

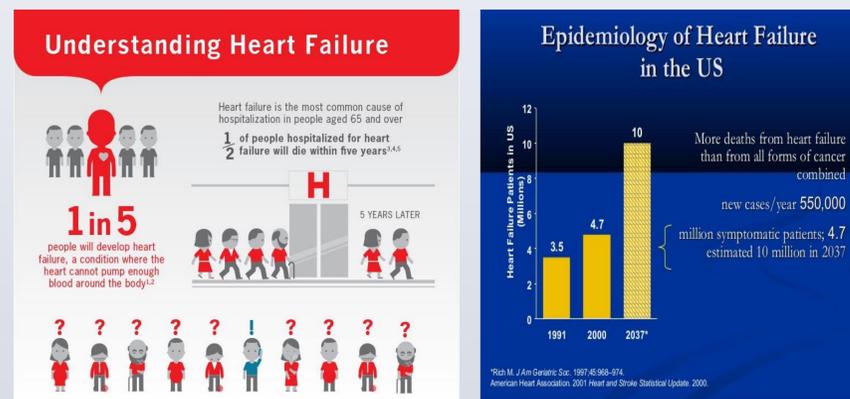
# The Efficacy of Mobile Health Applications for Heart Failure Management among Elderly in Primary Care Settings

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## Introduction

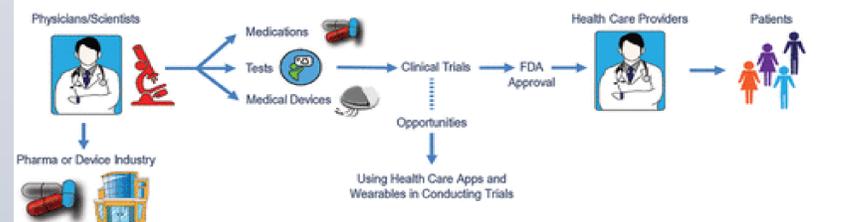
### Statistics

- Congestive Heart Failure (HF) is a major chronic disease in the United States (Son et al., 2020).
- Approximately > 6.5 million Americans are affected (Athilingam et al., 2017).
- 550 000 new cases diagnosed each year.
- The prevalence of HF is expected to increase 46 % by 2030 (Athilingam & Jenkins, 2018).
- HF is associated with dramatically diminished quality of life and high level of comorbidity.
- HF places a huge economic burden on the health care system due to high rehospitalization rates (Honeyman et al., 2014).



## Medical Innovation in the Era of Digital Health

### Traditional Model



### Direct to Consumer Products



## Mobile Health

- Information technology (IT) has become one of the vital mechanisms today for the growth of the healthcare industry (Erfania et al., 2020).
- By 2025, experts predict that 86% of the US population will be mobile phone service subscribers with 91% of those owning smartphones and there will be over 50 billion internet-connected devices by 2020 (Bostrom et al., 2019).
- Mobile health applications for HF management:
  - relieve the burden on current health care systems,
  - provide a more effective and efficient use clinical resources,
  - improve patient quality of life and enable better patient care.
- Nurse Practitioners (NPs) play a key role in HF management in primary care settings because early diagnosis of HF is important so that treatment can be initiated on time in order to delay the disease progression (Smeets et al., 2016).

## Objective

The goal of this study is to determine the efficacy of mobile health applications for Heart Failure management among elderly patients in primary care settings compared to elderly patients who do not use mobile health applications and taking care of their chronic disease in a traditional way.



## Methods

The databases searched were CINAHL, PubMed, PubMed Central, MEDLINE, JMIR, AHA and Cochrane Library via EBSCO. The research studies chosen were published in the US and included the keywords: heart failure, mobile phone, smart phone, mobile apps, mobile health, self-care management, older adults, chronic disease management, patient engagement, social determinants of health, quality of life. Also, search limits were set to locate studies published between 2011 through 2021, included randomized controlled trials, peer reviewed, systematic reviews, full text articles, English language, an elderly population age 65 and older, and a primary care setting. Excluded were any inpatient setting, adolescent or pediatric population, studies published prior to 2011. Six articles published between 2017 and 2021 were chosen for further reading. The articles included one scoping review, one qualitative study, two randomized studies, one usability study and one prospective study.

