

Therapeutic Education of Heart Failure: Prospective Study in the Cardiology Department of the Dalal Jamm National Hospital Center in Dakar

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Abstract

Context: Heart failure (HF) is a common pathology requiring many types of treatments, including therapeutic education, which has demonstrated a major benefit in terms of reducing re-hospitalization and mortality from HF or all other causes. **Objective:** The aim of this study was to evaluate the contribution of therapeutic education (TPE) in patients with heart failure. **Methodology:** This was a single-centre, interventional, non-randomized, before-and-after type study. It focused on hospitalized heart failure patients aged 18 and over. We evaluated the effect of TPE on therapeutic compliance, knowledge, practical attitudes, patient perceptions and quality of life. **Results:** Our study included 41 patients prior to therapeutic education: 17 men (41%) and 24 women (59%). The mean age was 54.7 ± 16.2 years. After the TPE sessions we evaluated 32 patients: The patients with good compliance increased from 75% to 90.63%, and patients with a low level of compliance (90.6%) decreased to 34.4%. An increase in the number of patients who had an attitude adapted to not exceeding the recommended amount of salt (6 before TPE and 22 after TPE), as well as in the number of patients who had an attitude adapted to physical activity (12 before TPE and 16 after TPE). There was also an increase in the number of patients who were confident about the outcome of their disease (12 before TPE and 16 after TPE), and a decrease in those who were hopeless (8 before TPE and 5 after TPE), an improvement in the quality of life score (45.03 before TPE and 15.78 after TPE). **Conclusion:** This study shows the beneficial effect of therapeutic education in patients hospitalized for heart failure in improving their level of knowledge, compliance with

treatment, lifestyle habits and quality of life.

Keywords

Therapeutic Education, Heart Failure, Quality of Life

1. Introduction

Heart failure is a syndrome associating symptoms, sometimes with clinical signs, resulting from a structural or functional abnormality of the heart, which leads to a drop in cardiac output or an increase in filling pressures during exercise or at rest [1]. At least 15 million Europeans and around 1,500,000 French suffer from this disease, which remains the leading cause of hospitalization for people over 65 years. Other studies [2] indicate that the prevalence of heart failure (HF) in the USA and Canada is 1.5% and 1.9% of the population respectively. In Africa, heart failure is considered the major complication of high blood pressure and the leading cause of cardiac hospitalizations [3]. In Senegal, we found no nationwide data on the epidemiology of HF. Nevertheless, hospital prevalences indicate 14.28% at the Saint Jean de DIEU hospital in Thiès; 47.91% at the Idrissa POUYE general hospital in Grand Yoff [4] [5]. It requires many types of treatments, including therapeutic education (TPE), which is rapidly gaining importance and is an integral part of heart failure management. Several studies [6]-[12] have shown a major benefit of TPE in terms of reduced re-hospitalization, lower mortality from HF or all other causes. Despite this scientific evidence, few doctors educate their patients, it is why many are poorly balanced, less than 50% follow their treatment correctly, many patients are misinformed about their disease and few are assisted in managing their treatment. In Africa, data on therapeutic education for heart failure patients are scarce [13] [14] [15]. The overall aim of this study was to evaluate the contribution of therapeutic education (TPE) in patients with heart failure.

2. Methodology

2.1. Population and Type of Study

We conducted a monocentric, interventional, non-randomized, before-and-after type study in the cardiology department of the Dalal Jamm National Hospital over a 6-month period from January 1 to June 30, 2022. All hospitalized heart failure patients aged 18 and over who freely agreed to take part in the study were included. We did not include patients who had not had a complete follow-up of the program, or those who had presented a psychiatric or cognitive disorder prior to the evaluation.

2.2. Materials and Methods

TPE program planning and implementation: The program was divided into

five stages (Figure 1):

1) Patient recruitment: Patients were recruited systematically and consecutively from the department's inpatient unit, following written free consent after information.

2) The educational diagnosis was carried out with the aim of identifying the patient's needs and expectations, and formulating the skills to be acquired or consolidated. We collected information from all patients using a questionnaire previously tested on two patients. This enabled us to assess the readability, relevance and, above all, comprehensibility of the questions put to the patients in the local language.

