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## ORIGINAL ARTICLE

# Medical Professionals' Perspective on Safety and Efficacy of Early Mobilization in Acute Heart Failure Patients

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## Abstract

**Background:** Acute heart failure (HF) patients most of the time present with hemodynamic instability, which often leads to prolonged bed rest. Despite its efficacy, early mobilization practice has not always been done due to several barriers in the medical professionals' perspective, especially regarding safety and efficacy. Prior studies had shown that medical professionals' views would greatly affect patients' perspectives, especially in HF rehabilitation. This study aims to describe medical professionals' views on the safety of early mobilization for HF.

**Methods:** An online survey was circulated among specialists and general practitioners (GP) on their point of view on early mobilization of HF patients.

**Results:** It was revealed that GP (n = 104) were largely unsure or against early mobilization (49% agree, 33% unsure, and 18% disagree), as compared with the residents'/specialists' group (n = 93, 71% agree, 5% unsure, and 24% disagree). The presence of intravenous (IV) line, geriatric patients, and high risk of fall, were rated significantly higher as barriers for GP as compared with the residents or specialists' group (p < 0.05).

**Conclusions:** It is evident from this study that more education on early mobilization for HF patients should be available for medical professionals.

**Keywords:** Rehabilitation, Heart failure, Early mobilization, Survey, Medical professionals

## Introduction

Early mobilization has been believed to be an effective strategy to improve patient's functional outcome after hospital discharge [1]. The strategy, however, was not always seen to be practical at times, especially in very frail patients who probably has been bedridden for days, before they were admitted to the hospital. Cardiovascular diseases are often seen to be one of the main

hurdles towards early mobilization, owing to the nature of hemodynamic instability during acute stage [2,3].

Heart failure (HF) patients often present with multitudes of functional decline due to multiorgan disorders which may worsen with each acute decompensation, consequently leading to longer hospitalization [4]. Other than hemodynamic instability, other apparent barriers for early mobilization include peripheral oedema, sarcopenic muscle loss,

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or compromised pulmonary function [5]. All of these subsequently lead to reduction in quality of life. Earlier out-of-bed mobilization was proven to preserve better function for HF patients, which could then improve activity on discharge [6,7]. Even though HF patients can benefit from early mobilization, it still proves to be a challenge for medical professionals to adopt this practice during daily practice.

This study was performed to identify possible barriers that were observed by interdisciplinary medical professionals and aims to raise awareness in the importance of inpatient early mobilization for acute HF.

## Methods

An online survey was conducted on medical professionals of different specialties and qualifications centered in Indonesia. Questions were based on phase 1 inpatient HF rehabilitation. The main points revolve around effectiveness, safety, and perceived barriers of early mobilization in HF patients, adapted from a study which discussed the barriers of cardiac rehabilitation in HF [4,8]. Inclusion criteria are those subjects who are medical professionals, at least graduated as general practitioners, and have access to a web-based questionnaire. The exclusion criteria were subjects who are from other professions aside from medical doctors, or those who didn't accomplish their medical degrees and pursued another profession. Subjects were given informed consent before attempting the survey, and they were allowed to leave at any point during the study. Almost all questions were in multiple choice of Likert scales with 3–5 choices, this was selected to accommodate neutral options. Subjects were required to answer all questions before submitting their responses. All data were

processed using the IBM Statistical Package for the Social Sciences (SPSS) 20.0 for Windows.

## Results

Among the participants ( $n = 197$ ), 104 (52.79 %) were general practitioners (GP), 42 (21.32 %) were cardiology specialists and residents, while 51 (25.89 %) were physical medicine and rehabilitation (PM&R) specialists and residents. For further analysis, the participants were divided into two groups: General Practitioner (GP) and Residents or Medical Specialists combined, with the baseline characteristics summarized in [Table 1](#).

A significantly higher portion of the participants in the GP group were unsure or against out-of-bed mobilization in acute HF patients, compared with the participants in the residents or medical specialist group (70.96 % vs 32.38 %,  $p < 0.001$ ) as seen in [Fig. 1](#). Subgroup analysis in [supplement table 1](#) showed that there were more participants working in an advanced level hospital (teaching, university hospital and national referrals) who believed that out-of-bed mobilization is possible and effective in acute HF patients, compared with the participants working in other more conventional hospital types (56.00 %). As for the comparison between GP and specialists which is shown in [supplement table 1](#), majority of cardiologists (64.29 %) and other specialists (76.47 %) agreed on the efficacy and safety of inpatient HF mobilization.

Details on participants' perspectives on barriers of early mobilization in acute HF patients can be seen in [Table 2](#). Significant differences were observed between GP's and residents or specialists' groups on the presence of intravenous (IV) line, geriatric patients, family members' reluctance of mobilization, as barriers. All of these factors were rated higher as

Table 1. Baseline characteristics.

