Scientific Research Publishing

World Journal of Cardiovascular Diseases, 2026, 16(2), 76-82
https://www.scirp.org/journal/wjcd
ISSN Online: 2164-5337
ISSN Print: 2164-5329

Assessment of Therapeutic Patient Education Knowledge Levels in Heart Failure Patients Followed at Amirou Boubacar Diallo National Hospital in Niamey: A Study of 100 Cases

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How to cite this paper: Kimba, S., Boubacar, D., Zakaria, A., Youssoufa, S.M., Hammadou, S., Ali, B.S., Mamane, A., Souleymane, B. and Toure, A.I. (2026) Assessment of Therapeutic Patient Education Knowledge Levels in Heart Failure Patients Followed at Amirou Boubacar Diallo National Hospital in Niamey: A Study of 100 Cases. *World Journal of Cardiovascular Diseases*, **16**, 76-82.
https://doi.org/10.4236/wjcd.2026.162008

Received: November 13, 2025
Accepted: February 7, 2026
Published: February 10, 2026

Abstract

Background: Heart failure is a chronic, common, and serious condition responsible for repeated hospitalizations and impaired quality of life. Therapeutic patient education (TPE) has proven effective in reducing hospitalizations and improving quality of life but remains poorly implemented in our setting. **Objective**: To assess the level of therapeutic education knowledge among heart failure patients followed at Amirou Boubacar Diallo National Hospital in Niamey. **Methods**: Descriptive cross-sectional study conducted over three months (June 1 to August 30, 2020). **Results**: One hundred patients (mean age 56.4 years) were included: 62% men, 38% women. NYHA class distribution: 38% class I, 32% class II, 15% class IV. LVEF was reduced in 67%. Main etiologies were hypertensive heart disease (70.6%) and ischemic heart disease (25%). Regarding education: 73.3% had received information about their disease and understood it was chronic and required lifelong treatment; 66% were non-adherent to treatment; 69% followed a low-sodium diet; 60% performed physical activity according to their capacity; 86% had never received smoking-cessation counseling. Socioeconomic status and educational level significantly influenced treatment adherence ($p = 0.04$). **Conclusion**: Therapeutic patient education in heart failure reduces healthcare costs and improves quality of life. Its systematic implementation in our setting, in accordance with learned society recommendations, is urgently needed.

Keywords

Heart Failure, Therapeutic Patient Education, Niamey, Niger

1. Introduction

Therapeutic patient education (TPE) has been defined by the World Health Organization since 1998 as a process that enables patients to acquire and maintain the skills needed to optimally manage life with a chronic disease [1]. It is an ongoing process integrated into care and centered on the patient [2] [3].

Heart failure is a chronic, frequent, and severe condition responsible for repeated hospitalizations and significant impairment of quality of life [4]. Overall mortality in symptomatic heart failure is approximately 50% within four years of diagnosis. In the Framingham study, five-year survival was 25% in men and 38% in women [5].

TPE in heart failure patients improves prognosis and quality of life [6]. Heart failure is a key target for TPE because of its high rate of preventable hospitalizations through simple daily clinical monitoring and the lifestyle changes it requires [7]. Despite strong evidence and recommendations from learned societies, TPE is offered to only a small proportion of eligible patients [8].

In our context, TPE remains poorly practiced, contributing to frequent rehospitalizations and increased cardiovascular healthcare expenditure. We conducted a descriptive cross-sectional study to assess the level of therapeutic education knowledge among heart failure patients managed at Amirou Boubacar Diallo National Hospital in Niamey.

2. Patients and Methods

This descriptive cross-sectional study was conducted over three months (June 1 to August 30, 2020) in the Department of Internal Medicine and Cardiology of HNABD. All heart failure patients seen in outpatient clinics or hospitalized during the study period who provided informed consent were included.

Patients had previously received individual TPE during routine consultations or hospitalization, using visual aids and a locally adapted "Snakes and Ladders" educational game. A questionnaire translated into the main national languages was administered.

Exclusion criteria: incomplete questionnaire or medical record.

Parameters studied:

- Sociodemographic: age, sex, ethnicity, occupation, origin, education 5evel
- Cardiovascular risk factors
- Knowledge of the disease (Patients received clear explanations about the anatomy of the cardiovascular system, how the heart functions normally, and the signs of cardiac decompensation. This parameter measures patients' ability to recognize the signs of cardiac decompensation and what to do before consult-

ing their doctor.)

- Re-hospitalizations
- Treatment adherence
- Knowledge of medications
- Socioeconomic level (access to drinking water, electricity, housing, financial means for care)
- Compliance with low-sodium diet
- Physical activity as recommended
- Recognition of warning signs and appropriate responses
- Smoking status
- Daily fruit and vegetable intake

Data were collected using a questionnaire translated into the two main languages spoken in Niger, anonymized, and analyzed with Microsoft Office Word 2013, Excel 2013, and Epi-Info. Chi-square test was used; $p \leq 0.05$ was considered significant.