We successively collected:

- On admission: socio-demographic data, clinical characteristics, paraclinical features.
- Before TPE: therapeutic compliance, level of knowledge, practical attitudes to avoid exceeding the recommended salt dose, attitudes to adopt to improve physical conditions, type of salt diet, patient's perception of a low-salt diet, practice of physical activity, outcome of their disease and quality of life.
- We used the Girerd adherence questionnaire [16] composed of six questions, which can be used to assess adherence to most chronic treatments. It enabled us to classify patients into 3 categories:
 - Good compliance; No "YES" answer, total = 0;
 - Minimal compliance problems for a "YES" answers total = 1 - 2;
 - Poor compliance for a "YES" answers total ≥ 3 .
- For the level of knowledge, we administered a questionnaire to assess their level of knowledge about the clinic, treatment, follow-up (warning signs), diet (salt intake) and regular physical activity (type and duration) in heart failure.

Each correct answer was scored out of 1; we summed the scores for each patient, and then qualified by giving the following mentions, according to the principle of the CAP survey in medical research [17]:

- Poor level of knowledge for a total of correct answers < 5 ;
- Average level of knowledge for a total of correct answers between 5 and 8;
- Good level of knowledge for a total of correct answers ≥ 8 .
- Practical attitudes concerned the recommended dose of salt in heart failure and the practice of physical activity in heart failure. For this assessment, we asked patients questions that we evaluated in 3 levels:
 - Adapted attitude, which we have defined as any appropriate attitude;

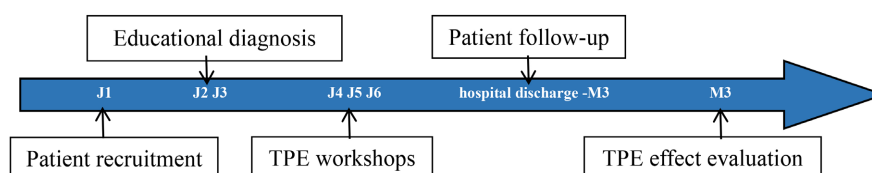


Figure 1. Therapeutic education program stages and timing.

- Inappropriate attitude is any behavior that is not appropriate but does not cause direct harm to the patient;
- Indifferent means doing nothing.
- Patient perception: It concerned the low-salt diet and physical activity. We used the 3-point Likert scale [18]: very important, important, not important, and added a section for those who didn't know.
- Patients' perception of the outcome of their illness:
This evaluation was subjective because it was based on the patient's statements (confident, desperate, Divine will, skeptical, no judgment).
- Quality of life: it was assessed using the "Living with Heart Failure Questionnaire" from the University of Minnesota [19]. Using this questionnaire, we sought to determine the extent to which heart failure had prevented patients from living as they would have wished in the month preceding the survey. Each question is scored from 0 to 5, with the sum giving a score from 0 to 105. The lower the score, and the closer to zero, the better the quality of life. We have classified it into three bands of 35 points each.

3) Therapeutic education workshops: They were carried out in individual interviews bedside patient, using a single document for all involved professionals (teaching guide). The Topics which had been taken into account during these sessions were: anatomy and physiology of the cardiovascular system, heart failure and its treatment, diet and physical activity.

4) Post-discharge follow-up focused on learning continuity to consolidate what had been learned. In order to maintain contact between the TPE team and the patients, we set up an online discussion group during the three months of follow-up.

5) Evaluating the effect of therapeutic education: three months after the end of the TPE sessions, an evaluation was carried out by the same practitioner on an individual basis, along the same lines as before the TPE.

We evaluated the effect of TPE on:

- Therapeutic compliance, level of knowledge;
- Practical attitudes towards recommended salt intake in heart failure and physical activity in heart failure;
- Type of patient's salt diet;
- Patients' perceptions of the low-salt diet, physical activity and the outcome of their disease;
- Quality of life;
- We also evaluated the rate of decompensation, rehospitalization and mortality, as well as overall patient satisfaction and the impact of patient participation to the online discussion group.

