

# Analysis of the impact of the digital transformation of a Therapeutic Patient Education (TPE) program in a cardiac rehabilitation centre

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## INTRODUCTION

Cardiac rehabilitation encompasses multiple cardiovascular conditions, such as coronary heart disease. Cardiac rehabilitation has two objectives:

- The controlled recovery of patient physical activity and autonomy with a rapid resumption of professional activity
- Secondary prevention against the risk factors of a recurrence of the disease.

Cardiac rehabilitation reduces cardiovascular mortality (-25%) and re-hospitalisations (-40%) in coronary heart disease and cardiac insufficiency. This has a positive impact on quality of life, and social and occupational reintegration<sup>1</sup>.

In 2011, only 33% of patients in France were hospitalized for rehabilitation<sup>2</sup> after a myocardial infarction.

Cardiac rehabilitation is recognized as a necessary step after a heart attack or surgery. It most often includes a Therapeutic Patient Education (TPE) program to help patients acquire or maintain the skills they need to better manage their condition in their daily life.

Both interactive and educational, the digital "AtoutCoeur" platform was conceived via a partnership established between the Léopold Bellan Hospital and Observia, drawing on the comprehensive TPE approach and recommendations from the French Health Authority (HAS), in order to support care teams in the four key stages of the TPE process: educational assessment, patient motivation, knowledge learning and ongoing maintenance.

The platform delivers a personalized engagement plan adapted to each patient's profile and needs, including effective 'gamified' learning modules.

It also aims to provide healthcare professionals a tool for inter professional coordination, patient educational status diagnosis, monitoring and follow-up of patient objectives.

## MATERIAL AND METHOD

### Objectives :

- Describe the patient population within the AtoutCoeur platform
- Evaluate the TPE activity of the cardiac rehabilitation centre following the implementation of the AtoutCoeur platform
- Evaluate the performance of AtoutCoeur in achieving the each patient's objectives

This analysis of the AtoutCoeur platform is a retrospective evaluation based on real world data. All the patients included in this analysis attended their TPE sessions using the AtoutCoeur platform at the Léopold Bellan Hospital Cardiac Rehabilitation Centre.

Patients were enrolled in the program in two phases: a first administrative step and a second, medical phase. Using patient enrolment data, an analysis of the characteristics of the patient population was carried out: the number of patients enrolled, their socio-demographic distribution, and patient distribution by medical and risk profiles.

Figure 1: Administrative Profile

Figure 2: Medical Profile

TPE activity at the cardiac rehabilitation centre, following the implementation of the AtoutCoeur platform, can be measured using the following metrics: the average number of sessions per patient, the total number of sessions performed, the average duration spent in the consultation module, percentage completion of each questionnaire (SF12, HAD, Epworth, Findrisc, Ricci & Gagnon, Girerd, IIEF5).

Healthcare professionals and patients together decide which goals the patient should aim to achieve as a result of the TPE sessions. The patient is allowed to select up to three goals, and healthcare professionals up to two. Examples of objectives include: improve physical activity, lose weight, adopt a healthier diet, stop smoking, better manage medication, improve diabetes control and reduce stress.

Figure 3 : Objectives included in the TPE courses



Within the AtoutCoeur platform, patient objectives are achieved based on their success on mastering the different levels of risk factors and lifestyle modules. The acquisition goal score is based on an algorithm that takes into account the medical profile and risk factors of each patient. Patient evaluation is measured via data collected in the AtoutCoeur platform. It is a shared assessment performed by several healthcare professionals.

