

Evaluation of the Quality of Heart Failure Management in the Cardiology Department of the Departmental University Hospital Centre of Borgou and Alibori (Chud-B/A) in Benin in 2023

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Received Date: 11 June 2025

Revised Date: 04 July 2025

Accepted Date: 20 July 2025

Publication Date: 28 July 2025

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Int J Cardiol Res Rev. 2025; Vol 2, Issue 2

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Abstract

Introduction: Heart failure is a major public health concern. The aim of our study was to evaluate the quality of its management in the cardiology department of the CHUD-B/A in 2023.

Method: This was a cross-sectional, evaluative study. It covered heart failure patients hospitalized in the cardiology department of CHUD-B/A between 01 January 2020 and 31 December 2022, as well as the staff and material resources mobilized for their care. The quality of care was assessed on the basis of compliance with the 'Structure', "Process" and "Outcome" components, following the theoretical framework established by Donabedian and using the Varkevisser scale.

Results: A total of 238 patients were admitted to hospital during the study period. The quality of care for heart failure patients was considered acceptable both overall and for each of the 'structure', "process" and 'outcome' components.

Conclusion: Heart failure management in the cardiology department of CHUD-B/A is of 'acceptable' quality. It deserves to be improved in order to offer better care to patients.

KEYWORDS

Quality of care, Heart failure, Benin.

INTRODUCTION

Heart failure is a major public health concern. According to the World Health Organisation (WHO), cardiovascular disease, which is most often complicated by heart failure, is currently the leading cause of death in the world, with 17.7 million deaths attributable to cardiovascular disease, accounting for 31% of global mortality, more than three-quarters of which occur in low- and middle-income countries [1]. Ageing populations and an increase in the frequency of cardiovascular risk factors are factors that have contributed to the preponderant increase in the prevalence of heart failure in recent years [2].

The management of heart failure combines a number of approaches, including drug treatment, therapeutic education, cardiovascular rehabilitation and psychosocial support, all of which cannot be implemented without an appropriate framework and qualified staff. According to some American and European studies, the recommendations concerning drug

treatment for heart failure are not widely applied, with the result that treatment is inadequate. Therapeutic education and cardiovascular rehabilitation benefit very few patients [3].

In Parakou, Benin, heart failure accounted for 9.24% of admissions and almost 60% of hospitalisations in the cardiology department of the Centre Hospitalier Universitaire Départemental du Borgou/Alibori (CHUD-B/A) in 2020 [4]. More strikingly, the mortality rate for heart failure in this department was 30.37% [4]. This high mortality rate undoubtedly reflects a series of dysfunctions in the management process. In such a context, it is essential to have an effective management system. This system would be more effective if the problems associated with its implementation were identified and corrective action taken. With this in mind, the present study was initiated to assess the quality of care for patients with heart failure in the cardiology department of CHUD-B/A in 2023.

Citation: Dohou SHM, Ade SS, Sonou DA, et al. Evaluation of the Quality of Heart Failure Management in the Cardiology Department of the Departmental University Hospital Centre of Borgou and Alibori (Chud-B/A) in Benin in 2023. Int J Cardiol Res Rev. 2025;2(2):1-5. DOI: 10.52106/3066-3431.1012.

METHODS

Study setting

The study took place in the cardiology department of CHUD-B/A and in pharmacies in the town of Parakou.

Type of study

This was a cross-sectional study with an evaluative purpose, which ran from January to December 2023.

Study Population

The primary target population consisted of patients hospitalised for heart failure in the cardiology department of CHUD-B/A over the period from 01st January 2020 to 31 December 2022. Secondary targets included medical and paramedical staff working in the cardiology department of CHUD-B/A as well as pharmacies located in the city of Parakou.

Sampling

Primary target: exhaustive census of patients, i.e. a total of 515 heart failure patients received during the study period.

Secondary targets: exhaustive census of care providers in the cardiology department (09) and pharmacies (21) in the town of Parakou. The head of the cardiology department was selected by reasoned choice.