2.3. Data Analysis

Our data were analyzed by using SPSS software. For quantitative variables, results were presented, standard deviation, minimum and maximum; qualitative

variables were described by frequency tables. To compare variables before and after TPE, we carried out an analysis on matched samples. Binary logistic regression was used in multivariate analysis to search for factors associated with the online messaging group. P values below 0.05 were considered significant.

3. Results

During the study period, 111 patients were hospitalized, 45 of them for heart failure. Forty-one (41) patients were included and 32 patients were assessed after the three-month follow-up (after TPE) as shown in **Figure 2**.

The mean age of patients was 54.7 ± 16.2 years, with extremes of 18 and 86 years. Females predominated, with a sex ratio of 0.7. General characteristics of study population are resumed in **Table 1**.

Dyspnea was the main symptom (100%), 97.6% of our patients belonged to NYHA functional stages III and IV, and no patient was in class I. Diet deviation and infections were the two most common factors in heart failure decompensation, respectively 63.4% and 53.7%. **Table 2** details the clinical characteristics of patients at the admission.

Over half of our patients (58.5%) were in sinus rhythm; 36.6% were in atrial fibrillation, 2.4% in flutter and high-grade AVB. Almost two-thirds (70.7%) of patients had impaired left ventricular systolic function, as shown in **Table 3**.

The proportion of patients with good level of compliance therapeutic was 75% before TPE and 90.6% after TPE, with a statistically insignificant difference ($p = 0.134$), those with minimal compliance problems dropped from 18.8% before TPE to 9.3% after TPE, with a statistically insignificant difference ($p = 0.251$). However, none of the patients had poor therapeutic compliance after TPE. **Table 4** shows the distribution of patients according to the level of therapeutic compliance.

Analysis of our results concerning the level of knowledge reveals that 18 patients or 56.2% who had a low level of knowledge before TPE had an average level of knowledge after TPE ($p = 0.001$) (**Table 5**), and no patient went from a low or average level of knowledge to a high level of knowledge.

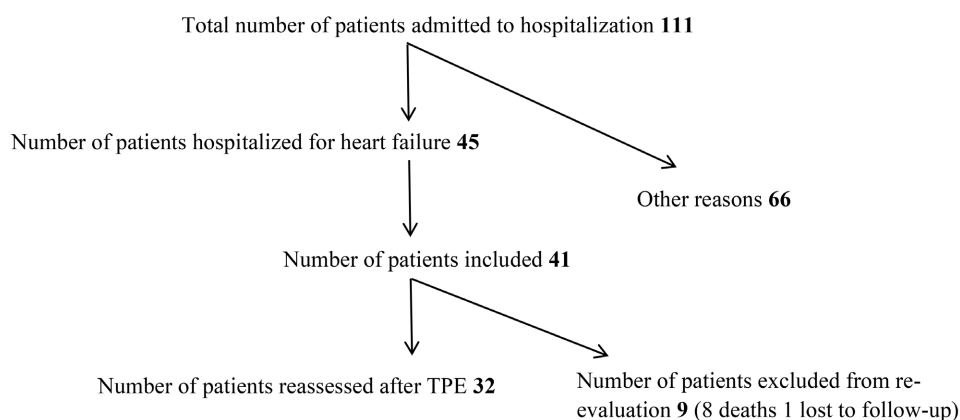


Figure 2. Selection diagram for our study population. TPE: therapeutic education.

Table 1. Socio-demographic characteristics of the study population.

Variables	Number	Percentage
Age		
18 to 59 years	20	48.7
60 years and over	21	51.3
Gender		
Men	17	41
Women	24	59
Schooling		
Schoolchildren	15	36.6
Out of school	26	63.4
Socio-economic level		
Low	18	43.9
Medium	18	43.9
High	5	12.2

Table 2. Clinical characteristics of patients at the admission.

Variables	Number	Percentage
Complaints		
Dyspnea	41	100
Cough	26	63.4
Chest pain	12	29.3
Palpitations	10	24.4
NYHA stages		
4	19	46.3
3	21	51.2
2	1	2.4
Decompensation factors		
Speed deviation	26	63.4
Infections	22	53.7
Therapeutic break	9	22.0
High blood pressure flare-up	2	4.9

NYHA: New York Heart Association.

