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**Impact of the COVID-19 pandemic on the burden of chronic heart failure patients**

**in France**

**Impact de la pandémie COVID-19 sur la charge des patients atteints d'insuffisance  
cardiaque chronique en France**

Impact of the COVID-19 pandemic on the burden of chronic heart failure patients in

France

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## Key Words

Chronic Heart failure; COVID 19 pandemic; Management

Mots clés : insuffisance cardiaque chronique, épidémie COVID 19 prise en charge

## Résumé

### Le contexte

La pandémie COVID-19 en France a conduit à la mise en place de mesures de confinement, limitant l'activité médicale aux soins d'urgence. Les patients souffrant d'insuffisance cardiaque (IC) sont particulièrement concernés par l'accès aux soins. Pendant la pandémie, les restrictions de déplacement et la peur de la contamination pourrait aggraver les patients atteints d'IC.

### Méthodes

Nous avons réalisé deux questionnaires anonymes dédiés aux symptômes des patients IC et l'autre à la pratique des cardiologues, complétés à la fin de la première période de confinement en France. En parallèle, des données du SNDS (Système National des Données de Santé) ont été collectées concernant les pratiques des cardiologues concernant les téléconsultations et télésuivis.

### Résultats

Concernant les patients IC, 1156 ont participé et ont rempli le questionnaire. 53% étaient des hommes, âgés de  $61 \pm 15$  ans chez les hommes et de  $53 \pm 12$  ans chez les femmes ; 13% ont déclaré se sentir mal pendant la période pandémique. 36% déclarent avoir plus de dyspnée, 14% plus d'œdème, 45% un gain de poids et 57% plus de fatigue. 45% des patients déclarent avoir passé plus de 4 semaines sans rendez-vous avec un médecin.

Concernant les cardiologues, ils ont proposé de réaliser un suivi à distance (téléconsultation incluant visio, ou appels téléphoniques) dans 23% des cas. En parallèle, les données du SNDS ont montré que 20% des cardiologues utilisaient des téléconsultations.

## Conclusion

À travers cette enquête originale, il ressort que pendant la pandémie les patients IC étaient plus symptomatiques, le suivi cardiologique était difficile et exigeant. Nous suggérons que les téléconsultations pourraient améliorer l'efficacité et la qualité des soins, réduire la demande des patients et réduire les coûts des soins de santé.

## Abstract

**Context :** The COVID-19 pandemic in France has led to the implementation of containment measures, limiting medical activity to urgent care. Heart Failure (HF) patients should have particularly been concerned. During the pandemic, movement restrictions and fear of contamination could have worsened HF patients.

**Methods :** We conducted two dedicated anonymous questionnaire completed at the end of the first lockdown period in France about the HF patients' symptoms and the cardiologists' practice. In parallel, data from the SNDS (Système National des Données de Santé) were collected concerning the practices of cardiologists.

**Results :** Regarding HF patients, 1156 participated and filled the questionnaire. 53% were men, aged  $61 \pm 15$  yo in men and  $53 \pm 12$  yo in women; 13 % declared feeling bad during the pandemic period. 36% declared they had more dyspnea, 14% more oedema, 45% a gain of weight and 57% were more tired. 45% of patients declared having spent more than 4 weeks without any appointment with a medical doctor. Regarding Cardiologists, they proposed to perform a remotely follow-up (teleconsultation including visio, phone call

management) in 23% of cases. In parallel, data from the SNDS showed that 20% of cardiologist used teleconsultations.

Conclusion : Through this original survey, it emerges that despite the HF patients being more symptomatic, cardiological follow-up was difficult and challenging. We suggest that teleconsultations could improve the efficiency and quality of care, reduce demands on patients, and reduce healthcare costs.