Study variables

The quality of heart failure management was assessed on the basis of a combination of "structure", "process" and "outcome" compliance scores in relation to international standards [5-9]:

- The structure was assessed on the basis of compliance with standards, human resources (availability, training and motivation of staff); work equipment (equipment in intensive care, laboratory, material in conventional hospitalisation, material resources in the functional exploration room) ; standards documents (availability and accessibility of heart failure management standards documents); availability of management marker drugs; organisation of management (availability of a monitoring mechanism, availability of a job description, work schedule) and interventional resources (cardiac resynchronisation, cardiac surgery, coronary angiography).
- The process was assessed for compliance with standards reception, clinical approach and complementary examinations (research into cardiovascular risk factors, history, type of heart failure, aetiology of heart failure, decompensation factor, electrocardiogram, cardiac echodoppler, request for minimum blood test, minimum blood test); treatment modalities (symptomatic drug treatment, adjuvant treatment, prognostic treatment, therapeutic education); other treatment modalities (cardiovascular rehabilitation, psychosocial support, dietician) and patient follow-up.
- Results were assessed on the basis of compliance with standards for key indicators such as complications (absence of complications); clinical condition at discharge; compliance with treatment; outcome of care and patient satisfaction.

Each item assessed was given a score of 1 when it complied with the standard, and 0 when it did not. Compiling the scores gives us the total expected score by sub-component and by component. The proportion of conformities in relation to the expected scores gives the compliance rate for each sub-component and component.

The overall quality of management is the proportion of the total score obtained in relation to the total expected score for the three components. Table 1 summarises the expected scores by component and sub-component.

Table 1: Summary of the operational aspect of the variables by component and sub-component, according to expected scores

Components	Subcomponents	Expected results
Structure		327
	Human resources	50
	Work equipment	30
	Tracer drugs	231
	Standards documents	2
	Organisation of care	14
Processus		3510
	Patient reception	89
	Clinical approach and complementary examinations	1904
	Therapeutic procedures	803
	Other treatment methods	714
	Patient follow-up	89
Results		892
	No complications	238
	Clinical condition at discharge	238
	Therapeutic compliance	89
	Outcome of care	238
	Satisfaction	89
Quality of care		4729

In accordance with the Varkevisser scale [10], we decided that:

- when compliance with standards is greater than or equal to 80%, this means that almost all the assessment criteria are satisfactory. The component's performance is considered "Good";
- when compliance with standards is between 60 and 79%, this means that few of the assessment criteria are satisfactory. The component's performance is deemed "Acceptable";
- when compliance with standards is less than 60%, this means that very few of the assessment criteria are satisfactory. The component's performance was assessed as "Poor".

The other variables consisted of the socio-demographic characteristics - age, gender, occupation, level of education, marital status and place of residence - of the various target groups.

Data Collection Techniques and Tools

The data were collected by documentary analysis, observation and questionnaire survey, using a data processing sheet, an observation grid and a questionnaire respectively. The questionnaire was administered to healthcare staff and patients; the observation was carried out on material resources and the documentary analysis focused on patient files. A questionnaire was applied to each patient living after hospitalisation, and the data (assessment of reception, therapeutic education, therapeutic compliance, assessment of care) were collected by telephone.

Data Processing and Analysis

The data was collected using the kobotoolbox server and analysed using sata18 software. The completeness and consistency of the data collected were checked at the end of each day to ensure quality. Means (\pm standard deviation) were determined for quantitative variables with a normal distribution, and medians (interquartile range,

IQR) for quantitative variables with an asymmetric distribution. The normality of the distributions was tested using the Shapiro Wilk test. The proportions of compliance with standards were calculated overall, by sub-component, and then by component.

Ethical Considerations

The study was approved by the Local Ethics Committee for Biomedical Research (CLERB-UP072/2023). Administrative authorisations were obtained beforehand from the management of the CHUD-B/A and the Borgou Order of Pharmacies.