Table 3. Paraclinical characteristics of patients at the admission.

Variables	Number	Percentage
Electrocardiogram		
Sinus rhythm	24	58.5
Atrial fibrillation	15	36.6

Continued

Atrial flutter	1	2.4
High-grade AVB	1	2.4
Transthoracic ultrasound		
Normal LVEF	12	29.3
Impaired LVEF	29	70.7

AVB: atrioventricular block; LVEF: left ventricular systolic function.

Table 4. Level of therapeutic compliance.

Variables	Before TPE		After TPE		P
	Number	Percentage	Number	Percentage	
Good	24	75	29	90.6	0.134
Minimal compliance problems	6	18.8	3	9.3	0.251
Bad	1	3.1	0	0	0.215
No previous treatment	1	3.1	0	0	0.215

TPE: therapeutic education; P: P value.

Table 5. Level of knowledge.

Variables	Before TPE		After TPE		P
	Number	Percentage	Number	Percentage	
Low	29	90.6	11	34.4	0.001
Medium	2	6.3	20	62.5	0.001
High	1	3.1	1	3.1	

TPE: therapeutic education; P: P value.

Concerning the attitudes to adopt in order not to exceed the recommended daily amount of salt after TPE: 50% ($p = 0.001$) more of them to get an adapted attitude; 25% ($p = 0.003$) less of them to get an inappropriate attitude and 25% ($p = 0.018$) less of them to be indifferent. The number of patients consuming more than 6g of salt per day decreased (27 before TPE to 10 after TPE) with a statistically significant difference ($p = 0.002$). The number of patients who claimed that a low-salt diet was very important rose from 25% before TPE to 62.5% after, with a statistically significant difference ($p = 0.002$) and a decrease from 28.1% before TPE to 9.4% after TPE of the number of patients who claimed to not know whether a low-salt diet was important (**Table 6**).

Patients who stated that physical activity was very important increased from 21.9% before PTE to 56.3% after PTE, with a statistically significant difference ($p = 0.003$), and no patient stated that physical activity was not important after PTE. Patients with a suitable attitude to physical activity increased by 12.5% ($p = 0.211$) and those who were indifferent to physical activity decreased by 6.3% ($p = 0.801$), as shown in **Table 7**.

Table 6. Low-salt diet.

Variables	Before TPE		After TPE		P
	Number	Percentage	Number	Percentage	
Practical ways to avoid exceeding the recommended salt dose					
Adapted	6	18.8	22	68.8	0.001
Unsuitable	11	34.4	3	9.4	0.003
Indifferent	15	46.9	7	21.9	0.018
Type of patient's salt diet					
≤6 grams of salt/day	5	15.6	22	68.8	0.002
>6 grams of salt /day	27	84.4	10	31.3	0.002
Patients' perception of the importance of a low-salt diet (≤6 grams salt/day)					
Very important	8	25	20	62.5	0.002
Important	13	40.6	8	25	0.134
Not important	2	6.3	1	3.1	0.231
Don't know	9	28.1	3	9.4	0.058

TPE: therapeutic education; P: P value.

Table 7. Physical activity.

Variables	Before TPE		After TPE		P
	Number	Percentage	Number	Percentage	
Patients' perception of the importance of physical activity					
Very important	7	21.9	18	56.3	0.003
Important	16	50	8	25	0.001
Not important	4	12.5	0	0	0.083
Don't know	5	15.6	6	18.8	0.215
Attitudes to adopt to improve physical conditions					
Adapted	12	37.5	16	50	0.211
Unsuitable	2	6.3	0	0	0.801
Indifferent	18	56.3	16	50	0.801

TPE: therapeutic education; P: P value.

Patients' perception of the outcome of their illness showed an increase in the number of patients who were confident (12 before TPE to 19 after TPE) ($p = 0.051$), patients who were hopeless decreased (8 before TPE to 5 after TPE) ($p = 0.325$) and those who did not have non-judgment (2 before TPE to 1 after TPE). Patients who said they were deferring to Divine will also decreased (9 before TPE to 6 after TPE) as represented in **Table 8**.

