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Impact of empowering leadership on emotional exhaustion: A controlled interventional study in a large French university hospital complex

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Abstract

Aim: The aim of this study is to assess the effect of a systemic intervention on the evolution of empowering leadership and emotional exhaustion in a university hospital sub-centre compared to a control sub-centre, both being part of a large French university hospital complex.

Background: Empowering leadership is a promising strategy for developing hospital team engagement and performance. However, the bureaucratic functioning of large hospitals, characterized by a managerial culture of control and a stratified organization, can be a barrier to empowering leadership.

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reviewed by an independent scientific committee. The French Ministry of Health had no role neither in the protocol definition, study conduct, data collection, data processing and interpretation nor in the choice of the results to be presented or the ways of valorization chosen.

Methods: The intervention included empowering leadership training, direct field experimentation of empowering leadership and coaching, involving all the sub-centre hierarchical levels for 12 months. Data were collected before and after the intervention. A total of 441 and 310 participants were, respectively, included in the intervention and control sub-centres.

Results: Empowering leadership was decreased, and emotional exhaustion was increased in the control sub-centre, while the scores remained stable in the intervention sub-centre. The increased emotional exhaustion in the control sub-centre could partially be explained by the change in empowering leadership.

Conclusion: In a context of decreased empowering leadership and increased emotional exhaustion, the intervention had a protective effect. Implications for the design of future interventions were discussed.

Implications for Nursing Management: This study unequivocally showed the benefit of transforming hospital management towards empowering leadership, to prevent increased emotional exhaustion.

Registration number: This study is registered on [ClinicalTrials.gov](https://clinicaltrials.gov) on 4 July 2019 (NCT04010773).

KEYWORDS

controlled interventional study, emotional exhaustion, empowering leadership, hospital management, systemic intervention

1 | INTRODUCTION

There is currently a growing interest in empowering leadership, and more generally in management styles promoting employees' autonomy, both in the business world and in the hospital sector (Davids et al., 2019; Jönsson et al., 2021). In this sense, the scientific literature largely reports the positive effect of empowering leadership on the effectiveness of organizations (Cheong et al., 2019; Kim, Beehr, & Prewett, 2018; Lee et al., 2018). In other words, the more control employees have over their work and the more autonomy support they receive (i.e., empowering leadership; Amundsen & Martinsen, 2014), the more their level of identification and involvement is strengthened, to the benefit of performance (Amundsen & Martinsen, 2015; Kim, Moon, & Shin, 2018; Zhang & Bartol, 2010).

Nevertheless, recent reviews have reported a lack of controlled interventional studies assessing empowering leadership (Cheong et al., 2019; Lee et al., 2018) and more generally management (Nielsen & Taris, 2019). Indeed, the experimental change in empowering leadership level, associated with the monitoring of dependent variables compared to a control group, allows assuming with a greater level of confidence the existence and direction of the causal relationships between empowering leadership and its consequences (Cheong et al., 2019; Jönsson et al., 2021). In addition, an experimental study would allow validating the efficiency of interventions designed to transform management (Nielsen & Taris, 2019). Therefore, this type of research study could be useful in the design of interventions aimed at promoting empowering leadership in organizations (Cheong et al., 2019; Nielsen & Taris, 2019).

This issue is particularly relevant in the French hospital context. Considering the impact of management on occupational health, quality of care and economic performance, the French health authority urges hospitals to implement a more empowering management (Petit Dit Dariel, 2015). It should be noted that this proposal may be a challenge in the hospital context in France and more generally in industrialized countries. Like many large organizations, hospitals follow a bureaucratic model defined by a managerial culture of control and a stratified organization, which weakens professionals' control over their work and prevents their commitment and performance (Getz, 2009; Lega & de Pietro, 2005). In other words, the evolution towards empowerment implies a structural and cultural shift, which necessarily raises questions about the distribution of power and the representation that each person (e.g., top-level management, head of department, nursing manager, physician and caregiver) has of his/her role (Cougot et al., 2019; Davids et al., 2019; Spreitzer, 2008). Therefore, there is an interest in developing systemic interventions, targeting all the hierarchical levels of the organization, in order to increase empowering leadership. This type of intervention seems particularly relevant in the hospital context and more generally in the context of large bureaucratic organizations.

1.1 | Towards a new intervention to improve empowering leadership in hospitals

We identified two controlled interventional studies designed to increase empowering leadership in supervisors in professional settings

(Cheong et al., 2019). The first study of 12 months was conducted in nursing managers from different organizations in Canada (Dahinten et al., 2014; MacPhee et al., 2014). The second study of two and a half months was conducted in managers from different professional organizations in the United Arab Emirates (Martin et al., 2012). Both studies have shown an increase in empowering leadership post-intervention, based on managers' self-reported measurements for the first one and on the employees' responses for the second one. Although the professional contexts were different, both interventions showed the interest of combining (a) empowering leadership education, (b) empowering leadership training under real-life conditions and (c) individual coaching.

In this sense, the literature indicates that the closer the managerial training is to the real-life context, the more it limits the cognitive effort of assimilating and transferring what has been learned in training to the professional context, and thus, the more it promotes the effective adoption of managerial behaviours (Barnett & Ceci, 2002; Blume et al., 2010). In addition, several controlled interventional studies have shown the positive effect of individual coaching on the adoption of target managerial behaviours such as transformational leadership (Cerni et al., 2010; Grover & Furnham, 2016; MacKie, 2014), especially in case of theoretically grounded coaching, and coaches themselves are considered relevant in psychology (Grover & Furnham, 2016). Thus, while facilitating the direct field implementation of behaviours with the help of a coach, training in empowering leadership appears to be a relevant approach.

However, as explained earlier, the bureaucratic structure and culture of hospitals could limit the effectiveness of such a system (Cougot et al., 2019; Getz, 2009; Lega & De Pietro, 2005). In this sense, the literature on empowering leadership shows that the top- and middle-level managements of a company determine the adoption of empowering behaviours by front-line managers and, ultimately, the empowerment of field professionals (Carney & Getz, 2016; Dahinten et al., 2014; MacPhee et al., 2014; Migneault et al., 2009). In turn, several works have suggested that the manifestations of the employees' empowerment (e.g., autonomy) would encourage managers to adopt empowering leadership (Cheong et al., 2019; Sharma & Kirkman, 2015; Uhl-Bien et al., 2014). Thus, empowering leadership of top-level management and front-line managers and empowerment of front-line professionals are interrelated, potentially bidirectionally (Cheong et al., 2019).