Figure 4: Risk factors

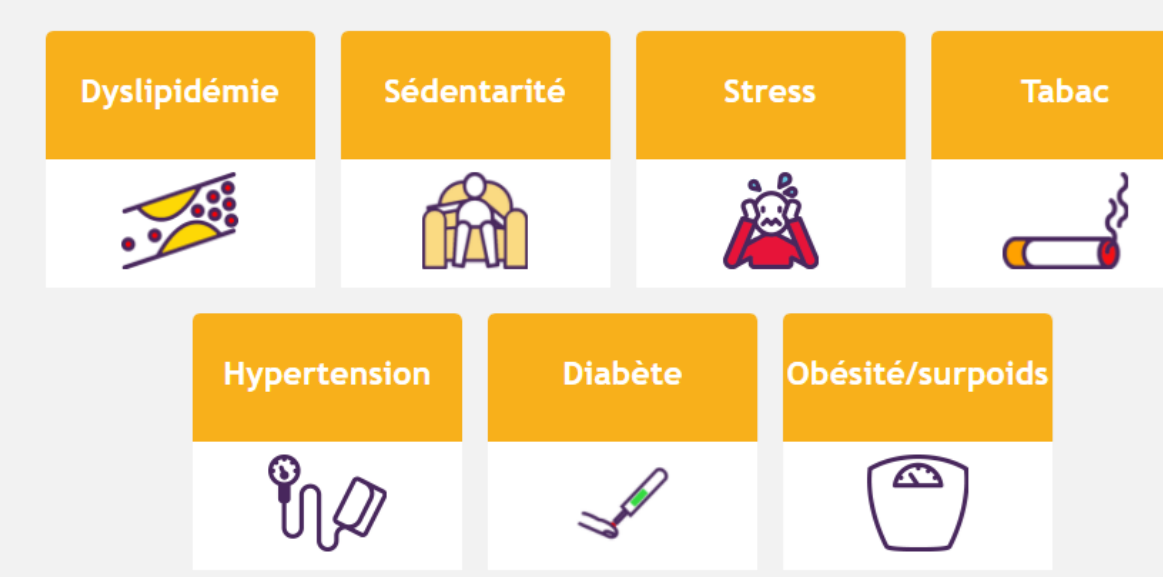


Figure 5: Lifestyle



## RESULTS

134 patients are enrolled in the AtoutCoeur platform, which represents 100% of the number of patients enrolled in the cardiac rehabilitation centre

