

# PREVALENCE AND PROGNOSTIC IMPORTANCE OF PRECIPITATING FACTORS LEADING TO HEART FAILURE HOSPITALIZATION IN A CONTEMPORARY COHORT OF EGYPTIAN PATIENTS- A NATIONWIDE STUDY

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## Introduction

Knowledge of the frequency of precipitating factors for acute heart failure (AHF) is important (either new-onset heart failure [NOHF] or worsening heart failure [WHF]), as this can guide strategies for prevention and treatment. Most data come only from Western Europe and North America; nevertheless, geographic differences do exist. We set out to study the prevalence of precipitating factors of AHF and their connection to patient characteristics and in-hospital and long-term mortality in patients from Egypt.hospitalized for decompensated HF. Using the ESC-HF-LT Registry which is a prospective, multicenter,observational study of patients confessed to cardiology centers in the nations of Europe and the.Mediterranean, patients presenting with AHF were recruited from 20 centers all over Egypt. Enrolling .physicians were requested to report possible precipitants from among several predefined reasons.

## Aim of the work

**Primary Aim:** Investigate predisposing factors prevalence of AHF and their association with patient characteristics and clinical outcomes in the Egyptian cohort of patients enlisted in the ESC-HF long-term Registry. Outcomes included in-hospital and one year mortality. **Secondary Aims:** Identify which precipitating factors are associated with various HF clinical presentations. Explore interactions with subgroups (listed below) for clinical outcome. Patients hospitalized for decompensating of chronic HF versys new-onset HF. (HFrEF) versus (HFmrEF) and (HFpEF). Men versus women. Hospital length of stay.

## Methods

Twenty locations participated in this registration, including the Mediterranean coast, the Nile Delta, Greater Cairo, Upper Egypt, and the Suez Canal regions. The selection of the centers was made with the intention of having a representative sample of hospitals with varying degrees of complexity. Nine participating locations were university hospitals, and 7 of them lacked cardiac surgery or catheterization laboratories. A total of 1661 Egyptian patients who experienced heart failure and were hospitalized between April 2011 and September 2014 were added to the ESC-HFLT Registry. Patients were followed up by telephone calls at a mean of 1 year after admission for vital status (alive or dead) only.

The responsible cardiologist at participating locations made a clinical diagnosis of HF. Patients have to be at least 18 years old to consent to the study. In accordance with the rules established by each participating site, the Registry was authorized by each regionalResearch Ethics Committee (REC). The Declaration of Helsinki served as the basis for conducting this study. All patients or, if allowed, a legal representative, provided written informed consent.

## Results

We included 1515 patients (mean age  $60 \pm 12$  years, 69% males). The mean LVEF was  $38 \pm 11\%$ . Seventy-seven percent of the total population had HFrEF, 9.8% had HFmrEF, and 13.3% had HFpEF. The commonly reported precipitating factors for AHF hospitalization among study population were as follows (in decreasing order of frequency): infection in 30.3% of patients, acute coronary syndrome/myocardial ischemia (ACS/MI) in 26%, anemia in 24.3%, uncontrolled hypertension in 24.2%, atrial fibrillation (AF) in 18.3%, renal dysfunction in 14.6%, and non compliance in 6.5% of patients. HFpEF patients had significantly higher rates of AF, uncontrolled hypertension, and anemia as precipitants for acute decompensation. ACS/MI were significantly more frequent in patients with HFmrEF. WHF patients had significantly higher rates of infection and non-compliance, whereas newonset HF patients showed significantly higher rates of ACS/MI and uncontrolled hypertension. One-year follow-up revealed that patients with HFrEF had a significantly higher rate of mortality compared topatients with HFmrEF and HFpEF (28.3%, 19.5, and 19.4%,  $P = 0.004$ ). Patients with WHF had a significantly higher rates of 1-year mortality when compared to those with NOHF (30.0% vs. 20.3%,  $P < 0.001$ ). Renal dysfunction, anemia, and infection were independently connected to worse long-term survival.