The aim of this study was to assess the effect of a systemic intervention on the evolution of empowering leadership in a university hospital sub-centre (the 'intervention sub-centre') compared to a 'control sub-centre', both being part of a large French university hospital complex (*Centre Hospitalier Universitaire*, CHU). More precisely, an intervention combining (a) empowering leadership education, (b) direct field empowering leadership training and (c) coaching was implemented at all hierarchical levels of the same sub-centre, in order to take into account the bureaucratic configuration of the organization (see details in Section 2). To facilitate the direct experience of empowering leadership by managers, but also to directly empower teams, a collective quality-of-life support in the workplace, encouraging the employees' expression and action within the framework of

their work (i.e., empowerment), was implemented in each of the sub-centre care units.

Hypothesis H1. The intervention will significantly increase the level of empowering leadership in the intervention sub-centre compared to the control sub-centre.

1.2 | Experimental study of the effect of empowering leadership on emotional exhaustion

Emotional exhaustion, namely, feelings of being overwhelmed and exhausted of one's resources (Maslach et al., 2001), is a major concern in the hospital sector. Indeed, emotional exhaustion is considered the central factor of burnout, as it is the progressive exhaustion of the individual's resources that is considered the precursor to the other two symptoms of burnout (i.e., cynicism and reduced personal accomplishment; Kristensen et al., 2005; Maslach et al., 2001; Taris et al., 2005). The prevalence of burnout is particularly high in hospital staff, including both nurses (global prevalence of 11.23%; Woo et al., 2020) and physicians (prevalence of 21% in France; Kansoun et al., 2019). Moreover, burnout triggers the occurrence of psychological disorders (e.g., depression) but also physical diseases such as type 2 diabetes and cardiovascular disorders (Salvagioni et al., 2017). These data show that emotional exhaustion (as the central factor of burnout, Kristensen et al., 2005; Maslach et al., 2001) is a particularly relevant indicator of the health status of hospital workers and a priority target for prevention (Kansoun et al., 2019; Pappa et al., 2020; Woo et al., 2020).

Although the positive effects of empowering leadership on performance are well established, its effects on emotional exhaustion have been poorly investigated, and the literature on this subject is contradictory (Kim, Beehr, & Prewett, 2018). On the one hand, some studies have shown that empowering leadership decreases emotional exhaustion (Bobbio et al., 2012; Greco et al., 2006), presumably by promoting the development of the resources available to employees to cope with job demands (e.g., social support and self-efficacy; Kim, Moon, & Shin, 2018; Kim & Beehr, 2018; Tripathi & Bharadwaja, 2020). But the intensity of these effects is low (Kim, Beehr, & Prewett, 2018). On the other hand, other studies have reported that empowering leadership may be a burden (Cheong et al., 2016; Sharma & Kirkman, 2015), which can consume resources and lead to emotional exhaustion. Specifically, empowering leadership-induced autonomy could be a stressful cognitive demand, as the employees are not only performing requested tasks but are also involved in the decision making related to their work (Cheong et al., 2016). Further studies are thus needed to understand the effect of empowering leadership on employees' emotional exhaustion.

Based on the experimental design of this study, we investigated the effect of the intervention on the evolution of employees' emotional exhaustion in the intervention sub-centre compared to the control sub-centre. In addition, we investigated the mediating effect of the evolution of empowering leadership on the relationship between the intervention and the evolution of emotional exhaustion. Thus, the

aim of this study was to confirm that empowering leadership evolution was responsible for the evolution of emotional exhaustion in the intervention sub-centre compared to the control sub-centre.

Hypothesis H2. The intervention will significantly decrease the level of emotional exhaustion in the intervention sub-centre compared to the control sub-centre.

Hypothesis H3. The effect of the intervention on emotional exhaustion will be mediated by empowering leadership.

2 | METHODS

2.1 | Design and context

This randomized, controlled, interventional study was conducted in a French university hospital complex between 2018 and 2020. The duration of the psychosocial intervention was 12 months. It concomitantly targeted the entire teams, front-line managers and top- and

middle-level managers of a sub-centre of the university hospital complex. Therefore, randomization was performed at the sub-centre level. The study indicators were collected before (T0) and directly after the intervention (T1).

2.2 | Description of the university hospital complex and sub-centre enrolment

The university hospital complex includes 12 sub-centres, with 5–6 departments each. These departments include several care units for a total of 20–25 care units per sub-centre. The number of employees in the sub-centres varies between 300 and over 1,000. Three hierarchical lines can be distinguished (Figure 1): the administrative line, the nursing line and the medical line, all three being under the authority of the general director of the university hospital complex. This three-axis hierarchy is divided into four main hierarchical levels: the university hospital complex management, the sub-centre management and the department and care unit management (respectively under the supervision of the chief medical officer and the nursing manager).