RESULTS

Description of the sample

A total of 269 targets were reached out of the 546 expected, for a recruitment rate of 49.26%, i.e. 238 (46.21%) patients, 10 (100%) carers and 21 (100%) pharmacies.

Patient age ranged from 11 to 117 years. The median age was 55 years (IIQ=41-66). Patients aged between 41 and 60 years were the most represented (39.08%). Men accounted for 58.65%, giving a sex ratio (M/F) of 1.09. Of the 238 patients, 4 (1.68%) had right heart failure, 11 (4.62%) had left heart failure and 223 (93.70%) had congestive heart failure.

Assessment of the "Structure" component

The "structure" component was acceptable with a score of 62%, i.e. 202 points out of 327 expected. Its sub-components are shown in Figure 1 below. This figure shows that the tracer drugs and standard documents sub-components were poor; human resources and equipment were acceptable; and finally, the organisation of care sub-component was good.

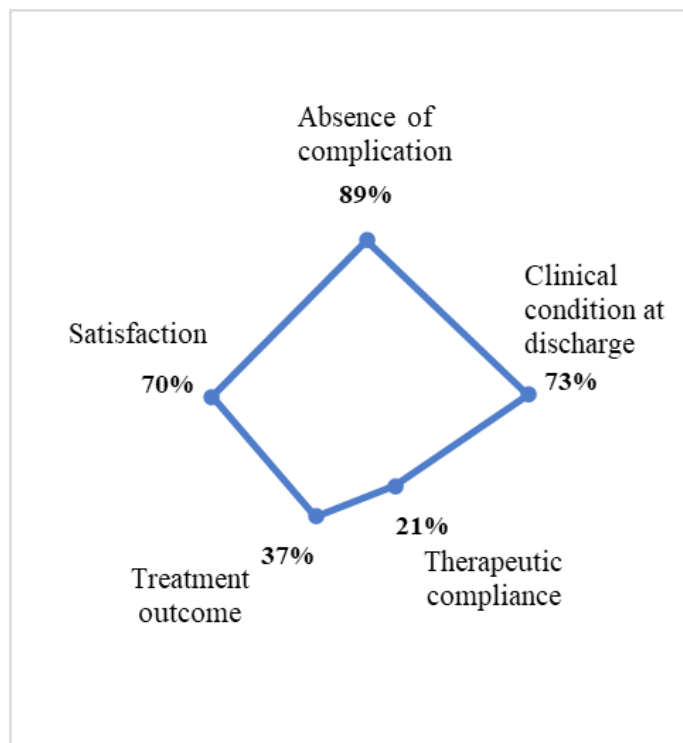


Figure 1: Assessment of the "Structure" component of heart failure management in the cardiology department of CHUD-B/A from 2020 to 2022.

Assessment of the "Process" component

With a score of 71%, or 2,486 points out of 3,510 expected, the "process" component was deemed acceptable. The main shortcomings were observed in the "other procedures" and "patient follow-up" sub-components, which were judged to be poor; therapeutic procedures and patient reception were acceptable, while the "clinical approach and complementary examinations" sub-component was good.

Figure 2 below summarizes the various sub-components and the scores obtained:

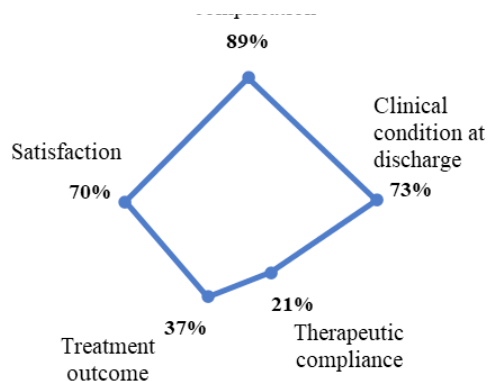


Figure 2: Assessment of the "Process" component of heart failure management in the cardiology department of CHUD-B/A from 2020 to 2022.

