

Precipitating Factors of Heart Failure Decompensation in Outpatients Followed at the Hôpital de la Paix, Ziguinchor (Senegal)

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Abstract

Introduction: Heart failure (HF) decompensation is associated with high morbidity and mortality and substantial healthcare costs. Identifying precipitating factors is essential for their prevention, particularly in resource-limited settings. **Patients and Methods:** Descriptive cross-sectional study including 100 heart failure patients followed as outpatients in the cardiology department of the Hôpital de la Paix, Ziguinchor (July to November 2023). Decompensation factors were collected through history-taking and clinical examination. Adherence level was assessed using the Morisky questionnaire. Data were analyzed using descriptive statistics. **Results:** Thirty-four percent of patients had at least one episode of cardiac decompensation. Therapeutic non-adherence was the leading factor of decompensation (55.9%), followed by rhythm disorders (11.8%), peri-operative stress (8.8%), and respiratory infections (11.8% combined: COPD exacerbation 5.9% and pneumonia 5.9%). Among decompensated patients, 76% had adherence problems. Treatment discontinuation concerned 52% of the overall population, mainly for financial reasons (59.6%) and side effects (26.9%). **Conclusion:** Therapeutic non-adherence is the most frequent factor of decompensation in this Ziguinchor outpatient cohort. Targeted interventions on therapeutic education, financial accessibility of treatments, and management of side effects are needed to reduce hospitalizations for decompensation.

Keywords

Heart Failure, Decompensation, Therapeutic Non-Adherence, Precipitating Factors, Senegal, Ziguinchor

1. Introduction

Heart failure (HF) is a progressive chronic disease characterized by recurrent episodes of acute decompensation. Each decompensation episode worsens long-term prognosis and reduces survival [1] [2]. Preventing decompensation is therefore a major objective in the management of these patients.

Precipitating factors are numerous and well documented in the literature: therapeutic non-adherence, intercurrent infections, rhythm disorders, myocardial ischemia, fluid and sodium imbalance, uncontrolled hypertension, anemia, renal failure, use of nephrotoxic agents (nonsteroidal anti-inflammatory drugs, alcohol), and perioperative stress [3]-[5]. Identifying them allows the definition of preventive strategies tailored to each context.

In sub-Saharan Africa, data on decompensation factors remain scarce. The particular socioeconomic context—difficulties in access to care, high cost of treatment, low health insurance coverage—could considerably alter the profile of causes observed compared with Western series [6]. In high-income countries, heart failure-associated hospitalizations are frequent and burdensome [7], whereas the factors precipitating decompensation have been little described in our setting. The objective of this study was to identify the factors of HF decompensation among outpatients followed in the cardiology department of the Hôpital de la Paix, Ziguinchor.

2. Patients and Methods

2.1. Study Type and Period

This was a descriptive cross-sectional study conducted in the cardiology department of the Hôpital de la Paix, Ziguinchor, from July to November 2023.

2.2. Study Population

One hundred outpatients followed for heart failure were consecutively included. Inclusion criteria were: age ≥ 16 years, HF diagnosis established for at least 3 months, ongoing treatment, and informed consent obtained. Decompensation was defined as the onset or worsening of clinical signs of HF prompting an unscheduled consultation or hospitalization.

2.3. Study Parameters

Variables collected included: decompensation factors identified through history-taking and clinical examination, level of therapeutic adherence assessed using the Morisky questionnaire (score 0 - 8: poor adherence < 6 , minimal adherence 6 - 7, good adherence = 8), reasons for treatment discontinuation, reported side effects, prescribed treatments, and patient awareness of the risks associated with treatment discontinuation.

2.4. Statistical Analysis

Data were entered and analyzed using SPSS V27 software. Qualitative variables

were expressed as counts and percentages. Quantitative variables were expressed as mean $\pm$ standard deviation.

2.5. Ethical Considerations

Data confidentiality was ensured. Informed consent was obtained from each patient prior to inclusion.

3. Results

Of the 100 patients included, 34 (34%) had experienced at least one episode of decompensation during outpatient follow-up.

Therapeutic non-adherence was the leading factor of decompensation, accounting for more than half of the episodes (55.9%). Rhythm disorders (11.8%) and respiratory conditions (11.8% combined) were the two other main causes.