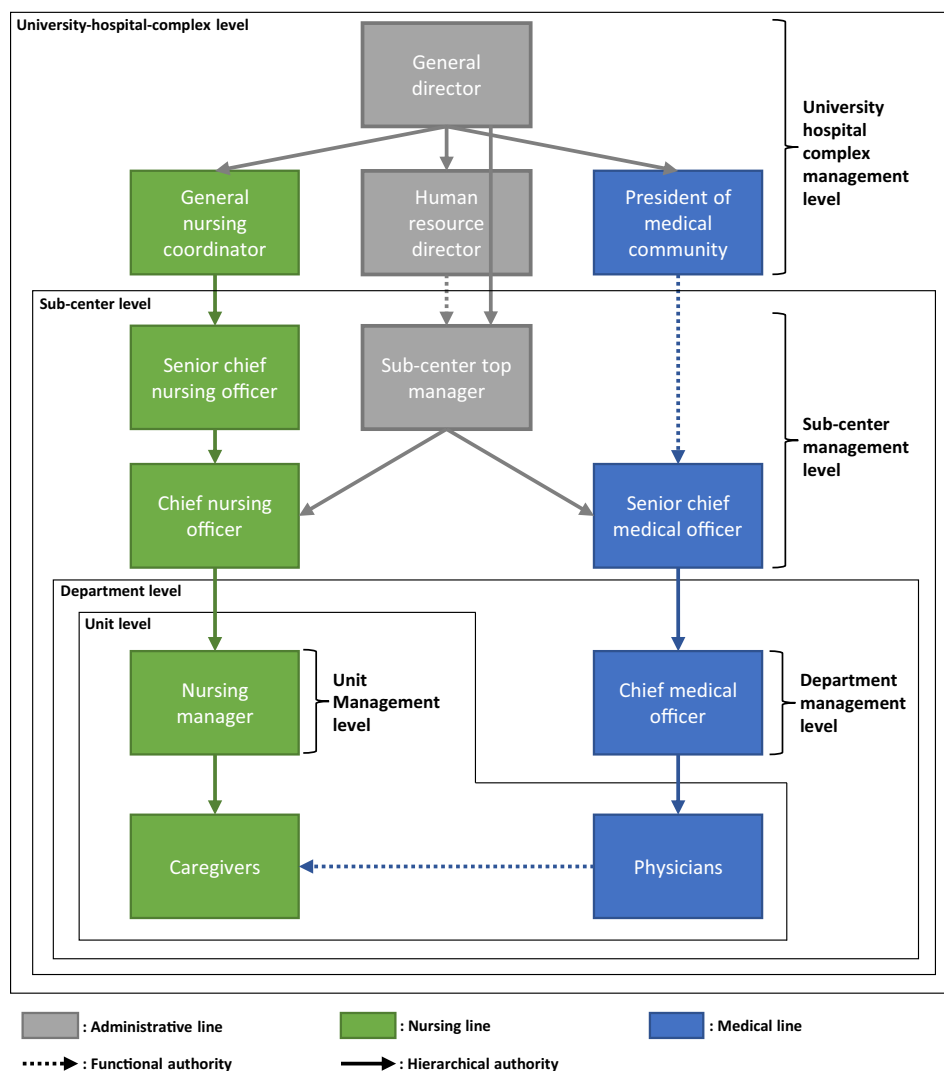


FIGURE 1 Hierarchical structure of the university hospital complex

The sub-centres were recruited prior to randomization in collaboration with the university hospital complex management if they met the following eligibility criteria:

1. Agreement of the university hospital complex management (i.e., general director, human resource director, president of medical community and general nursing coordinator).
2. No major reorganization or capacity restructuring planned over the study period.
3. Agreement of the sub-centre management (i.e., sub-centre top-level manager, senior chief nursing officer, senior chief medical officer and chief nursing officer).
4. Sub-centre with both medical and surgical activities.

A first random draw was planned among the eligible sub-centres to determine the two sub-centres to be included in the study. However, only two sub-centres met all the criteria. Therefore, both sub-centres were included without randomization.

2.3 | Data collection and randomization

The indicators were collected during the mandatory check-up in the occupational health department of the university hospital. Professionals were welcomed by a clinical research nurse who presented the research protocol and included eligible participants in the study who met the following criteria:

1. Any professional working in a care unit (e.g., nurse, care assistant and chief medical officer).
2. Signed written informed consent to participate in the research.

Participants completed a tablet questionnaire in the waiting room. After the inclusion campaign and baseline data collection, a random draw was performed by the multidisciplinary scientific committee of the study to determine which of the two sub-centres would benefit from the intervention. The scientific committee was composed of the researchers associated with the project (including the co-authors of this article). Seven of them belonged to the university hospital and six to other institutions. Data collection after 1 year of follow-up (T1) followed the same procedure. The duration of each data collection campaign was 3 months.

2.4 | Experimental procedure in the intervention sub-centre

The study process targeted the entire system and initially involved a transfer of power in the form of a quality-of-life consultation process for each care unit. All stakeholders, from the top-level management to the teams, were thus invited to directly experience an original space for dialogue and co-construction, implying empowerment for the teams and empowering leadership for the managers. The whole

process was facilitated by the principal investigator, the study coordinator and a team of facilitators, according to a standardized protocol, with the help of the multidisciplinary scientific committee. The study coordinator and the facilitators were specially recruited for this project. Their sole supervisor was the study's principal investigator, who was himself affiliated with the occupational health department of the university hospital complex. The intervention had been developed both in an empirical and theoretical approach: empirically as we drew on transformation experiences reported in the ethnographic literature (Carney & Getz, 2016; Davids et al., 2019; Getz, 2009) and advice from two external chief executive officers (CEO) experienced in empowering leadership but, also, as we conducted a pilot study to pre-test (on two departments) and improve the intervention model. Theoretically, we designed the intervention based on empowering leadership theory (Amundsen & Martinsen, 2014; Konczak et al., 2000), as well as broader models of social psychology, in particular, commitment theory (Guéguen et al., 2013; Kiesler & Sakumura, 1966) and self-determination theory (Ryan & Deci, 2000).

Step 0: Preparation of the intervention (12 months): presentation and validation of the procedure with (1) the general director and other university hospital complex managers; (2) the senior management of the sub-centres meeting the inclusion criteria and (3) the trade unions: setting up of a steering committee composed of the directors of the university hospital complex management, including the principal investigator and invitation of the steering committee to visit a company recognized for its empowering leadership, including a meeting with its CEO. This step ended with T0 data collection and randomization. The aim is top-level management acculturation to empowering leadership.

Step 1: Start of the intervention: inclusion of the senior management of the intervention sub-centre in the steering committee and training seminar No. 1 (0.5 days). The seminar was intended for the unit, department and sub-centre managements and involved the university hospital complex management. It included (1) theoretical knowledge on empowering leadership and its consequences and (2) the intervention of the CEO of a company known for its empowering leadership who shared his personal experience of transformation towards empowering leadership and mediated a workshop debate. The aim is acculturation to empowering leadership and involvement of the entire hierarchical chain in the intervention.

Step 2: Qualitative diagnosis and unit engagement phase (4 months): the facilitators met with the nursing managers and chief medical officers. They presented the intervention to the teams. They then conducted exploratory research interviews with the professionals. Then, they wrote a qualitative report for each unit, describing the resources and constraints perceived by the team. The report should not contain any recommendations. The aim is alliance of facilitators with the unit and department management and pre-engagement of the teams.

- Step 3: Phase of submission of the reports to the hierarchy in a coaching logic (1 month), starting with the steering committee, and then to the front-line managers. The aim is empowering leadership coaching and preparation for the accompaniment of the teams within the entire hierarchical chain.
- Step 4: Training seminar No. 2 for managers (0.5 days): The principal investigator presented the team accompaniment and recommended managerial practices (i.e., empowering leadership). Then, a CEO of an external company known for its empowering leadership came to share his experience in transformation towards empowering leadership and then mediated a workshop on the implementation of the future accompaniment and empowering leadership. The aim is to mobilize the entire hierarchical chain towards empowering leadership in the implementation of step 5.
- Step 5: Feedback, collective debate on the reports and presentation of the accompaniment plan in each care unit, totalling 20–25 feedback contributions for the intervention sub-centre (1 month): The medical and nursing team, the nursing manager, the chief medical officer, the sub-centre management and the human resource manager of the university hospital complex were present at each meeting. The facilitator detailed each part of the qualitative analysis for collective discussion. He mediated the debate between all the stakeholders and encouraged the emergence of potential solutions. The aim is empowering leadership for the managers and team empowerment.
- Step 6: Phase of working groups in each unit (3 months): The composition and objectives of the groups were chosen by the medical and nursing team. The groups had to be led by a nursing referent and a medical referent. The nursing manager and the chief medical officer helped the referents and the groups, by sharing developments across the different groups and providing an overall synthesis according to a department perspective. The facilitator assisted the groups, while coaching the managers in empowering leadership. The aim is empowering leadership for the unit and department managers and team empowerment.
- Step 7: Negotiation and co-construction meetings in each care unit (1 month), with the same stakeholders as in step 5. The topics discussed during the meetings were defined by the working groups and communicated to the steering committee in advance. During the meetings, the working groups presented the improvements they implemented and formulated their requests for support requiring a structural provision. The university hospital complex and sub-centre managerial staff valued commitment, participated in the collective reflection on improvement and arbitrated the scope of management available, while informing on the constraints to be taken into account at the overall facility level (e.g., economic constraints). The nursing manager was encouraged to mediate exchanges, with the coaching of the facilitator. The aim is empowering leadership for the unit, department and sub-centre management and team empowerment.