Assessment of the "Results" component

The "results" component was acceptable. It totaled a score of 556 points against an expected 892 points. Therapeutic compliance and the outcome of care recorded low scores; clinical condition at discharge and satisfaction were acceptable; only the absence of complications was judged to be good.

Figure 3 below shows the various sub-components:

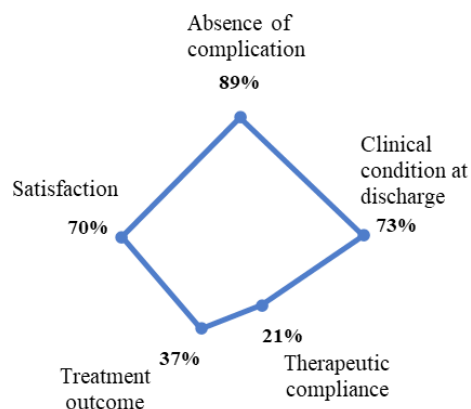


Figure 3: Assessment of the "Results" component of heart failure management in the cardiology department of CHUD-B/A from 2020 to 2022.

Overall Assessment of the Quality of Heart Failure Management

Overall, the assessment of the quality of heart failure management was acceptable, with a score of 69%. Table 2 below summarises the quality of heart failure management and its components.

Table 2: Quality of heart failure management in the cardiology department of CHUD-B/A from 2020 to 2022

	Expected score	Score obtained	Compliance (%)	Appreciation
Structure	327	202	62	B
Process	3510	2486	71	B
Results	892	556	62	B
Quality of care	4729	3244	69	B

DISCUSSION

Socio-demographic characteristics of patients

In our study, the age of heart failure patients ranged from 11 to 117 years, with a median of 55 years. This median age is similar to those found by Kingue et al., in Cameroon [11] and Yayhed et al., in Togo [12], i.e. 57 and 54 years respectively. Higher average ages were found in the Princes study in France [13] and the study by Vander Wal et al., in the Netherlands [14], at 71 and 72 years respectively. This difference between northern and southern countries is often highlighted and could be explained by the ageing and higher life expectancy of the western population. In addition, improvements in the management of heart failure and cardiovascular risk factors, thanks to more rigorous application of the new recommendations in Western countries, could also explain this difference.

We also noted that patients aged between 41 and 60 years were the most represented (39.08%) in our study. In the Yayhed et al., study in Togo, it was patients aged between 50 and 69 years [12]. Given that the two countries share the same geographical area, this difference could be explained by sampling fluctuations.

In terms of gender, there was a predominance of males (58.65%), with a sex ratio (M/F) of 1.09. This result corroborates those of other studies. This result corroborates those of other authors in Cameroon [11] and Togo [12], i.e. 1.3 and 1.5 respectively. Men are certainly more likely to be affected by heart failure, for a variety of reasons including, but not limited to, a higher incidence of cardiovascular risk factors, less effective management of these risk factors, and more frequent use of healthcare services than women.

In-Hospital Incidence of Heart Failure

The incidence of heart failure in hospital in this study was 59.6%. This was higher than the rates found over a 3-year period by Bivigou et al., in Gabon [15] and Diallo et al., in Mali [16], 49.7% and 37.5% respectively. This is a high rate, which calls for awareness-raising and early screening campaigns in our populations. For nearly a decade, an annual week has been devoted to raising mass awareness of cardiovascular diseases and screening for them, particularly hypertension. These types of action need to be further strengthened in the community and extended to other nearby regions, where patients also come from.

Structure Component

Comparisons of the heart failure management structure with international standards have been carried out. This is an important and not insignificant aspect which plays a major role in the outcome of a patient's care.

The assessment of the facility was not good, but was deemed acceptable. The main shortcomings were: a shortage of human resources, a lack of specific training and continuing education, a lack of equipment, drug shortages and the absence of a monitoring mechanism.

Racine Morel et al., [17] in France had already highlighted the major role of human resources and the need to create therapeutic units in order to meet heart failure management standards.