Table 1 details all identified factors.

Table 1. Factors of heart failure decompensation (N = 34 decompensated patients).

Decompensation factor	n	%
Therapeutic non-adherence	19	55.9
Rhythm disorders	4	11.8
Perioperative stress	3	8.8
COPD exacerbation	2	5.9
Infectious pneumonia	2	5.9
Acute valvular regurgitation	1	2.9
Pulmonary embolism	1	2.9
Conduction disorders	1	2.9
Acute coronary syndrome	1	2.9
Total	34	100.0

COPD: Chronic Obstructive Pulmonary Disease.

In the overall study population, 52% of patients reported having discontinued their treatment at least once. Among the 34 patients who experienced decompensation, 76% had adherence problems: 39% had poor adherence (Morisky score < 6) and 37% had minimal adherence (score 6 - 7). Only 24% were good adherers (**Table 2**).

The main reasons were financial difficulties (59.6%) and side effects (26.9%). Some patients reported more than one reason.

The mean monthly cost of the prescription was estimated at 16,340 FCFA. **Table 3** presents the distribution of reasons for treatment discontinuation.

Table 2. Level of therapeutic adherence among decompensated patients (N = 34).

Adherence level	n	%
Good adherence	8	24.0
Minimal adherence	13	37.0
Poor adherence	13	39.0
Total	34	100.0

Table 3. Reasons for treatment discontinuation (N = 52 patients who discontinued treatment).

Reason for discontinuation	n	%
Financial difficulties	31	59.6
Side effects	14	26.9
Failure to renew prescription	8	15.4
Voluntary discontinuation (no medical reason)	2	3.8

Among the 14 patients who discontinued treatment because of side effects, polyuria (64.3%) was the most frequent reason, followed by cough (28.6%). **Table 4** presents the details of the reported side effects.

Table 4. Side effects leading to treatment discontinuation (N = 14).

Side effect	n	%
Polyuria	9	64.3
Cough	4	28.6
Muscle cramps	3	21.4
Epigastric pain	1	7.1

The mean number of prescribed medications was 4.0 ± 1.32 . Patients who experienced decompensation received on average 4.3 medications versus 3.9 for non-decompensated patients, with no statistically significant difference. The most frequently prescribed treatments are presented in **Table 5**.

Table 5. Treatments prescribed in the study population (N = 100).

Treatment	n	%
Loop diuretics	58	58.0
Potassium-sparing diuretics	56	56.0
Angiotensin-converting enzyme inhibitors (ACEIs)	48	48.0
Other agents	-	-
Mean number of medications ($\pm$ SD)	4.04 ± 1.32	-

Only 32% of patients were aware of the risks of treatment discontinuation. Consequences cited included cardiac arrest (n = 20), stroke (n = 7), and HF recurrence

(n = 5). This knowledge gap was particularly marked among decompensated patients, whereas 87% of them reported “knowing their disease,” highlighting a gap between self-reported knowledge and actual understanding of therapeutic issues.

4. Discussion

Our study shows that therapeutic non-adherence is the leading factor of HF decompensation in Ziguinchor, accounting for 55.9% of episodes. This finding is considerably higher than in Western series, where non-adherence accounts for only 10% - 20% of causes of decompensation [3] [4]. This difference is explained by the Senegalese socioeconomic context, marked by major difficulties in access to care and treatment costs disproportionate to the population’s income. These results are consistent with other African data: Houndolo *et al.* in Benin found non-adherence to be a decompensation factor in 60% of cases [8], and Damasceno *et al.*, in a multinational African cohort, highlighted the predominance of factors related to access to care [9].

The mean monthly cost of the prescription (16,340 FCFA) represents a prohibitive burden for a large proportion of the Senegalese population in general. Financial difficulties were the leading reason for treatment discontinuation (59.6%). In the absence of effective universal health coverage for chronic diseases, many patients are forced to discontinue their treatment.

Side effects were the second leading reason for treatment discontinuation (26.9%). Polyuria related to loop diuretics is frequently poorly tolerated and often insufficiently explained to patients during consultations. Structured therapeutic education—addressing in particular the management of polyuria and the distinction between expected adverse effects and warning signs—could reduce unjustified discontinuations. Cough under ACE inhibitors is another classic cause of intolerance, for which substitution with an angiotensin II receptor blocker (ARB) should be considered.