- Step 8: Structural adjustment phase (2 months): Following the meetings, the managerial bodies implemented their decisions and proposals, while taking care to communicate with the teams. The facilitators prepared their departure by inviting the nursing managers and department heads to continue the working groups and maintain their referents. The aim is to initiate a continuous improvement loop, combining empowering leadership for the unit, department and sub-centre management and team empowerment.

2.5 | Procedure in the control sub-centre

No intervention was performed in the control sub-centre.

2.6 | Indicators

Empowering leadership was measured using the Leader Empowering Behavior Questionnaire (LEBQ; Konczak et al., 2000). It included 17 items that measured six behaviours: delegation of authority (e.g., 'My manager gives me the authority I need to make decisions that improve work processes and procedures'), accountability (e.g., 'My manager holds me accountable for the work I am assigned to'), self-directed decision making (e.g., 'My manager tries to help me arrive at my own solutions when problems arise, rather than telling me what he/she would do'), information sharing (e.g., 'My manager shares information that I need to ensure high quality results'), skill development (e.g., 'My manager provides me with frequent opportunities to develop new skills') and finally coaching for innovative performance (e.g., 'I am encouraged to try out new ideas even if there is a chance they may not succeed'). Participants were asked to indicate their level of agreement with each statement on a seven-point scale, ranging from (1) *strongly disagree* to (7) *strongly agree*. The questionnaire was found to have satisfactory reliability and criterion validity (Konczak et al., 2000).

Emotional exhaustion was measured using the five items proposed by Maslach and Schaufeli (1993) (e.g., 'I feel emotionally drained from my work'). Participants indicated whether they had recently experienced each of the situations using a 5-point scale, ranging from (1) *strongly disagree* to (5) *strongly agree*. The questionnaire was found to have satisfactory reliability and criterion validity (Schutte et al., 2000; Taris et al., 1999).

The following data were collected: age, gender, occupational position, contract type, working time and seniority.

2.7 | Statistical analysis

2.7.1 | Empowering leadership modelling: Test of a bifactorial structure

Recent studies have used bifactorial models (Gillet et al., 2019; Howard et al., 2016; Tóth-Király et al., 2018). Based on a

multidimensional questionnaire, a bifactorial analysis consists in estimating a global factor from the set of items and then estimating specific factors based on the remaining information from the items, once globality has been taken into account (Gillet et al., 2019; Markon, 2019; Morin, Arens, & Marsh, 2016). If such a model could be validated for empowering leadership, it would then be possible to simultaneously study the global effect of empowering leadership as well as the effect of each of its component behaviours on emotional exhaustion.

The bifactorial structure of empowering leadership at T0 was first investigated according to the method recommended by Morin and colleagues (Gillet et al., 2019; Morin, Arens, & Marsh, 2016). These analyses were performed with Mplus 8.3 software, using the maximum likelihood with robust standard errors (MLR). Four competing models of empowering leadership were assessed (Figure S1): a confirmatory factor analysis (CFA) model with six correlated factors defined by their respective items (i.e., model of Konczak et al., 2000); an exploratory structural equation model (ESEM) with the same six correlated factors, but considering that the items could simultaneously define several dimensions (i.e., cross-loadings; Morin, Arens, & Marsh, 2016), and a bifactor CFA model with seven independent factors: six specific factors defined by their specific items and one global factor defined by all empowering leadership items. Cross-loadings were not allowed and all dimensions were specified as orthogonal (i.e., independent), since the global factor was expected to explain the covariance between the sub-dimensions (Morin, Arens, & Marsh, 2016), and a bifactor ESEM model using the same structure as the bifactor CFA model, but considering that the items could also contribute to define the other specific factors, and not only their corresponding specific factors and the global factor.

Then, an inter-model comparison was performed based on the fit indices obtained and the parameters estimated in the models. The fit of the models was assessed using the Comparative Fit Index (CFI), the Tucker-Lewis Index (TLI) and the Root Mean Square Error of Approximation (RMSEA). A CFI (or TLI) ≥ 0.90 and 0.95 indicates an acceptable and excellent fit to the data, respectively (Marsh et al., 2009). An RMSEA < 0.08 and 0.06 indicates an acceptable and excellent fit, respectively (Marsh et al., 2009). The CFA and ESEM models were compared. The ESEM model was preferred provided that (1) it was well defined, (2) the fit indices were better and (3) the inter-factor correlations decreased when cross-loadings were taken into account (Marsh et al., 2009). Then, the selected CFA or ESEM model was compared to the corresponding bifactor model. The bifactor model was preferred provided that (1) the fit indices were better, (2) the global factor was well defined by the whole set of scale items and (3) the specific factors were correctly defined (Gillet et al., 2019; Morin, Arens, & Marsh, 2016). For each factor, the omega coefficient for composite reliability (ω ; Green & Yang, 2015) was also calculated and reported.

2.7.2 | Empowering leadership and emotional exhaustion invariance between T0 and T1

In a second step, the temporal invariance of the empowering leadership and emotional exhaustion measurement models between T0 and

T1 was tested. Missing data at T1 (25.56%) were imputed according to previously published recommendations (Buuren, 2018; Graham, 2009), using the full information maximum likelihood (FIML) method that allows direct imputation during model estimates (Graham, 2009; Muthén & Muthén, 2017).

For the invariance tests, the procedure described by Millsap was followed (Millsap, 2012). First, a model with 'configural invariance' (Schmitt & Kuljanin, 2008), assuming that the items were associated with the same constructs at T0 and T1 was assessed (Cheung & Rensvold, 2002). Second, a 'weak invariance' model was specified by adding the constraint of an identical estimate of the item factor loadings at T0 and T1 in addition to the factorial configuration. Third, a 'strong invariance' model was specified by adding the constraint of an identical estimate of the intercepts at T0 and T1. Fourth, a 'strict invariance' model specifying in addition an equality constraint to the item residual variance at T0 and T1 was tested. Then, the 'invariance of variances and covariances' was tested in a fifth model and finally a sixth model with addition of the equality constraints across the latent means between T0 and T1 was tested (i.e., 'invariance of latent means').