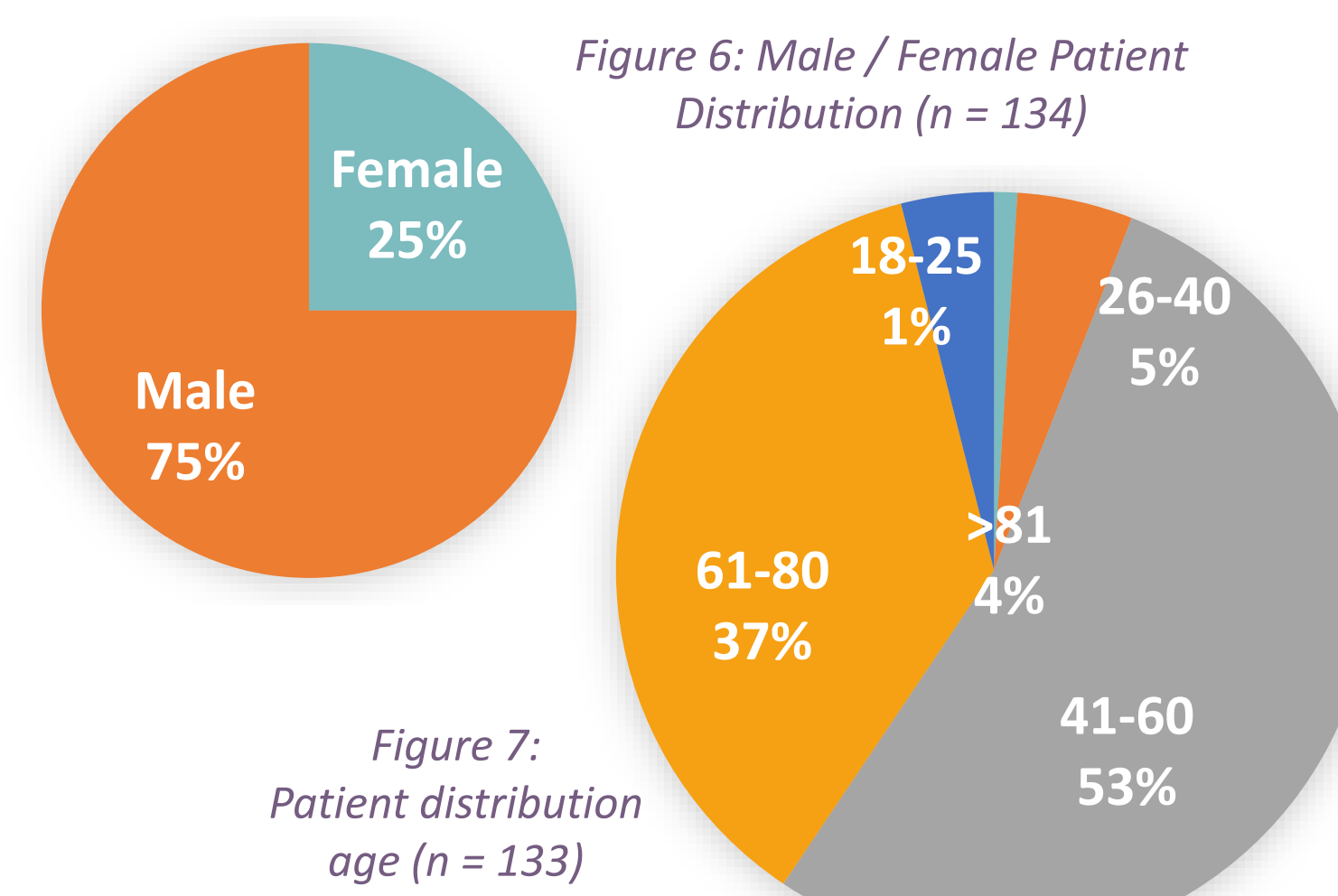


Figure 6: Male / Female Patient Distribution (n = 134)

Figure 7: Patient distribution age (n = 133)

	Sessions (n=134)
Total number of sessions	2755
Average number of sessions per patient	20,56

Figure 10: Evaluation of activity in terms of sessions

	Duration
Average duration of sessions (n = 134)	2,91 min
Average TPE journey time (n=17)	50,91 days

Figure 11: Evaluation of activity in terms of duration

	% (n=598)
% of survey completion SF12	20
% of survey completion HAD	20
% of survey completion Ricci & Gagnon	20
% of survey completion Girerd	17
% of survey completion Epworth	12
% of survey completion Findrisc	8
% of survey completion IIEF5	0

Figure 12: Evaluation of survey activity

	% (n= 134)
High-risk hypertension	23
Valvular heart disease	22
Heart failure	19
Renal insufficiency	13
Pacemaker	8
Aortic aneurysm	6
Defibrillator	5
Congenital	4
Coronary	0
Dyslipidemia	17
Sedentary lifestyle	16
Hypertension	16
Stress	15
Obesity	12
Tobacco	12
Diabetes	11
Pre-diabetes	1

Figure 9: Breakdown by Medical Profile / Risk

	Average score at the 1st session after validation of the shared diagnosis (n=67)	Average score per session 20 (n=58)	Evolution (%)
Average score "Better eating"	5,7	19,03	234
Average score "weight loss"	5,1	15,99	214
Average score "Manage my medications"	13,16	29,09	121
Average score "Smoking cessation"	35,27	60,54	72
Average score "Improve physical activity"	25,44	42,21	66
Average score "Being less stressed"	14,46	21,07	46
Average score "Improve my diabetes control"	11,79	13,65	16

Figure 13: Assessment of the achievement of objectives

## CONCLUSION

Future patients will benefit from the AtoutCoeur platform, a program which is already considered a success in the cardiac rehabilitation centre at the Léopold Bellan Hospital due to the fact that 100% of patients with cardiovascular complications continue to be enrolled in the platform. Future evaluations of the AtoutCoeur platform will allow for studies of both the evolution of the questionnaire scores and patient quality of life.

In the current population of enrolled patients, the majority are male (75%) and between the ages of 41 and 60 years old (53%). A review of the medical profile of enrolled patients reveals that most are hypertensive and at high risk of (23%) or already exhibit valvar disease (22%). 17% of patients are at risk for dyslipidaemia; 16% are at risk for inactivity or hypertension.

Since platform launch in January 2017, 2,755 sessions have been conducted, meaning that each patient has attended an average of 20.56 sessions. The SF12, HAD and Ricci & Gagnon questionnaires were completed by 20% of patients. It can therefore be deduced that patient activity during the first 6 months of platform availability is strong.

There was a significant change in average patient scores per objective between the first and the 20th session after the validation of the shared diagnosis, in particular the evolution of the average score for better nutritional goal achievement (234 %) and weight loss goal attainment (214%). These significant and positive advances demonstrate a fundamental change in patient behaviour in those patients enrolled in the AtoutCoeur platform.