Difficulties encountered

- Lack of precision in patient recall of disease onset and prior hospitalizations
- Reduced healthcare attendance due to the COVID-19 pandemic, limiting sample size

3. Results

One hundred patients were included from 564 patients managed in the department (145 hospitalized, 419 outpatient), giving a hospital prevalence of heart failure of 17.7%.

Mean age was 56.4 years (range 19 - 93 years) [Figure 1]; 62% were male [Figure 2]. Low socioeconomic level was noted in 60.6%; 41% were retired civil servants, housewives, or unemployed. 61% resided in urban Niamey; 66% had no formal education [Figure 3].

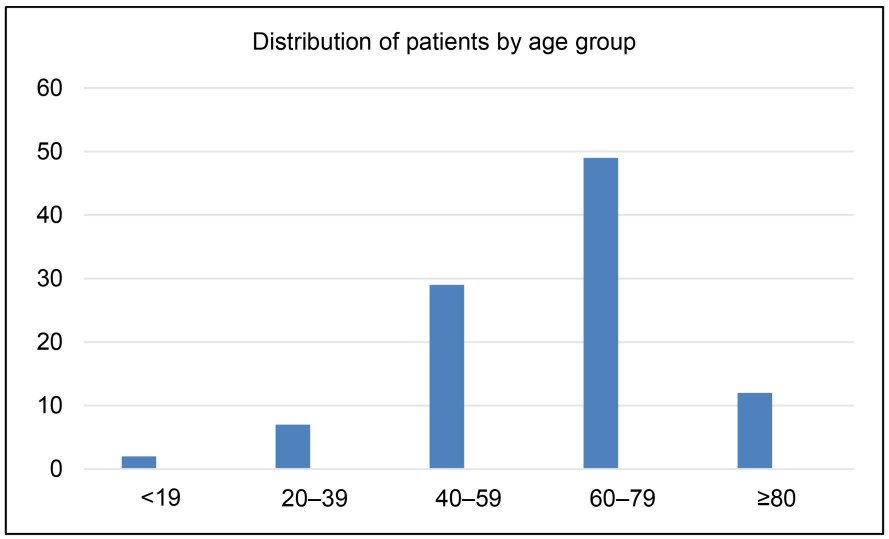

Figure 1. Distribution of patients by age group.

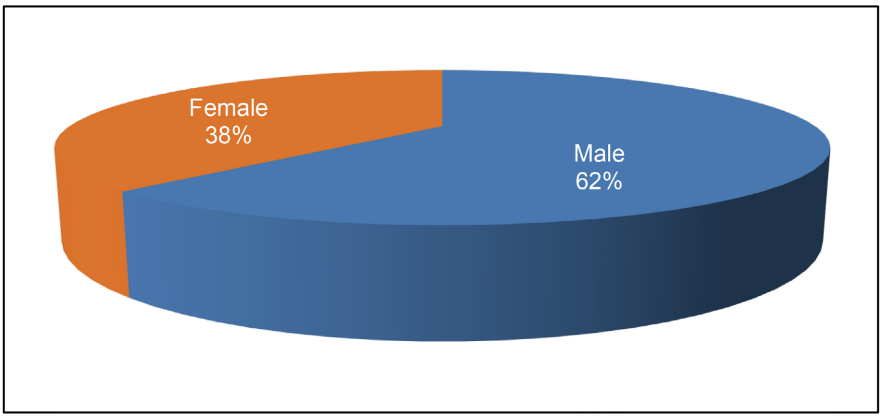

Figure 2. Distribution of patients by sex.

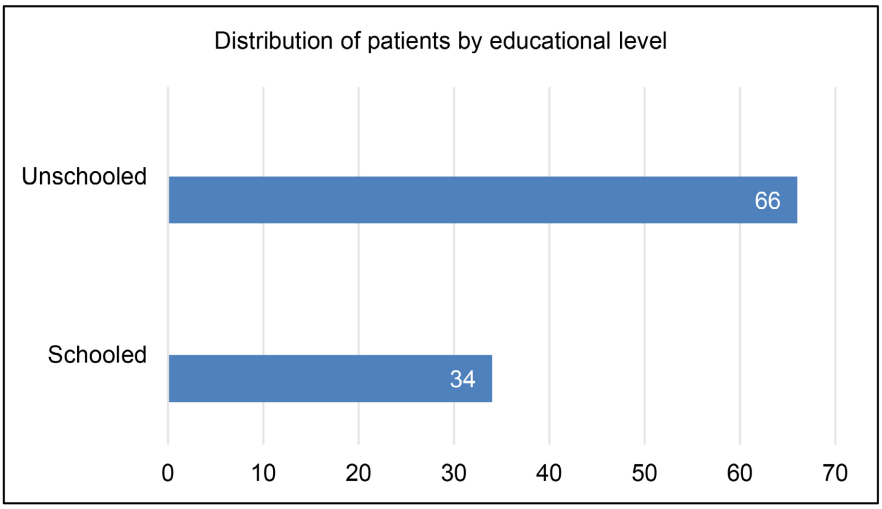

Figure 3. Distribution of patients by educational level.