## **Background**

The COVID-19 pandemic in France led to the implementation of containment measures from March 17th, 2020, limiting medical activity to urgent care and consultations for all patients, but especially for patients older than 70-years-old. Heart Failure (HF) patients are of particular concern with these measures. During the pandemic, movement restrictions and fear of contamination could have led to a reluctance to call and/or come to emergency services (1) resulting in health care delay and higher mortality in out-of-hospital cardiac arrest (2). Frail HF patients could have been particularly sensitive to these limitations, as they require frequent and heavy care. Beyond the direct mortality caused by COVID-19, there are growing concerns regarding the consequences of the COVID-19 pandemic on the health care system (3). In this context, we evaluated the impact of the pandemic and lockdown on the management of chronic heart failure by interviewing patients using a dedicated anonymous electronic questionnaire. Simultaneously, we investigated the practice of cardiologists during the lockdown period especially concerning the use of teleconsultations in France and we compared it with data from the French SNDS (Système National des Données de Santé).

## Methods

In this longitudinal study, we used a sample of participants from the French HF patients population. Between the 5<sup>th</sup> of May and the 6<sup>th</sup> of June corresponding with the end of the lockdown period in France, we invited HF patients to answer a questionnaire. The questionnaire was broadcasted by an electronic approach using mailing lists of patient associations and a national press campaign. The questionnaire was available via a hypertext link on a dedicated secure platform. The questionnaire was constructed with four cardiologists specialized in heart failure, a patient and a sociologist. It was a structured questionnaire of 18 questions. There were 3 contextual questions, 2 general questions about well-being, 5 questions on HF symptoms, and 8 questions on disease management in the context of containment, access to care and follow-up procedures, compliance with the diet, access to physical activity (Questionnaire 1 in the appendix). All the questions were in line with the diagnosis or with the management of heart failure as recommended in the 2016 HF guidelines. The patient sample for this study is those who completed the questionnaire during the observed period. The data collected was anonymous, and under French law, there was no need to report the investigation to an ethics committee.

Another questionnaire was simultaneously broadcast to French cardiologists involved in the field of HF to know the effect of lockdown period on their practice (Questionnaire 2). In parallel, data from the SNDS (*Système National des Données de Santé*) were collected concerning the practices of cardiologists during the pandemic. The data was then collected on a secure health server. Quantitative continuous variables are presented as mean  $\pm$  SD (normal distribution) or median (1st and 3rd quartiles) (non-normal distribution). Categorical variables are presented by numbers (%).

## Results of the questionnaire among HF patients

In total, 1,156 patients participated and filled out the questionnaire. Among the latter, 53% were men, aged  $61 \pm 15$  y.o. in men and  $53 \pm 12$  y.o. in women; 96% of the patients were living in metropolitan France, 4% in francophone countries or overseas territories; and 32% declared they had a coronary artery disease.

In the sample, 13% indicated that they felt bad or fairly bad during the pandemic period and 69% reported a feeling of insecurity or danger. Another 11% of patients reported having had symptoms related to COVID-19. Dyspnea was reported by 36%, oedema by 14%, weight gain by 45%, and feeling tired by 57% (Fig. 1). The three most common measures taken to protect themselves and others from the coronavirus were hand washing, social distancing and wearing a mask.

Seven percent of patients who answered the questionnaire were hospitalized during the lockdown period and three-fourths of these patients had a non-scheduled hospitalization. Patients having spent more than 4 weeks without any appointment with a medical doctor comprised 48%. Of these, 71% of the patients in the latter situation reported that there was no alternative solution offered to replace a face-to-face appointment. In 23% of patients, their cardiologist proposed an alternative follow-up with teleconsultation including the use of Visio or a phone call management. According to SNDS report, in France, before the lockdown period, the use of teleconsultation was almost zero, while it increased and reached nearly 20% during the lockdown period at a national scale (Fig. 3) (5). A total of 93% of the patients reported that they carried on with their usual treatment, 0.2% interrupted it due to availability problems in pharmacies. A dietary salt regimen was not respected by 23% of patients. Meanwhile, 30% stopped physical activity and 44% reduced physical activity (Fig. 2).

### **Results of the questionnaire among cardiologists**

The survey was conducted simultaneously with 200 volunteer cardiologists in France. Among them, 68% were men, 50% were between 40-59 years old and 22% were over 60 years old. About 28% were active in a university hospital and 29% in a private practice, 15% in a general hospital and 28% in a private hospital. Of the respondents, 61% declared that their activities were modified by the COVID-19 pandemic. Impacts included: 35% postponed their consultations when it was not an emergency; 94% had patients that cancelled their appointments; 56% of cardiologists used phone call consultations during the pandemics, while only 19% used teleconsultation with video; and 50% noted that in the future they will use teleconsultation more often.