The average quality of life score was 45.03 before TPE and 15.78 after TPE, with a statistically significant difference ($p = 0.001$). A closer look at this result reveals an increase in the number of patients (10 before TPE and 27 after TPE)

with a score below 35, and no post-TPE patient with a score between 75 and 105, as shown in **Figure 3**.

The majority (53.1%, n = 17) of our patients remained stable during the three months of follow-up, one patient was decompensated three times (**Table 9**). Three patients were re-hospitalized, and there were eight deaths, a rate of 19.5%.

After a bivariate analysis and binary logistic regression on several variables we found:

- Membership of the online messaging group was associated with patients' good ability to monitor their disease (OR = 6.33; 95% CI [1.114 - 35.997]; p = 0.028).
- There was a statistically significant association between belonging to the on-line messaging group and patient survival (OR = 6; 95% CI [1.036 - 34.748]; p = 0.032).

Table 8. Patients' perceptions of the outcome of their disease.

Variables	Before TPE		After TPE		P
	Number	Percentage	Number	Percentage	
Confident	12	37.5	19	59.4	0.051
Desperate	8	25	5	15.6	0.325
Divine will	9	28.1	6	18.8	0.325
Skeptical	1	3.1	1	3.1	
No judgment	2	6.3	1	3.1	0.325

TPE: therapeutic education; P: P value.

Table 9. Distribution of patients according to the number of decompensation.

Number of decompensation	Numbers	Percentage (%)
0	17	53.1
1	11	34.4
2	3	9.4
3	1	3.1
Total	32	100.0

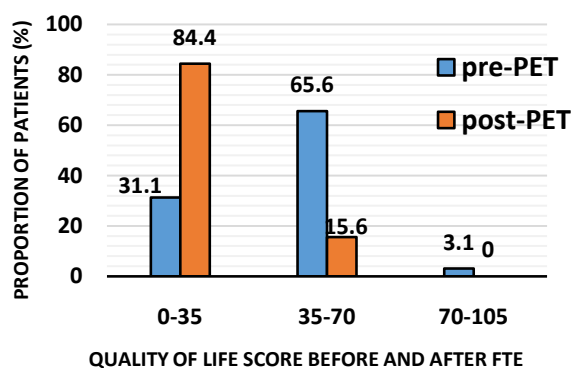


Figure 3. Assessment of the effect of TPE on quality of life.

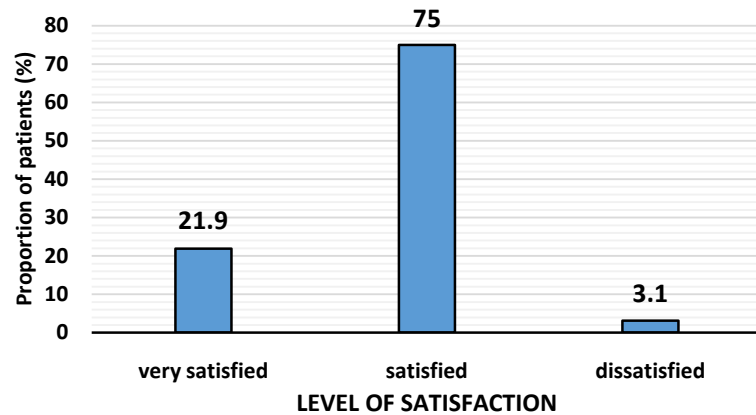


Figure 4. Level of patient satisfaction.

- There was no association between group membership and level of knowledge, compliance of therapeutic, type of salt diet, QOL score, de-compensation or re-hospitalization.

Almost all patients were satisfied or very satisfied from TPE programme (96.9%), as represented in the **Figure 4**.

4. Discussion

Study limitations: Two main biases have been observed: the Hawthorne effect, which corresponds to the influence on observed attitudes due to the presence of the observer, and the Halo effect, which corresponds to the observer's tendency to be influenced by the general impression given by the person being observed. The use of new information and communication technologies, such as a CAWI (Computer Assisted Web Interview) approach, could be a solution. This methodological approach has become the standard for opinion surveys.