Thereafter, the goodness of fit of each model was assessed using the same indices as before, that is, the CFI, TLI and RMSEA. A step-by-step comparison of the six invariant models was then performed, with assessment of the change in CFI, TLI and RMSEA at each step. Based on the thresholds described by Chen (2007), each type of invariance could be confirmed when the observed difference with the previous (less constrained) model was < 0.10 for the CFI and TLI and < 0.015 for the RMSEA.

2.7.3 | Linear mixed model strategy

Considering the hierarchical structure of the data, all the statistical analyses of the effect of the intervention were performed using linear mixed models (LMM; Singmann & David, 2018). Remember that participants were part of care units, which were themselves integrated into sub-centres. In this configuration, it is not excluded that the observed effect of the intervention (i.e., effect of the sub-centre) on the dependent variables is in fact due to an effect of the care unit (e.g., effect of organizational culture variations between units). The LMM method allowed solving this problem by decomposing the sources of variance between the fixed and random effects (Bliese et al., 2018; Singmann & David, 2018). Fixed effects indicated the effect of one or more independent variables as in a classical linear regression (e.g., sub-centre variable). The random effects consisted in estimating the error term of the model as a function of a variable, the modalities of which structured our sample (e.g., care unit variable), to obtain a more accurate but also more generalizable estimate of the fixed effects investigated (Baayen et al., 2008; Singmann & David, 2018).

The analyses were performed using R software (version 4.1.0) and the lme4 package (Bates et al., 2014), with the restricted maximum likelihood estimator (REML; Corbeil & Searle, 1976; Gilmour et al., 1995). All analyses were performed using the invariant factor

scores (i.e., from the most invariant model), after standardization (mean = 0, standard deviation = 1). Factor scores provide a more accurate estimate of individual levels than the sum of the items, since they take into account measurement errors and factor structure (Morin, Meyer, et al., 2016; Skrondal & Laake, 2001).

For each model, the difference in score between T1 and T0 was considered a dependent variable. Each model included the socio-demographic variables (i.e., age, gender, position, seniority, working time and contract type), the value of the dependent variable at T0 and the sub-centre variable (intervention sub-centre vs. control sub-centre) to test the effect of the intervention. In each model, the care unit variable was specified as a random effect to estimate the mean of the dependent variable for each care unit. In each case, the intra-class correlation coefficient (ICC) was reported. It varied between 0 and 1 and represented the proportion of the variance of the dependent variable explained by the random effect (i.e., care unit variable; Bliese et al., 2018; Nakagawa & Schielzeth, 2013).

2.7.4 | Effect of the intervention on empowering leadership and emotional exhaustion

A series of LMM were used to investigate (1) the effect of the intervention on empowering leadership, (2) the effect of the intervention on emotional exhaustion and (3) the mediating effect of empowering leadership on the relationship between the intervention and emotional exhaustion. First, seven LMMs explaining the evolution of each of the empowering leadership factors were assessed to investigate the controlled effect of the intervention on the evolution of the global factor for empowering leadership (LMM1) and the specific factors for delegation of authority (LMM2), accountability (LMM3), self-directed decision making (LMM4), information sharing (LMM5), skill development (LMM6) and coaching for innovative performance (LMM7). Then, a LMM explaining the evolution of emotional exhaustion (LMM8) was assessed to investigate the controlled effect of the intervention on the evolution of emotional exhaustion. The model was also fitted to the global factor and the six specific factors for empowering leadership at T0 to investigate the predictive effect of empowering leadership on the evolution of emotional exhaustion at 1 year.

Finally, a hierarchical regression approach was used to assess a ninth LMM similar to LMM8, but in which a fixed effect accounting for the evolution of the global factor and the six specific factors for empowering leadership was also specified (LMM9). According to Baron and Kenny's (1986) criteria, we could conclude that the evolution of empowering leadership had a mediating effect on emotional exhaustion provided that (1) the effect of the intervention on the evolution of empowering leadership and emotional exhaustion was statistically significant (i.e., with LMM1-LMM8), (2) the effect of the evolution of empowering leadership on the evolution of emotional exhaustion was statistically significant (i.e., with LMM9) and (3) the introduction of empowering leadership in the explanation of the evolution of emotional exhaustion contributed to decrease the value of the regression coefficient of the intervention (i.e., LMM9 vs. LMM8).

3 | RESULTS

3.1 | Participants and sample characteristics

A total of 981 participants were included (566 from the intervention sub-centre and 415 from the control sub-centre), with an overall participation rate of 63% at T0 and a follow-up rate of 67% at 1 year (Table 1). Nurses, nursing assistants and secretaries demonstrated the best participation rate at T0 (ranging from 76 to 81%), followed by physicians and hospital service workers (ranging from 32% to 53%). The data of 751 participants who did not change care units between T0 and T1 and who did not receive a quality-of-life support in the workplace in the control sub-centre were included in the analyses. This choice was made to ensure that the observed changes in empowering leadership scores reflected an effect of the intervention and not a change in participants' unit or an 'experimental bias' in the control sub-centre. The sociodemographic variables, as well as empowering leadership and emotional exhaustion scores before modelling, are detailed in Table S1. At baseline, the empowering leadership and emotional exhaustion scores did not significantly differ between the intervention and control sub-centres.

3.2 | Fitting of the empowering leadership measurement models

The fit indices for the four tested models are presented in Table 2. The standardized factor loadings of the items (λ), the residual variance of the items (δ) and the fidelity of the dimensions are presented in Table S2 for the four empowering leadership models. The correlation coefficients between the latent factors for the CFA and ESEM models are presented in Table S3. The four empowering leadership models showed an overall satisfactory fit, with the exception of the CFA model in which the TLI was 0.896. The bifactor ESEM model was the model that best fitted the data for all indices.

3.3 | ESEM versus CFA

The ESEM model better fitted the data than the CFA model. Empowering leadership dimensions were correctly defined by the dedicated items, in both the CFA ($\lambda = 0.406-0.915$) and ESEM models ($\lambda = 0.246-0.929$). In the ESEM model, numerous cross-loadings were observed, and they were systematically lower than the loadings of the items dedicated to the dimensions ($\lambda = 0.001-0.263$). Finally, the correlations between the factors were decreased in the ESEM model compared to the CFA model. All these findings supported the superiority of the ESEM model over the CFA model.

