We must find an alternate means for patients to participate in a program that gives them flexibility and ensures that we increase the overall compliance. Compliance will then increase overall health in our patients.

## Acknowledgements

I would like to start of by thanking my wife, children and the rest of my family for sticking with me and being a constant cheerleader in my corner through this journey. Without the continuous words of encouragement, I would not be where I am today. I would also like to thank my advisor Kristen Carr, MPAS, PA-C, DipACLM, for ensuring that my scholarly project was of scholarly work and being a sounding board when I needed it. An additional thanks goes out to Kyle Knutson and Evan Perala for giving their expert advice to ensure that my project was on the right path. Lastly, I would like to thank all my fellow classmates in the MPAS program at UND; you all will be great providers.

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