

# Apps for Coronary Heart Disease

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Mobile health applications (MHA) are discussed to contribute in overcoming this gap in treatment by fostering CHD management. First, MHA may support daily monitoring of activities and symptoms. Second, adherence to treatment and lifestyle changes can be increased by self-tracking, feedback, and reminder functions of MHA.

Keywords: coronary heart disease (CHD) ; apps ; mobile health ; eHealth ; systematic evaluation

## 1. Introduction

Cardiovascular diseases and especially coronary heart diseases (CHD) are one of the leading causes of death worldwide [1][2]. According to the global burden of disease study 17.8 million people died from cardiovascular diseases in 2017 [1]. According to the heart disease and stroke statistics the prevalence of CHD in the US ranges from 5.3% for female adults to 7.4% for male adults [3].

Disease management and behavior change including lifestyle changes are key aspects of CHD care but often not adequately and enduringly considered in care settings [4]. The large number of risk and lifestyle factors render the prevention and self-management of CHD extensive and complex for patients [4][5]. Therefore, means of promoting disease management and lifestyle changes as well as information are necessary to improve prevention and conventional treatment of CHD [4][6][7]. Mobile health applications (MHA) are discussed to contribute in overcoming this gap in treatment by fostering CHD management [6][8]. First, MHA may support daily monitoring of activities and symptoms [9]. Second, adherence to treatment and lifestyle changes can be increased by self-tracking, feedback, and reminder functions of MHA [9][10]. Third, MHA are accessible at all times and at relatively little costs [11] making MHA a scalable solution to provide general information about CHD, symptoms, and specific lifestyle modifications [12][13]. Fourth, MHA can increase patients' perception to play an active role in their own healthcare and hereby foster self-sufficiency, disease management, and

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## 2. Research Methods

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	<i>n</i> (%)	<i>M</i> ( <i>SD</i> )
Platform		
Android	30 (78.95%)	
iOS	7 (18.42%)	
Both	1 (2.63%)	
Affiliation		
Commercial company	20 (52.63%)	
NGO	2 (5.26%)	
University	2 (5.26%)	
Government	1 (2.63%)	
Unknown	13 (34.21%)	
Obligatory payment		
Google Play store	2 (5.26%)	2.84 (0.85)
Apple App store	2 (5.26%)	2.29 (1.20)



Name	Provision of Information					Data Acquisition, Processing and Evaluation					Calendar and Appointment-Related			Support		Other	
	News	Reference	Learning Material	Player/Viewer	Broker	Decision Support	Calculator	Meter	Monitor	Surveillance/Tracker	Diary	Reminder	Calendar	Utility/Aid	Coach	Health Manager	Communicator/Social Network
Angina	-	✓	-	-	-	-	-	-	-	-	-	-	-	-	-	-	✓
Heart Disease 101 Audio Book	-	✓	-	✓	-	-	-	-	-	-	-	-	-	-	-	-	-

## 4. Conclusions

This first systematic evaluation of MHA for CHD demonstrated an average overall quality of MHA (  $M = 3.38$ ,  $SD = 0.36$ ). The most common functions were information texts and risk score calculators. Only few MHA provide a set of multiple functions and incorporate behavior change techniques limiting the potential for lifestyle changes and support in disease management of users. Most MHA were not developed by a credible source and there is a considerable lack of scientific evidence for the usefulness and efficacy of the included MHA. Nevertheless, some potentially helpful MHA were identified.