Biological monitoring (NTproBNP dosage) was delayed in 19%. Meanwhile, 77% of cardiologists did not change treatment, and in particular they continued angiotensin-converting enzyme inhibitors and receptor blockers despite speculation about worse outcomes among patients on these medications at the beginning of the COVID-19 pandemic. Moreover, 75% continued to regularly follow French Society of Cardiology recommendations.

## **Discussion**

To the best of our knowledge, this is the first report on nationwide surveys in the field of cardiology regarding the impact of the COVID-19 pandemic on chronic heart failure patients. Interestingly, more than one-thousand patients and two-hundred cardiologists were motivated to answer the questionnaires within a short period of time.

### *- HF patients and care-system limits during the epidemic*

In this report, we found that patients with CHF were more symptomatic during the pandemic. Importantly, almost two-thirds of patients reported a feeling of insecurity and



danger. Around 11% of patients reported symptoms of COVID-19 infection. We were unable to confirm if the patients were truly infected, as obviously hospitalized or dying patients from COVID-19 did not participate in the study. The effects of this two-month lockdown period resulted in hospitalization for 7%, of which three-fourths were not planned. Obviously only alive patients, young, and sufficiently healthy patients were able to answer the electronic questionnaire, and thus may represent a bias. Positively, treatment was maintained thanks to pharmacies that extended prescriptions as recommended by the health authorities. Overall, patients were less active during this period and did not follow their diet very well in one quarter of cases. The COVID-19 pandemic was also previously found to have an impact in patients suffering from CHF as it could worsen their disease (4).

- *Teleconsultation instead of face-to-face*

Many professionals canceled their in-person consultations to avoid further COVID-19 exposure risks. Consequently, we observed a period without planned appointments and there were reports of difficulties in follow-up for CHF patients. Before the pandemic, very few cardiologists used teleconsultation as a modern tool for monitoring patients. Indeed, until recently, the use of teleconsultation was low. In our study, 23% of the patients indicated that they had been offered a teleconsultation during the period. In France, before the lockdown period, the use of teleconsultation was almost zero, while it increased dramatically and reached nearly 20% during the lockdown period at a national scale (Fig. 3) (5). We may estimate that as a consequence of the epidemic, its use will expand and allow for remote monitoring. It can be estimated that the teleconsultation procedures took several days or even weeks to be implemented, explaining the differences observed between the statements of patients and those of cardiologists. Moreover, physical exams via video consultation systems are possible in heart failure (6,7), even if the process seems

quite demanding and takes a long time. Use also tends to be dedicated to follow-up consultations (8). In recent years, telemedicine has become a viable choice to offer patients, especially since the TIMHF2 study was positive (9). In the OSICAT study, hospitalizations were reduced by 21% in the telemedicine group (10). With implementation of the ETAPes program, we can expect a dramatic increase in telemedicine (11).

- *Mental health and COVID-19*

In our study, we found that 69% of HF patients felt in danger and 13% felt fairly bad. The COVID-19 epidemic imposed an unfamiliar situation on the healthcare system, and also caused a loss of freedom, a reduction or loss of wages, and hence emotional stress. Health workers play an important role in listening to this distress and in helping through the struggle. Although most people will find resources to overcome such a long stress period, frailest groups including chronic HF patients may develop post-traumatic stress syndrome. Moreover HF patients may develop fear to go outside and may become more isolated. Employees in the healthcare system have an important role to play in the psychosocial needs that affect these populations (12). The extensive media coverage of this pandemic may also have worried patients and cardiologists.

We can put into perspective that there are several tools to prevent rehospitalization in HF patients, whether it is in the field of telemedicine or an ambulatory care system close to patients (13,14). Strategies that incorporated follow-up by a specialized multidisciplinary team, programs that focused on enhancing patient self-care activities and programs with telephone contact can reduced HF hospitalization.

The authors recognized the use of non validated questionnaires but one should keep in mind we never have to deal with such pandemia impacting the field of cardiology before. So we decided to create the questionnaires within few days in order to appreciate as closely

as possible the impact of the COVID 19 disease in our HF patients and their follow-up. We believe our findings over more one thousand HF patients and 200 cardiologists are useful to understand the consequences such health system blockage can generate in frail population such as the ones with chronic diseases.