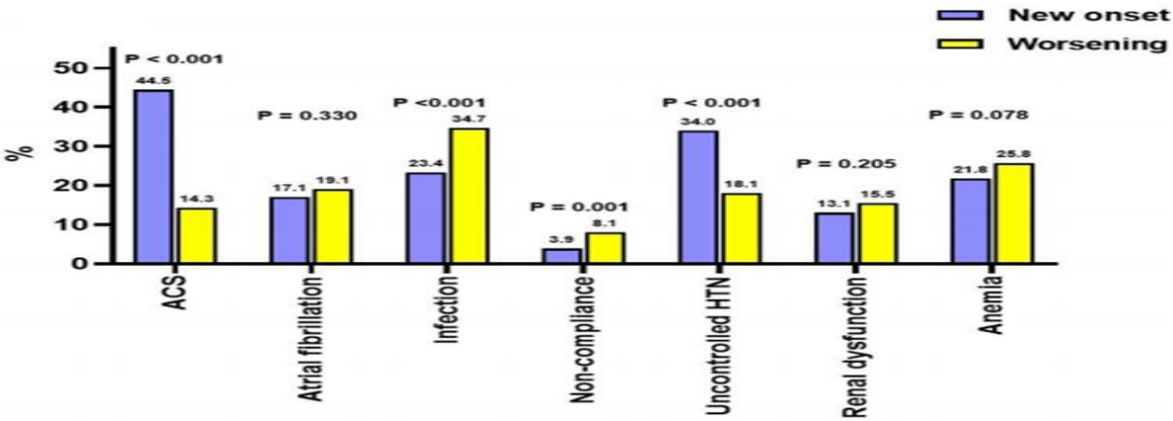


Figure (1): Precipitating factors in new onset HF vs WHF.

Table (1): General characteristics according to ejection fraction

	Ejection fraction (%)			P-value
	< 40	41 – 49	≥ 50	
Age (years)	61 ±12 <sup>a</sup>	62 ±10 <sup>a</sup>	58 ±12 <sup>b</sup>	<0.001*
Gender				
Males	858 (73.6)	102 (68.5)	86 (42.8)	<0.001*
Females	307 (26.4)	47 (31.5)	115 (57.2)	
BMI (kg/m <sup>2</sup> )	29.6 ±5.1 <sup>a</sup>	32 ±5.2 <sup>b</sup>	32.6 ±6.2 <sup>b</sup>	<0.001*
HF history	758 (65.1)	79 (53)	95 (47.3)	<0.001*
Smoking	343 (29.4)	54 (36.2)	40 (19.9)	0.002*
History of AF	257 (22.1)	35 (23.5)	82 (40.8)	<0.001*
Diabetes	541 (46.4)	77 (51.7)	65 (32.3)	<0.001*
Thyroid disease	16 (1.4)	5 (3.4)	6 (3)	0.087
COPD	178 (15.3)	15 (10.1)	30 (14.9)	0.239
Stroke	86 (7.4)	12 (8.1)	17 (8.5)	0.847
Peripheral vascular disease	69 (5.9)	7 (4.7)	3 (1.5)	0.032*
Heart failure status				
New onset	410 (35.2)	70 (47)	106 (52.7)	<0.001*
Worsening	755 (64.8)	79 (53)	95 (47.3)	
Primary etiology				
Ischemic	828 (71.1)	124 (83.2)	76 (37.8)	<0.001*
Non ischemic	337 (28.9)	25 (16.8)	125 (62.2)	
Baseline Hemoglobin (gm/dl)	11.8 ±2.2	11.7 ±2.1	11.4 ±2.2	0.116
Baseline creatinine (md/dl)	1.2 (0.4 - 12) <sup>a</sup>	1.2 (0.5 - 8) <sup>a, b</sup>	1.1 (0.5 - 6.6) <sup>b</sup>	0.008*

## Conclusion

Precipitating factors of AHF are frequent and substantially influence outcomes after hospitalization. They should be considered goals for avoiding AHF hospitalization and depicting those at highest risk for short-term mortality.