Results: The study was carried out to evaluate the contribution of therapeutic education in patients with heart failure in the cardiology department of the Dalal Jamm National Hospital in Dakar. The mean age of the patients was 54.7 ± 16.2 years. Our population was relatively young; this could be explained by the fact that the Senegalese population is predominantly young (55.83% of the general population are aged between 15 and 64) and life expectancy at birth in Senegal is 67.4 years [20]. We noted a female predominance, with an M/F sex ratio of 0.7. Data is variable in the literature. Nganou-Gnindjio *et al.* [21] reported a female predominance, whereas NGAÏDÉ AA *et al.* [22] found as many men as women in their study. This difference could be explained by the methodology used by the different authors. The majority of our patients did not attend school ($n = 26$, or 63.4%). Our result corroborates to the data from the National of Statistics and Demography Agency in Senegal, which indicated in 2017 that Senegal had 54% illiterates, 62% of whom were women. In our series, the low and medium socio-economic levels were the most represented (43.9%, $n = 18$ each). This result is in line with the standard of living of the UEMOA member population, 49.4% of who live below the poverty line. In 2011 in Senegal, the poverty rate was

around 46.8% [23]. Dyspnea was present in all our patients, 51.2% were NYHA stage 3 and 46.3% were NYHA stage 4. This high proportion of NYHA stage 3 and 4 patients could be explained by the fact that our study population was made up exclusively of hospitalized patients for cardiac decompensation. Diet deviation and infections were the two most common factors in heart failure decompensation, respectively 63.4% and 53.7%. Our results are in line with the literature in terms of prevalence of decompensation factors [21] [24] [25]. Therapeutic education helps prevent certain decompensation factors, in particular diet deviations and therapeutic discontinuations. The recommendations on therapeutic education clearly state that knowledge of decompensating factors is one of the educational objectives to be achieved [18]. The most frequent electrocardiographic abnormality was atrial fibrillation (36.6%, $n = 24$). This is the most common rhythm disorder in clinical practice. Its prevalence in heart failure patients ranges from 10% to 30% [26]. Atrial fibrillation is a powerful and independent prognostic factor in heart failure. Transthoracic cardiac Doppler echocardiography was performed in all our patients, and is a key examination for positive and etiological diagnosis, prognostic evaluation and therapeutic management. We found that 70.7% ($n = 29$) of our patients had impaired left ventricular systolic function. Our result was superior to that of Rita M. [27], who found 60% impaired LVEF. This difference could be explained by the fact that this study was carried out only on an elderly population.

The contribution of therapeutic education: The results of the pre-TPE assessment demonstrate the educational need of our study population. Numerous studies, including meta-analyses [6]-[12], have demonstrated the benefits of TPE: it reduces re-hospitalization for HF, optimizes medical treatment, improves quality of life and reduces the cost of care. Thanks to the educational activities offered and delivered during this study, we found:

Patients with good therapeutic compliance increased from 75% before TPE to 90.63% after, with a non-significant difference ($p = 0.134$). No patient had poor compliance after TPE. This result could be explained by the involvement of parents and relatives in treatment management. Indeed, in Senegal, family solidarity is a daily reality. The TPE should build on these values to better involve family members and close friends in treatment. It has been shown that by involving relatives in TPE, they are better able to participate in the management of their treatment [28] [29] [30]. Analysis of the level of knowledge revealed that 18 patients (56.2%), who had a low level of knowledge before TPE, had an average level of knowledge afterwards ($p = 0.001$). This result demonstrates patients' ability to understand their disease if they are educated, despite a low literacy rate. Crozet C. *et al.* [31] found an average knowledge gain of 13.3%. In terms of attitudes to avoid exceeding the recommended daily salt intake after TPE, 50% more ($p = 0.001$) to have an adapted attitude, 25% less ($p = 0.003$) to have an inappropriate attitude and 25% less ($p = 0.018$) to be indifferent. The number of patients consuming more than 6 g of salt per day decreased (27 before TPE to 10 after) $p = 0.002$. Despite these rather satisfactory results, we must remain cau-