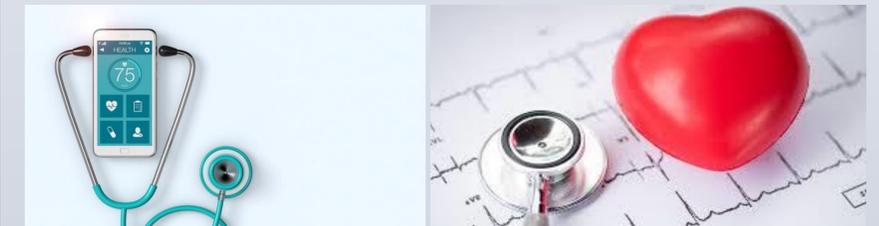
## Limitations

- Age-related factors such as cognitive impairment, limitation in physical abilities, and social isolation contribute to the complexity of self-care among older adults with HF.
- Age-related sensory changes (fine motor skill deficiencies, vision loss) make certain devices more difficult to manipulate.
- Older adults may accept new technologies with less confidence than younger adults (Athilingam et al., 2017).
- Lack of knowledge, lack of socialization and "fear" of misusing the technology, were the most cited barriers to mHealth adoption for HF management among elderly people (Guo et al., 2019).



## Results and Recommendations

- The use of mHealth apps can improve education on different aspects of HF and promote the importance of self-care (Wali et al., 2020).
- The mHealth apps may be considered portable systems for improving knowledge about HF self-management, recognizing, and seeking early care for symptoms and increasing adherence to treatment plans (Athilingam & Jenkins, 2018).
- The mHealth app is a sort of data repository that can only be used by the patient.
- Healthcare Providers (HCPs) will consult the mHealth app only during regular patient visits or when specific alerts occur that suggest patients consult them (Masterson Creber et al., 2016).
- The Habits Heart App (Wei et al., 2021) appears to be simple and easy to navigate, can enable the patient to self-monitor symptoms and vital signs in order to actively participate in the control and management of the disease.
- When older patients and caregivers are provided with guidance/trained to use mHealth app, feedback is positive and participants may follow mHealth app instructions, even over long periods of time (Wali et al., 2020).
- A wide range of groups need to be included in assessment studies and it is important to engage with patients who may be less independent and more likely experience barriers to use (Athilingam et al., 2017).
- Lack of efficacy testing is one of the biggest barriers to adopting mHealth apps (Kim et al., 2017).
- The iHeartU app helps patients with HF in self-management of their chronic condition to improve their communication with health care providers and family caregivers, improves the level of engagement of patients and lead to better health outcomes (Zhang et al., 2019).
- The functionality and effectiveness of the mHealth apps may be improved through HF patients' participation in social media and virtual/online support groups (Mortara et al., 2020).



## Conclusion

- HF is a prevalent disease in the elderly population and will continue to increase that will lead to substantial morbidity, mortality, and consumption of medical resources, particularly among older Americans.
- The NPs are primary care healthcare providers who play an important role in early diagnosis of HF, management of the disease in order to delay the disease progression.
- The mHealth has enabled numerous avenues for remote management of HF. Older adults, with the highest burden of disease, may stand to benefit the most.
- Small studies have demonstrated potential benefits to mHealth, but older adults have been under-represented, and further research will help to elucidate engagement and outcomes among older adults who are prescribed this intervention.
- There is great potential for mHealth apps to foster patient engagement in HF self-care and improve interaction with HCPs in a cost-effective way, but to ensure that the tools add value and really meet patient needs, patients need to participate in their design, development and refinement (Mortara et al., 2020).
- Supporting older adults with a HF will ensure maximum benefit from multiple complex medical regimens and better quality of life.
- With appropriate education of the workforce and adequate technical support services, effective and appropriately directed mobile health delivery would relieve the burden on current healthcare systems, provide a more efficient and effective use clinical resources, and enable better patient care.

## Selected References

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