3.4 | ESEM versus bifactor ESEM

The bifactor ESEM model was overall well defined. The empowering leadership items were associated with high and statistically significant

TABLE 1 Study sample

Category	Participation at T0		Participation at T0 and T1		Participation at T0 without change in unit at T1 and without participation in a W-QoL support in the control SC
	n	Participation rate (%)	n	Follow-up rate (%)	n
Intervention SC	566	67	363	64	441
Control SC	415	59	291	70	310
Total	981	63	654	67	751
Intervention SC					
Nurses	260	78	161	62	205
Nursing assistants	135	70	83	61	113
HSW	20	53	8	40	15
Secretaries	48	80	36	75	43
Physicians	72	50	35	49	43
Others	31	NA	26	84	22
Control SC					
Nurses	130	76	96	74	99
Nursing assistants	117	80	82	70	96
HSW	16	32	11	69	10
Secretaries	39	81	25	64	28
Physicians	86	38	49	57	60
Others	27	NA	22	81	17

Abbreviations: HSW, hospital service workers; NA, not applicable; SC, sub-centre; W-QoL, quality of life in the workplace.

TABLE 2 Fit results of the measurement models

	χ^2 (df)	CFI	TLI	RMSEA	90% CI	$\Delta\chi^2$	Δdf	ΔCFI	ΔTLI	$\Delta RMSEA$
Alternative models for measuring empowering leadership at T0										
CFA	564.653 (104)*	0.920	0.896	0.070	[0.064; 0.075]					
Bifactor CFA	403.212 (102)*	0.948	0.931	0.057	[0.051; 0.063]					
ESEM	114.023 (49)*	0.989	0.969	0.038	[0.029; 0.047]					
Bifactor ESEM	59.017 (38)*	0.996	0.987	0.025	[0.011; 0.036]					
Alternative models for measuring empowering leadership at T1										
CFA	435.238 (104)*	0.920	0.895	0.075	[0.068; 0.083]					
Bifactor CFA	347.144 (102)*	0.941	0.921	0.066	[0.058; 0.073]					
ESEM	126.115 (49)*	0.981	0.948	0.053	[0.042; 0.065]					
Bifactor ESEM	97.281 (38)*	0.986	0.949	0.053	[0.040; 0.066]					
Invariant models of empowering leadership (bifactor ESEM) and emotional exhaustion (CFA) at T0 and T1										
Configural invariance	1,086.531 (657)*	0.969	0.955	0.030	[0.026; 0.033]	-	-	-	-	-
Weak invariance	1,163.343 (731)*	0.968	0.959	0.028	[0.025; 0.031]	76.812	74	-0.001	0.004	-0.002
Strong invariance	1,179.087 (745)*	0.968	0.960	0.028	[0.025; 0.031]	15.744	14	0.000	0.001	0.000
Strict invariance	1,288.893 (767)*	0.962	0.953	0.030	[0.027; 0.033]	109.806	22	-0.006	-0.007	0.002
Variance-covariance invariance	1,345.332 (796)*	0.960	0.952	0.030	[0.027; 0.033]	56.439	29	-0.002	-0.001	0.000
Invariance of latent means	1,360.615 (804)*	0.959	0.952	0.030	[0.028; 0.033]	15.283	8	-0.001	0.000	0.000

Abbreviations: χ^2 , Khi^2 test; CFA, confirmatory factor analysis; CFI, comparative fit index; df, degree of freedom; ESEM, exploratory structural equation modelling; RMSEA, root mean square error of approximation; TLI, Tucker-Lewis index; 90% CI = 90% confidence interval for the RMSEA.

* $p < 0.01$.

factor loadings for the global factor ($\lambda = 0.124\text{--}0.717$). Overall, the specific factors were well defined by their dedicated items ($\lambda = 0.062\text{--}0.716$) except for item 12 related to self-directed decision making that was associated with a very low and non-significant loading for its specific factor. Nevertheless, the dimension remained well defined by the other dedicated items ($\lambda = 0.528\text{--}0.571$), as well as the other specific factors. Thus, (a) the bifactor ESEM model showed an excellent and better fit than the ESEM, CFA and bifactor CFA models, and (b) both the global factor and specific factors were well defined. In addition, further analyses revealed an excellent fit (Table 2), and a good definition of the bifactor ESEM model of empowering leadership at T1 (Table S4). Therefore, the bifactor ESEM model could be considered the best model to be used.

3.5 | Invariance in the empowering leadership (bifactor ESEM) and emotional exhaustion (CFA) models between T0 and T1

The fit indices of the six invariant models as well as their evolution when invariance constraints were added are presented in Table 2. The configural invariance was confirmed, with an excellent fit to all criteria. Adding stepwise invariance constraints in the five successive models did not significantly lower the goodness of fit (i.e., $\Delta\text{CFI} < 0.010$, $\Delta\text{TLI} < 0.010$ and $\Delta\text{RMSEA} < 0.015$). Thus, there was a full invariance in the model integrating empowering leadership and emotional exhaustion at T0 and T1. The factors related to empowering leadership and to emotional exhaustion were well defined (Table S5).

3.6 | Effect of the intervention on empowering leadership

LMM1 for the global factor for empowering leadership and LMM8 and LMM9 for emotional exhaustion are shown in Table 3. The ICCs were negligible (i.e., $\text{ICC} < 0.05$; LeBreton & Senter, 2008). However, the random effect remained included in the models to control the care unit effect (Bliese et al., 2018). As expected, the effect of the intervention on the evolution of the global factor for empowering leadership between T0 and T1 (LMM1) was statistically significant. However, the increase in global factor for empowering leadership in the intervention sub-centre was not significant (change = $+0.028$; 95% CI [-0.062 , 0.118]), whereas a statistically significant decrease was observed in the control sub-centre (change = -0.112 ; 95% CI [-0.213 , -0.011]). Thus, the intervention stabilized the level of the global factor for empowering leadership in the intervention sub-centre, in a context of decreased level of global factor for empowering leadership observed in the control sub-centre. Therefore, Hypothesis H1 could be considered as partially validated. In addition, the intervention had no significant effect on the evolution of the specific factors (LMM2-LMM7; Table S6).

3.7 | Effect of empowering leadership on emotional exhaustion

The global factor for empowering leadership at T0 and its evolution between T0 and T1 were negatively associated with the evolution of emotional exhaustion (LMM8 and LMM9). Furthermore, the specific factors for delegation of authority and information sharing at T0, as well as the specific factor for coaching for innovative performance, were negatively associated with the evolution of emotional exhaustion (LMM8). On the other hand, the specific factor for self-directed decision making at T0, as well as its evolution between T0 and T1, was positively associated with the evolution of emotional exhaustion (LMM9). Note that the effect of the specific factor for self-directed decision making accounted for 1.4% of the variance of the evolution of emotional exhaustion, compared to 9.2% for the global factor and the other specific factors for empowering leadership (Table S7). Thus, empowering leadership had mixed effects on emotional exhaustion at 1 year, but its effects were more protective than exhausting.