Process" Component

The assessment of the process was not good, but was deemed acceptable. However, cardiovascular risk factors had been sought in all patients, and in our context the risk factors found were age (over 50 in men and 60 in women) for 54.62% and arterial hypertension for 45.62%. Elsewhere in Mali, Traore et al., [18] found similar results, with age at 47.68% and arterial hypertension at 45.6%.

A search for the type of heart failure was also performed, dominated by congestive heart failure at 93.70%; this search was also performed by Traore et al., [18] and Douay et al., [19] but found lower results for congestive heart failure at 61.8% and 21% respectively. The aetiology of heart failure investigated in all patients revealed ischaemic heart disease in 55.04%, unlike Gnaba et al. in Côte d'Ivoire who found hypertensive heart disease in 80% of patients [20]. It should be noted, however, that ischaemic heart disease was confirmed on the basis of clinical, electrocardiographic and echographic evidence. The absence of coronary angiography was a major bias in confirming this aetiology.

Decompensation factors were also sought in all patients; infection and anaemia were the main factors in 47.48% and 39.92% of cases respectively. Unlike our study, Kheyi et al., in Morocco found hypertensive relapse in 43.04% and infection in 22.02% of cases [21]; this can be explained by the fact that hypertension was predominant in the Moroccan study population. However, not all our patients were able to undergo all the paraclinical tests because of the high cost and lack of medical cover, unlike Kheyi et al., in Morocco, in whom all patients were able to undergo them [3].

In our study, prognostic treatment, therapeutic education and other therapeutic means were the weak points of the process component. Prognostic treatment was considered appropriate for the symptoms in 47.87% of patients; this was due to the low rate of combination of the therapeutic classes recommended by the learned societies of cardiology and to the drug discontinuation sometimes observed. The majority of patients (86.52%) stated that they had not received sufficient therapeutic education. In a study evaluating a therapeutic education programme for patients with heart failure, Brunie et al., demonstrated the significant benefits of therapeutic education on patient health [21]. Other therapeutic means, such as cardiovascular rehabilitation, psychosocial support and support from a dietician, were non-existent.

Bigot et al., in France showed the need for the creation of cardiovascular rehabilitation centres in order to compensate for these shortcomings and to comply with the recommendations for the management of heart failure [22].

Results" component

The evaluation of the outcome component was acceptable. At the end of the hospital stay, 72.69% of patients had compensated heart failure and 15.97% had died. This mortality rate is higher than that found by Kambire et al., which was 10.7% [23]. This difference could

be explained by the size of the population, which was 84 patients in their study compared with 238 in ours. However, patient compliance and satisfaction were lower; good compliance was found in 25.84% of patients; a similar finding was made by Yayhed et al., who found good compliance in 25.50% of patients [12]. This could be explained by shortcomings in therapeutic education, poor understanding of the disease, or even the difficult economic circumstances of some patients.

Quality of Heart Failure Management

At the end of this study, the overall quality of management was judged to be "acceptable" on the basis of an assessment adapted from the model proposed by Donabedian [24] and the Varkevisser scale [10]. The score recorded for all components was 69%. Such a score is not reassuring and needs to be improved, the target being performance above 80%. The "structure" and "results" assessments recorded the lowest scores, 62%, which is very close to 60%, the threshold below which the quality of care is judged to be "poor". These components therefore require particularly urgent improvement, if a prioritisation of actions is to be achieved, short of improving the system as a whole.

CONCLUSION

This study shows that the quality of heart failure management in the cardiology department of the Centre Hospitalier Universitaire Départemental du Borgou et de l'Alibori (CHUD-B/A) in 2023 is acceptable. The human and material resources available are insufficient to ensure optimal patient care. The inaccessibility of recommended treatment molecules makes treatment difficult. Despite these shortcomings, staff are working hard to provide care by adapting to local conditions. Improvements in working conditions, technical facilities and medical monitoring should help to reduce the mortality rate among heart failure patients. The creation of therapeutic heart failure units would be an ideal way of ensuring continuity of care for heart failure patients.

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