tious about their sustainability. In general, in Senegal, a low-sodium diet is part of the therapeutic arsenal of physicians in the management of HF. However, its implementation remains extremely difficult in a society where the minimum daily salt consumption is estimated at 8.81 g/d and the maximum at 32 g/d [32] on the one hand, and the other hand the difficulty to respect an individual hypo-sodium diet linked to family constraints. Patients with an adapted attitude to physical activity increased by 12.5% ($p = 0.211$) and those who were indifferent decreased by 6.3% ($p = 0.801$). It is recommended that patients with heart failure should be advised to engage in adapted physical activity, according to their needs and habits, in order to maintain their quality of life as much as possible [33] [34]. However, it is often difficult to apply this advice, as heart failure patients are reluctant to engage in physical activity for fear of tiring themselves out. Three patients were admitted for cardiac rehabilitation. In this program, in addition to the therapeutic education provided in our study, these patients benefited from exercise training and psychological support. The effect of TPE on patients' perception of the outcome of their illness was quite satisfactory. The number of patients who were confident increased (12 before TPE to 19 afterwards) ($p = 0.051$), patients who were hopeless decreased (8 before TPE to 5 afterwards) ($p = 0.325$), and those who had no judgment (2 before TPE to 1 afterwards), and patients who said they relied on divine will also decreased (9 before TPE to 6 afterwards). A multi-disciplinary approach, involving psychiatrists and psychologists, is important for better patient care. Indeed, the aim is to detect possible psychiatric complications, with depression and emotional management at the top of the list. The involvement of a psychologist is an essential element of any effective TPE program. However, during the course of our study, we were unable to involve a psychologist in our TPE sessions, as this role was played by the cardiologist specializing in TPE. The average quality of life score was 45.03 before TPE versus 15.78 after ($p = 0.001$). A closer look at the results reveals an increase in the number of patients (10 before TPE to 27 afterwards) with a score below 35; no post-TPE patient had a score between 75 and 105. The closer the QoL score is to 0, the better the quality of life. This rather satisfactory result can be a powerful argument to put forward in order to motivate a patient. It is also a good criterion for evaluating a TPE programme. The rate of decompensation and re-hospitalization are two other criteria for judging the effectiveness of good therapeutic education. The majority (53.1%) of our patients remained stable during the three months of follow-up. However, it is difficult to attribute this stability to the sole effect of TPE, as they were not compared with a control group. However, three patients were re-hospitalized and we noted eight deaths, a rate of 19.5%. Membership of the online discussion group was statistically associated with appropriate disease monitoring OR = 6.33; 95% CI [1.114 - 35.997]; $p = 0.028$; there was also a statistically significant association between membership of the online discussion group and patient survival OR = 6; 95% CI [1.036 - 34.748]; $p = 0.032$. For a therapeutic education programme to be effective, it is important to provide therapeutic support at a distance, in order to maintain

long-term follow-up and perpetuate patients' knowledge and skills. To this end, the use of new information and communication technologies is an innovative approach that could add value to traditional therapeutic education. Three quarters of our patients were satisfied with the TPE programme, and 22% were very satisfied. Patient satisfaction with therapeutic education has been assessed in several studies, with satisfaction exceeding 90% [28] [31]. Patient motivation and satisfaction are essential elements in any educational process aimed at modifying lifestyle habits, in order to achieve active participation in disease management.

5. Conclusion

Therapeutic education is an essential non-pharmacological therapy in the management of heart failure. It has enabled patients to acquire useful skills to better understand and manage their disease on a daily basis. However, we feel that a randomized study on a larger scale and over a longer period is needed to confirm these results.

Conflicts of Interest

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

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Annex

❖ SURVEY FORM

General information

N°/2022

First and last name.....

Connected phone number

Address (city, region)

Socio-professional characteristics

Age..... Sex: Female Male ; Level of education: Educated Un-
educated

Socioeconomic level:

- Is he employed? Yes No
- Does he have another source of income? Yes No
- Does he have a career? Yes No
- Does he own his home? Yes No
- Is he able to pay for prescriptions and tests without difficulty? Yes No
- Low socioeconomic level < 2 Medium socioeconomic level 2 - 3 High
socioeconomic level > 3

Functional signs at the admission:

Dyspnea palpitations Chest pain Cough Other.....