3.8 | Effect of the intervention on emotional exhaustion

The effect of the intervention on the change in emotional exhaustion between T0 and T1 (LMM8) was statistically significant. Nevertheless, the decrease in emotional exhaustion in the intervention sub-centre was not significant (change = -0.050 ; 95% CI [-0.112 , 0.013]), whereas a statistically significant increase was observed in the control sub-centre (change = $+0.087$; 95% CI [0.015 , 0.159]). Thus, the intervention stabilized the level of emotional exhaustion, in a context of increased emotional exhaustion as evidenced in the control sub-centre. Therefore, Hypothesis H2 could be considered as partially validated.

3.9 | Effect of the intervention on emotional exhaustion mediated by empowering leadership

The comparison of the regression coefficient for the sub-centre variable (intervention sub-centre versus control sub-centre) between MLM8 and MLM9 showed a decrease in the effect size of the intervention, after the inclusion of the change in empowering leadership between T0 and T1 in the explanation of emotional exhaustion. Furthermore, the effect of the intervention remained statistically significant, and the change in global factor for empowering leadership indicated a significant effect on the change in emotional exhaustion in MLM9. Therefore, in line with Baron and Kenny's (1986) criteria, we could conclude that the evolution of the global factor for empowering leadership partially mediated the effect of the intervention on the evolution of emotional exhaustion. Note that the mediating effect was also observed when only the evolution of the global factor for empowering leadership (without the evolution of the specific factors) was considered in the explanation of emotional exhaustion (Table S8).

TABLE 3 Linear mixed models for measuring the global factor for empowering leadership and emotional exhaustion evolution between T0 and T1

Random effect	LMM1: GF for EL			LMM8: EE			LMM9: EE		
	var.	SD	ICC	var.	SD	ICC	var.	SD	ICC
CU	0.022	0.150	0.046	0.007	0.083	0.023	0.005	0.068	0.017
Residuals	0.468	0.684		0.294	0.543		0.266	0.516	
Fixed effect	<i>b</i>	SE	<i>p</i>	<i>b</i>	SE	<i>p</i>	<i>B</i>	SE	<i>p</i>
Intercept	0.172	0.172	0.319	0.026	0.135	0.848	0.075	0.128	0.559
Male versus									
Female	-0.072	0.090	0.421	0.009	0.071	0.904	-0.005	0.068	0.940
Age	-0.004	0.003	0.175	0.000	0.002	0.871	0.000	0.002	0.962
Seniority in the CHU	0.000	0.002	0.965	0.002	0.002	0.215	0.002	0.002	0.158
Seniority in the CU	0.001	0.002	0.727	-0.001	0.002	0.770	-0.001	0.002	0.627
Position: Nurses versus									
Nurse assistants	-0.057	0.064	0.372	0.068	0.052	0.187	0.048	0.049	0.333
Physicians	0.008	0.097	0.933	-0.024	0.079	0.761	-0.038	0.075	0.610
Secretaries	0.027	0.095	0.775	-0.217	0.075	0.004	-0.205	0.071	0.004
HSW	-0.200	0.147	0.174	0.147	0.118	0.212	0.083	0.112	0.461
Nursing managers	-0.150	0.188	0.426	-0.275	0.150	0.066	-0.334	0.143	0.020
Chief medical officers	0.305	0.298	0.305	-0.383	0.235	0.104	-0.297	0.224	0.184
Others	0.027	0.151	0.858	-0.082	0.121	0.498	-0.118	0.115	0.306
Contract: Probationary period versus									
Officials	0.027	0.131	0.835	-0.122	0.103	0.240	-0.128	0.098	0.191
Fixed-term contract	-0.037	0.153	0.811	-0.144	0.122	0.238	-0.182	0.116	0.116
Permanent contract	0.205	0.423	0.629	-0.364	0.339	0.283	-0.351	0.323	0.277
Working full-time versus									
Part-time	-0.016	0.057	0.778	0.027	0.045	0.558	0.033	0.043	0.446
Exhaustion at T0				-0.304	0.023	0.000	-0.282	0.026	0.000
GF for EL at T0	-0.449	0.028	0.000	-0.076	0.023	0.001	-0.162	0.027	0.000
SF for Dele. at T0				-0.088	0.024	0.000	-0.074	0.030	0.014
SF for Acc. at T0				0.013	0.024	0.588	-0.029	0.029	0.309
SF for Self. at T0				-0.005	0.025	0.836	0.082	0.034	0.017
SF for Info. at T0				-0.070	0.025	0.006	-0.051	0.030	0.089
SF for Skills. at T0				0.001	0.023	0.964	-0.041	0.027	0.127
SF for Innov. at T0				0.013	0.027	0.631	-0.002	0.030	0.940
ΔGF for EL							-0.267	0.033	0.000
ΔSF for Dele.							-0.008	0.030	0.780
ΔSF for Acc.							-0.057	0.040	0.159
ΔSF for Self.							0.136	0.037	0.000
ΔSF for Info.							0.068	0.042	0.104
ΔSF for Skills.							0.000	0.042	0.993
ΔSF for Innov.							-0.203	0.057	0.000
Intervention-SC versus									
Control-SC	-0.140	0.069	0.047	0.137	0.135	0.007	0.094	0.045	0.042
R^2			0.316			0.256			0.330
ΔR^2						-			0.073 **

Note: Statistically significant parameters are indicated in bold ($p < .05$).

Abbreviations: ΔR^2 , difference in explained variance; Acc., accountability; *b*, non-standardized regression coefficient; CU, care unit; Dele., delegation of authority; EE, emotional exhaustion; EL, empowering leadership; GF, global factor; HSW, hospital service workers; ICC, intra-class correlation; Info., information sharing; Innov., coaching for innovative performance; *p*, *p* value; R^2 , percentage of variance explained; SC, sub-centre; SD, standard deviation; SE, standard error of the coefficient; Self., self-directed decision making; SF, specific factor; Skills., skills development; var., variance.

* $p < 0.05$. ** $p < 0.01$.

[Correction added on 7 November 2022, after first online publication: In the last column of the 'Female' row entry, 0,940 has been corrected to 0.940 in this version.]

4 | DISCUSSION

4.1 | Bifactorial model of empowering leadership

Our results clearly showed the superiority of the bifactorial model of empowering leadership at T0 and T1. This indicates, at the psychometric level, that the items of Konczak et al. (2000) simultaneously reflect several constructs (i.e., multidimensionality; Morin, Arens, & Marsh, 2016), and by extension that the six empowering behaviours initially proposed by Konczak et al. (2000) actually cover several managerial realities: a global phenomenon, characterized through the global factor by the implementation of all the empowering behaviours, and a specific phenomenon, characterized through the specific factors by the independent implementation of the behaviours of delegation of authority, accountability, self-directed decision making, information sharing, skill development and coaching for innovative performance. In other words, our results indicate that managers can engage in the entire set of empowering behaviours or, selectively, in each of the specific empowering behaviours.