**Conclusion:** This study shows that a significant blockage of the health system has affected the emotional state and the evolution of patients suffering from chronic diseases like HF.

In the event of repeated acute health crisis in the future, necessary organizational changes will have to take account such findings in order to maintain a capacity to take care of the most fragile chronic patients. Home telemonitoring and teleconsultation as a routine clinical service may improve the efficiency and quality of care, reduce demands on patients, and lower healthcare costs. Such efforts will also reduce the spread of infections, whether that is the misery of seasonal rhinovirus, annual influenza, or a lethal pandemic. Accordingly, let's do it—now.

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### **Disclosure of interest**

The authors declare that they have no competing interests

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**Figures' legends:**

**Figure 1: Patients' symptoms during the pandemic**

**Figure 2: Patients' compliance with recommendations during the pandemic**

**Figure 3: Percentage of teleconsultations among cardiologists over time since the beginning of 2020. In blue: percentage of patients using teleconsultation. In orange: percentage of acts of teleconsultation**

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## PATIENTS' SYMPTOMES DURING THE PANDEMIC

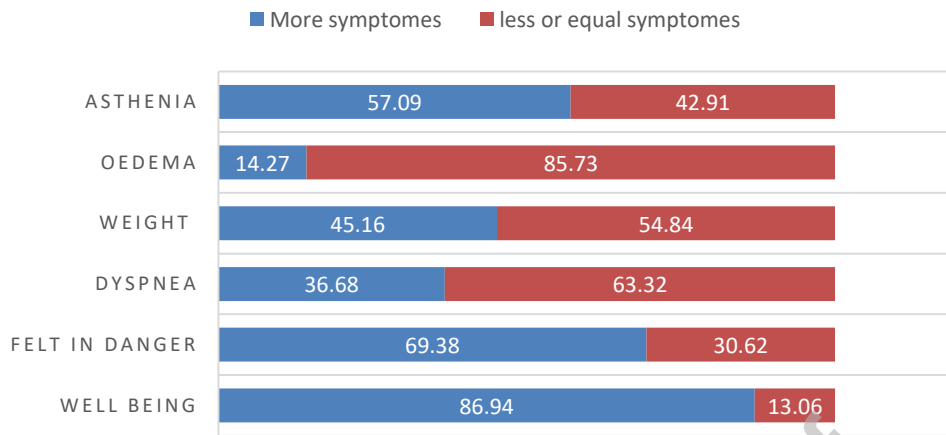


Fig 2

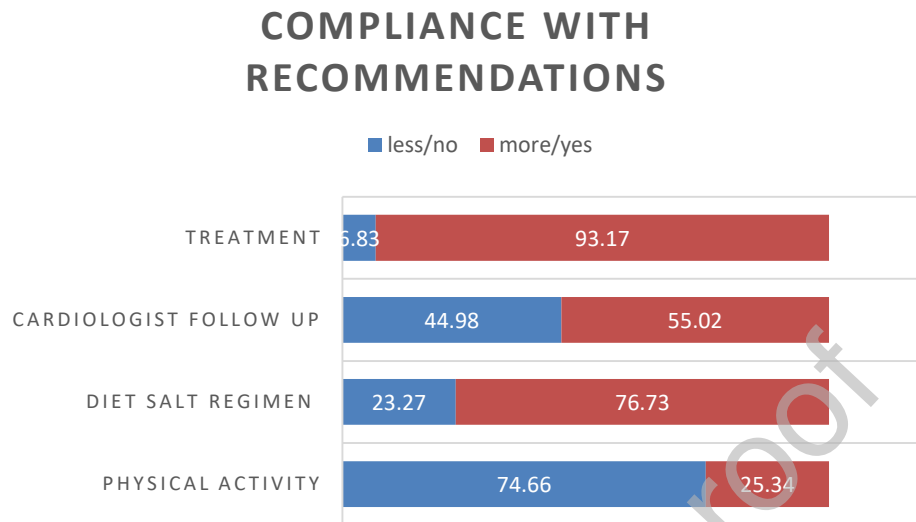




Fig 3