Rhythm disorders (11.8%) and respiratory infections (COPD exacerbation 5.9% + pneumonia 5.9% = 11.8%) were the two other main causes, consistent with the international literature [4] [5]. Perioperative stress (8.8%) was not negligible in this polymorbid population and underscores the need for systematic preoperative cardiac assessment. Lack of awareness of the risks of treatment discontinuation among 68% of patients illustrates current shortcomings in therapeutic education and justifies strengthening this component of outpatient follow-up.

Study Limitations

This study has several limitations. Its cross-sectional design does not allow a formal causal relationship to be established between the identified factors and decompensation episodes. The modest sample size (n = 100) limits statistical power. Despite these limitations, the strength of the association between non-adherence and decompensation, and its consistency with other African series, reinforce the validity of the conclusions.

5. Conclusions

Therapeutic non-adherence is the most frequent factor of decompensation among heart failure outpatients followed in Ziguinchor, accounting for more than half of the episodes. Financial barriers and side effects are the main underlying causes. Rhythm disorders and respiratory infections are the other important factors.

Targeted interventions are needed: strengthening therapeutic education on the chronic nature of the disease and management of side effects, improving financial accessibility through expanded health insurance coverage and the use of generic drugs, early screening and treatment of rhythm disorders, influenza and pneumococcal vaccination, and close follow-up of at-risk patients. Reducing hospitalizations for decompensation depends primarily on improving therapeutic adherence in this context.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

- [1] Gheorghiad, M., Vaduganathan, M., Fonarow, G.C. and Bonow, R.O. (2013) Re-hospitalization for Heart Failure: Problems and Perspectives. *Journal of the American College of Cardiology*, **61**, 391-403. <https://doi.org/10.1016/j.jacc.2012.09.038>
- [2] Ambrosy, A.P., Fonarow, G.C., Butler, J., Chioncel, O., Greene, S.J., Vaduganathan, M., *et al.* (2014) The Global Health and Economic Burden of Hospitalizations for Heart Failure. *Journal of the American College of Cardiology*, **63**, 1123-1133. <https://doi.org/10.1016/j.jacc.2013.11.053>
- [3] Tsuyuki, R.T., McKelvie, R.S., Arnold, J.M.O., Avezum Jr., Á., Barretto, A.C.P., Carvalho, A.C.C., *et al.* (2001) Acute Precipitants of Congestive Heart Failure Exacerbations. *Archives of Internal Medicine*, **161**, 2337-2342. <https://doi.org/10.1001/archinte.161.19.2337>
- [4] Fonarow, G.C., Abraham, W.T., Albert, N.M., *et al.* (2008) Factors Identified as Precipitating Hospital Admissions for Heart Failure and Clinical Outcomes: Findings from OPTIMIZE-HF. *Archives of Internal Medicine*, **168**, 847-854. <https://doi.org/10.1001/archinte.168.8.847>
- [5] Vader, J.M. and Rich, M.W. (2015) Causes of Hospitalization for Heart Failure. *Current Heart Failure Reports*, **12**, 169-176.
- [6] Kapoor, J.R. and Perazella, M.A. (2013) Diagnostic and Therapeutic Approach to Acute Decompensated Heart Failure. *The American Journal of Medicine*, **126**, 473-478.
- [7] Blecker, S., Paul, M., Taksler, G., Ogedegbe, G. and Katz, S. (2013) Heart Failure-Associated Hospitalizations in the United States. *Journal of the American College of Cardiology*, **61**, 1259-1267. <https://doi.org/10.1016/j.jacc.2012.12.038>
- [8] Houndolo, T., Houenassi, M., Agbotsou, K., *et al.* (2016) Facteurs de décompensation de l'insuffisance cardiaque à Cotonou. *African Journal of Cardiology*, **3**, 12-18.
- [9] Damasceno, A., Mayosi, B.M., Sani, M., Ogah, O.S., Mondo, C., Ojji, D., *et al.* (2012) The Causes, Treatment, and Outcome of Acute Heart Failure in 1006 Africans from 9 Countries. *Archives of Internal Medicine*, **172**, 1386-1394. <https://doi.org/10.1001/archinternmed.2012.3310>