Variables	General Practitioner ( $n = 104$ )	Residents or Medical Specialists ( $n = 93$ )
Gender		
Male	78 (75.0 %)	47 (50.5 %)
Female	26 (25.0 %)	46 (49.5 %)
Age	29 (23–50)	35 (27–52)
Working place		
Teaching, University Hospital and National Referral Hospital	10	67
Regional Hospital	55	22
Conventional Hospital, Primary Health Center, Clinic, or Online Practice	39	4
Experience managing heart failure patients		
Inpatient	16	3
Outpatient	49	28
Inpatient and outpatient	39	62

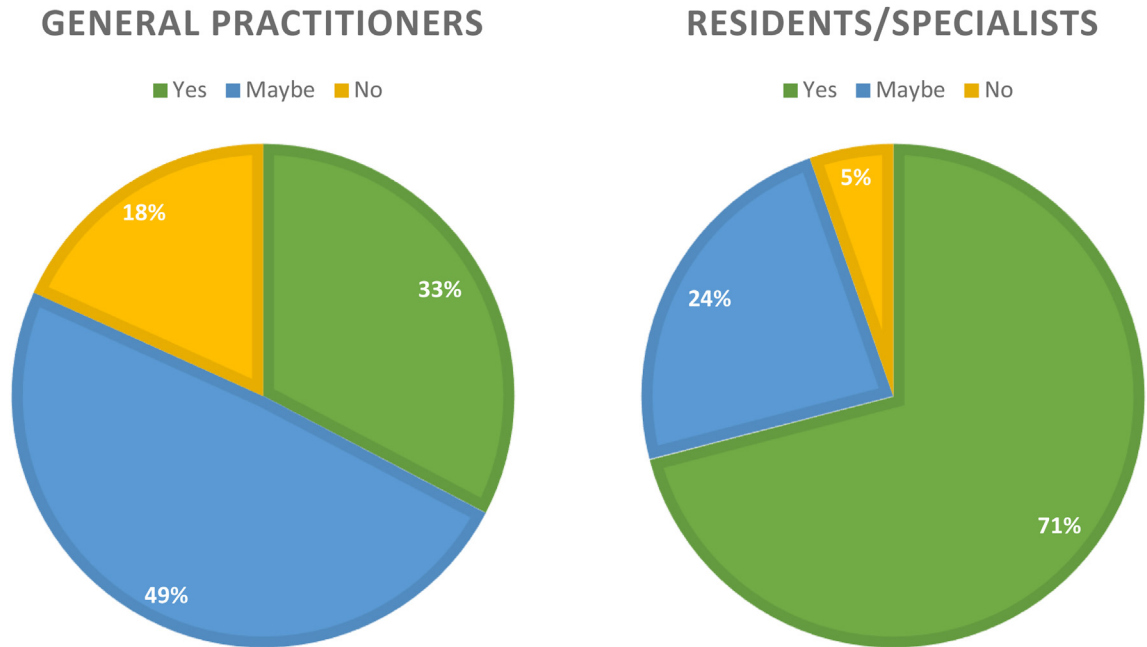


Fig. 1. Medical professionals' perspectives on the effectiveness of out-of-bed mobilization on heart failure patients.

barriers of early mobilization in acute heart failure patients by GP's.

## Discussion

This study revolves around the theme of whether out-of-bed mobilization could be allowed in HF patients during inpatient phase. It could be seen from the results that only 50.76 % of medical professionals answered 'yes' for all medical professional groups combined. Interestingly, intra-group analysis revealed that 70.96 % of specialists and residents have mentioned yes, and only 32.69 % of general practitioners have answered the same. Exploring the responses by GP's further, 49.03 % answered 'maybe', and 18.26 % answered 'no'.

Other than HF, few studies have discussed barriers regarding early mobilization in ICU patients, with similar concern of hemodynamic instability during acute phase [2,3]. Those studies clearly mentioned four classifications of ICU mobilization barriers, such as patient-related barriers, structural barriers, cultural barriers, and process-related barriers [1]. All these barriers could be applied HF inpatient mobilization, although there will be different parameters in each barrier classification, especially on the subject of patient and family perspectives [5].

It is well acknowledged that the main concern of early mobilization in HF is safety of out-of-bed mobilization. Hemodynamic instability during acute decompensated HF is commonly seen and this could

Table 2. Barriers of early mobilization in acute heart failure patients.