Cardiovascular risk factors: hypertension 77%, smoking 24% [Table 1]. Heart failure was global in 50%, left-sided in 35%, and right-sided in 15%. NYHA class: I (38%), II (32%), III (15%), IV (15%) [Table 2]. LVEF was moderately reduced in 50%, severely reduced in 25%, and preserved in 25%. Etiologies: hypertensive heart disease 60%, ischemic 20%, dilated cardiomyopathy 10%, rheumatic valvular disease 10%.

Diet and lifestyle: low-sodium diet followed by 69% [Table 3]; daily fruit/vegetable intake 38.6%; omega-3-rich foods 14.9%. Physical activity is performed by 63%.

Knowledge and adherence: 73.3% [Figure 4] knew their disease was chronic and required lifelong treatment; only 34% were adherent to medication; 54% knew correct timing of medications; only 45% of smokers had received cessation counseling.

Warning signs and responses: 69% did not know what to do in case of weight gain, lower-limb edema, or orthopnea; only 3.3% reduced salt intake and 2.2% increased diuretic dose when symptoms worsened.

Table 1. Distribution of cardiovascular risk factors.

Cardiovascular risk factor	Frequency	Percentage
Hypertension	77	77%
Smoking	24	24%
Diabetes mellitus	16	16%
Obesity	3	3%
Dyslipidemia	1	1%

Table 2. Distribution of patients by NYHA functional class.

NYHA class	Frequency	Percentage
Class I	38	38.0%
Class II	32	32.0%
Class III	26	26.0%
Class IV	4	4.0%
Total	**100**	**100.0%**

Table 3. Adherence to low-sodium diet.

Low-sodium diet	Frequency	Percentage
Yes	69	69.0%
No	31	31.0%
Total	**100**	**100.0%**

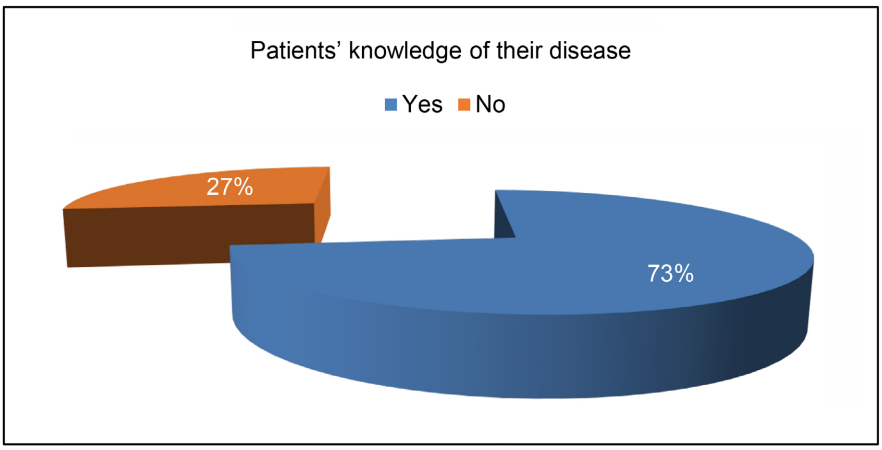

Figure 4. Patients' knowledge of their disease.

Rehospitalization: 70% had ≥1 rehospitalization for decompensation; one patient had five in the past year.

Bivariate analysis showed significant association between socioeconomic/educational level and treatment adherence ($p = 0.04$).

4. Discussion

This is the first study in Niger evaluating therapeutic education in heart failure patients according to GERS and ESC recommendations. Mean age (56.4 years) and male predominance (62%) are consistent with African series. Hypertension was the leading risk factor (77%), similar to Damon *et al.* (68.8%) [9]. Hypertensive heart disease was the leading etiology (60%), unlike European series where ischemic heart disease predominates, reflecting poor hypertension control in Africa.

73.3% of patients understood the chronic nature of their disease - encouraging given the low education level (66% unschooled) - but lower than Mansouri (100%) [10]. Treatment adherence was poor (34%) versus 84.3% in Lemoine's French study [11], explained by low socioeconomic status (60.6%) and education level, both significantly associated with non-adherence ($p = 0.04$) - a finding also reported by Yacouba *et al.* [12].

Low-sodium diet adherence (69%) and physical activity (63%) were relatively good but lower than in developed countries (81.3% for salt restriction in Lemoine [13]). Fruit/vegetable and omega-3 intake were very low, reflecting poverty and lack of universal health coverage.

Most patients (69%) did not recognize warning signs of decompensation, contributing to the high rehospitalization rate (70%), much higher than in Roussel's series (36.1% with ≥1 rehospitalization) [14], due to differences in education, insurance coverage, and healthcare infrastructure.

5. Conclusion

Therapeutic patient education in heart failure remains insufficient in our setting despite some positive results. Non-adherence, dietary errors, inadequate physical activity, low socioeconomic and educational levels are major risk factors for decompensation and rehospitalization. Systematic implementation of structured TPE programs, using simple, culturally adapted tools, is essential to reduce morbidity, mortality, and healthcare costs while improving quality of life. A larger-scale study is needed to confirm and extend these findings.

Conflicts of Interest

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

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