NYHA stage: Stage I Stage II Stage III Stage IV

Decompensation factors: Anemia infection therapeutic breakdown
 diet deviation other.....

Electrocardiogram.....

Cardiac Doppler ultrasound.....

Level of therapeutic compliance:

Did you forget to take your medicine this morning? YES NO

Since the last consultation have you run out of medicine? YES NO

Have you ever taken your medicine late compared to the usual time? YES
NO

Have you ever failed to take your treatment because, on certain days, your
memory fails you? YES NO

Have you ever not taken your medicine because, on certain days, you feel that
your treatment is doing you more harm than good? YES NO

Do you think you have too much medicine to take? YES NO

Total/Score: Good compliance (response NO ≥ 3) Minimal compliance
problem (response NO 1 - 2) Poor compliance (response NO = 0)

The patient's level of knowledge:

Questions	Answer	
	Correct	Incorrect
Name your disease		
Mention the clinical signs of your disease		
Mention the cause(s) of your disease		

Continued

Mention the food containing salt

What is the recommended daily intake of salt?

Mention the warning signs of heart failure

Mention the recommended types of physical activity

Mention your heart failure medicine

Precise the posology and the time of getting your medicine

Name the side effects of your medicine

Level of knowledge

Poor if <5 Fair if 5-8 Good if > 8

What is your home salt regime?

Hyposaline diet (≤ 6 gramme salt per day) Hypersaline diet (> 6 gramme salt per day)

What do you do to avoid exceeding the recommended daily salt intake?

Cooking without adding salt Calculate daily salt intake Favoring less salty fo Using herbs Doesn't matter Others.....

How important do you think a low-salt diet is?

Not important Quite important Very important Don't know

What are you doing to improve your physical condition?

Relaxation Walking at least 3 times/week Jogging Swimming Join a gym Do nothing Other.....

How important do you think physical activity is?

Not important Quite important Very important Don't know

How do you feel about your illness?

circle the number that you think best corresponds to your condition for each sentence, bearing in mind that: 0 = no 1 = a little 2 = moderately 3 = moderately 4 = a lot 5 = enormously

In the last 4 weeks, has your heart failure prevented you from living as you would have liked?

- Making your ankles and legs swell..... 0 1 2 3 4 5
- Making it difficult to carry out your usual activities at home or in the garden 0 1 2 3 4 5
- Making it difficult the relationships and activities with your friends or your family 0 1 2 3 4 5
- Forcing you to sit or lie down to rest during the day 0 1 2 3 4 5
- By making you feel tired, weary or lacking in energy 0 1 2 3 4 5
- By making it difficult for you to earn a living 0 1 2 3 4 5
- By making it difficult for you to walk or climb stairs 0 1 2 3 4 5
- By making you breathless 0 1 2 3 4 5
- By preventing you from sleeping well at night 0 1 2 3 4 5
- Forcing you to cut back on your favourite foods 0 1 2 3 4 5

- Making it difficult for you to travel outside your home 0 1 2 3 4 5
 - Making it difficult for you to have sex 0 1 2 3 4 5
 - By making it difficult for you to enjoy your hobbies, sports or favourite pastimes 0 1 3 4 5
 - Making it hard for you to concentrate or remember things 0 1 2 3 4 5
 - By causing you to experience adverse drug reactions 0 1 2 3 4 5
 - By making you worried 0 1 2 3 4 5
 - By making you depressed 0 1 2 3 4 5
 - By making you spend more money 0 1 2 3 4 5
 - By making you feel less in control of what happens to you 0 1 2 3 4 5
 - Forcing you to spend time in hospital 0 1 2 3 4 5
 - By making you feel like a burden on your family or friends 0 1 2 3 4 5
- Total.....(The lower the score and the closer to zero, the better the quality of life)

Do you have a close relative who has an android phone which can access to the internet? YES NO

Number of decompensations without hospitalization.....

Number of re-hospitalizations for cardiac decompensation.....

Deceased: YES NO

How satisfied are you? Very satisfied satisfied dissatisfied