Variables	General Practitioner (n = 104)	Residents or Medical Specialists (n = 93)	p value
IV line	71 (68.3 %)	43 (46.2 %)	0.002
Deep access IV catheter	65 (62.5 %)	56 (60.2 %)	0.742
Ventilator	80 (76.9 %)	71 (76.3 %)	0.924
Pacemaker	45 (43.3 %)	34 (36.6 %)	0.337
Unstable hemodynamic	81 (77.9 %)	80 (86.0 %)	0.140
Geriatric patients	52 (50.0 %)	27 (29.0 %)	0.003
Protocol limitations	56 (53.8 %)	43 (46.2 %)	0.286
Safety device limitations	60 (57.7 %)	47 (50.5 %)	0.314
Time limitations	57 (54.8 %)	44 (47.3 %)	0.293
Patient's fear of mobilization	60 (57.7 %)	51 (54.8 %)	0.687
High risk of fall	58 (55.8 %)	41 (44.1 %)	0.102
Family member does not allow mobilization	44 (42.3 %)	26 (28.0 %)	0.036
Lack of coordination	54 (51.9 %)	47 (50.5 %)	0.846
Unwanted risks	45 (43.3 %)	31 (33.3 %)	0.153

pose challenge for early mobilization. Aligning to hemodynamic instability, majority of both groups agreed that deep access IV catheter was a potential mobility barrier. A similar study done on addressing the perspectives of nurses, physicians, and physiotherapists, showed that patient safety was the second most acknowledged barrier, the first being medical knowledge on mobilization [2,3].

Several studies had addressed concerns over low utilization rates of heart failure rehabilitation [8,9]. There are three main factors which are dominantly reported as barriers for HF cardiac rehabilitation, namely patient factors, physician factors, and service factors [8]. For inpatient rehabilitation, service factors usually would not be a problem, while patient and physician factors are both potential challenges for inpatient and outpatient HF rehabilitation [8]. It was reported that physician knowledge on cardiac rehabilitation for HF was still suboptimal, and patients too, on the other hand, were reluctant to change their lifestyle, putting them at a greater risk for readmission [4,8]. There are other reported factors which are applicable as well, such as hospital types and presence of cardiac rehabilitation services, all of which would affect the perspectives of both health professionals or patients on early mobilization [4]. In fact, a study done in Indonesia showed that early rehabilitation for post-discharge HF patients was generally safe, especially when the 6-minute walking distance was above 240 metres [10]. More studies should be performed to ensure safety and promote early mobilization practice.

Our study revealed that medical providers identified unstable hemodynamic to be the top barrier in HF patients. Geriatric age, high fall risks, and patients' fear of fall were somewhat similarly perceived in the barrier level [1]. To the authors' knowledge, this is the first survey that was conducted on health professionals' early mobilization perspectives in HF.

The outcome of cardiovascular care also relies on the effectiveness of long-term care, which requires the involvement of general practitioners. Early ICU mobilization guidelines have been published in 2018, additionally, recent guidelines on HF and cardiovascular diseases have re-established the importance of early mobilization during the inpatient phase [11]. Despite the presence of these guidelines, adherence of general practitioners to cardiovascular exercise prescription has been reported to be low [12]. Recent survey on general practitioners' knowledge in cardiovascular diseases was generally reported to be restricted and further training was required [12]. Similar results were shown on our study, that more than half of general practitioners do

not spontaneously consent towards early mobilization in HF.

Although residents and specialists may be more aware of the needs of early mobilization on HF, there are still no specific guidelines provided on early mobilization for HF. On the other hand, with rapid advancement in the treatment for HF patients, continuous medical education is essential.

A survey has been performed on the perspectives of patients and family members on early mobilization in acute cardiovascular care [5]. Older adults have been identified to experience more fear of falls, and this becomes the most important barrier in this group of patients. They also added that even when better communication was a potential solution, many patients remained to be unaware of the benefits of early mobilization [5].

Patient and family views were not investigated in our study. Our study revealed that family members' reluctance towards mobilization was significantly higher in the GP group, however it was still below 50 % for both groups.

## Conclusions

The complexity of acute management for patients with heart failure has led to a remarkable challenge for medical professionals to engage in early mobilization for these patients on a regular basis. Therefore, the results of our study highlight the importance of improving knowledge in early mobilization in heart failure, which would motivate medical professionals, patients and their families to follow this evidence-based practice.

## Funding support

Not applicable

## Conflicts of interest

None declared

## Ethical information

Our study has been approved by the Institutional Review Board of Harapan Kita National Cardiovascular Center Hospital with the ethical clearance number: LB.02.01A/I1/016/KEP016/2023.

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**Appendix.**

*Supplement Table 1. Comparison between hospital types whether out of bed mobilization in inpatient HF would be safe and effective (p < 0.001).*

Hospital Types	Yes (n = 100)	Maybe (n = 73)	No (n = 24)
Teaching, University Hospital and National Referral Hospital (n = 77)	56	15	6
Regional Hospital (n = 77)	29	38	10
Conventional Hospital, Primary Health Center, Clinic, or Online Practice (n = 43)	15	20	8

*Supplement Table 2. Comparison between specialists and general practitioners whether out of bed mobilization in inpatient HF would be safe and effective (p < 0.001).*

Variables	Yes (n = 100)	Maybe (n = 73)	No (n = 24)
General Practitioner (n = 104)	34	51	19
Cardiologists (specialists and residents) (n = 42)	27	12	3
Physical Medicine and Rehabilitation (specialists and residents) (n = 51)	39	10	2