The identification of a global factor is consistent with the literature. Indeed, the latest empowering leadership scales propose to group different empowering behaviours into a limited number of encompassing factors (e.g., the two-dimensional scale of Amundsen & Martinsen, 2014). In addition, many studies have used a single composite factor for empowering leadership (Cheong et al., 2019; Pearce et al., 2003). However, the fact that specific factors were well defined once the global factor was considered showed the limitations of a parsimonious model of empowering leadership. Such a model might not capture the specificity of certain behaviours and their consequences.

4.2 | Effect of the intervention

As expected, the effect of the intervention on the change in both global factor for empowering leadership and emotional exhaustion between T0 and T1 was statistically significant. However, this significant effect of the intervention was more related to a significant deterioration of the global factor for empowering leadership and emotional exhaustion in the control sub-centre than to an improvement in the indicators in the intervention sub-centre. In our opinion, the evolution observed in the control sub-centre could reflect delayed and/or lasting effects of policies setup within the university hospital complex prior to the research study. Indeed, the facility implemented numerous 'reorganizations' in all its sub-centres in 2013 and 2014 (i.e., 4 years before the intervention), in order to direct its activity towards ambulatory care and to reduce its expenses. All sub-centres were concerned. However, until today, the occupational health service of the university hospital complex has regularly warned about the consequences of these transformations on health, noting increased exhaustion in the whole facility (Tripodi et al., 2014, 2016). In this sense, the literature indicates that organizational transformations foster exhaustion (Day et al., 2017; Koppel et al., 2015). In addition, the demands made to individuals could affect emotional exhaustion up to

5 years later (Aronsson et al., 2017; Seidler et al., 2014). Moreover, emotional exhaustion implies a loss of personal resources and thus a decrease in coping capacity, which in turn could further increase the level of exhaustion in an upward spiral (Bakker & Costa, 2014). Thus, the past transformations (in 2013 and 2014), as well as the related exhaustion generated at this time, could explain the increase in emotional exhaustion observed between T0 and T1 in the control sub-centre (i.e., between 2018 and 2019). Considering that the intervention and control sub-centres were reorganized over the same period (i.e., that the two sub-centres were comparable; Tripodi et al., 2016, 2014), our findings suggested that the intervention allowed at least stopping the progression of emotional exhaustion in the intervention sub-centre.

Regarding the evolution of empowering leadership in the control sub-centre, it should be specified that most of the past reorganizations were implemented in an authoritative manner by the management (Gambert, 2020; Tripodi et al., 2016). It should also be recalled that the leadership style adopted by the top-level management influences front-line management practices (Brown & Treviño, 2014; Davids et al., 2019; Migneault et al., 2009). Therefore, it seemed reasonable to assume that the past managerial behaviour of the university hospital complex top-level management could still influence the managerial behaviour of the middle- and front-line management within the facility. Moreover, qualitative parameters identified in the analysis of the accompaniment phase indicated the maintenance and presence of a directive leadership in the university hospital complex management during the research study. During step 3 (i.e., month 5) of the intervention, one of the chief medical officers directly contacted the general director to request the removal of his department from the intervention programme, because he did not want to implement empowering leadership. Despite the clear commitment of the sub-centre management, but also of the department's nursing managers and medical teams, the general director supported the chief medical officer's request. Subsequently, we observed the deprogramming of the general director in the steering committee meeting agenda. In our opinion, this concrete case could more generally reflect the directive leadership style adopted by the general director within the university hospital complex. In this sense, the principal investigator had to negotiate twice to postpone reorganizations in the intervention sub-centre, which the top-level management of the university hospital complex had been unilaterally decided to implement during the accompaniment phase. Regarding the influence of the top-level management on front-line management behaviours (Brown & Treviño, 2014; Carney & Getz, 2016; Migneault et al., 2009), the directive leadership style of the top-level management of the university hospital complex, and more precisely of the general director, could explain the decrease in global factor for empowering leadership observed in the control sub-centre. Considering that the intervention sub-centre depended on the same top-level management at the university hospital complex level, we could assume that the intervention protected the intervention sub-centre from the decrease in global factor for empowering leadership observed in the control sub-centre.

4.3 | Effect of empowering leadership on emotional exhaustion

In this study, we showed that changes in the global factor for empowering leadership during the intervention partially mediated the effects of the intervention on emotional exhaustion. In other words, part of the protective effects of the intervention against increased emotional exhaustion was related to the fact that the intervention protected the intervention sub-centre from a decline in global factor for empowering leadership. To our knowledge, this is the first controlled study to show the protective effect of empowering leadership against increased emotional exhaustion at 1 year. Furthermore, we showed that the specific factors for delegation of authority, information sharing and coaching for innovative performance were negatively associated with emotional exhaustion at 1 year. Based on our findings, empowering leadership could be considered a job resource, likely to increase the ability of employees to cope with their job demands, in line with the results of recent studies (Kim, Moon, & Shin, 2018; Kim & Beehr, 2018; Tripathi & Bharadwaja, 2020).

On the other hand, we found that the level of the specific factor for self-directed decision making contributed to increase emotional exhaustion at 1 year, when the positive effect of the global factor for empowering leadership was taken into account. Thus, the incentive and expectation of autonomy in decision making raised by the manager/supervisor could be an exhausting demand. This result was consistent with (a) the hypothesis of Cheong et al. (2016) that the autonomy induced by empowering leadership could be a stressful demand for employees and, more generally, (b) with the contrasting literature on autonomy (Kubicek et al., 2017). Although autonomy is mainly considered a resource (Bakker & Demerouti, 2017), some studies have indicated that it requires an effort, insofar as employees must make decisions by themselves about the method or planning of the work for example (Kubicek et al., 2017).

In any case, we found that empowering leadership was much more protective ($R^2 = 9.2\%$) than exhausting ($R^2 = 1.4\%$). Therefore, our results support the fact that empowering leadership should be promoted in hospitals to decrease health care team emotional exhaustion.

4.4 | Limitations

Our results need to be confirmed in other samples, especially since the adoption and effect of empowering leadership may vary according to cultural and organizational contexts (Blume et al., 2010; Cheong et al., 2019; Davids et al., 2019). Furthermore, even if randomized design is a strong method to control for the confounding variables inherent to the organizational culture, there is a risk that the experimental and control groups will not be completely comparable (regarding organization and culture), especially when the study is conducted on only two sub-centres. However, as we matched them effectively, no differences were observed at baseline between the sub-centres with respect to empowering leadership. In addition, the use of LMM allowed us to control for the sub-centres differences that would rely

on care unit's differences in terms of organization and culture. But despite this, there could still remain organizational culture differences between the two sub-centres (that would rely directly on the sub-centres level) that could bias the effect estimate we obtained for the intervention. Although this is expensive and challenging to coordinate, future experimental studies could address this limitation by replicating this study on a large number of randomly drawn sub-centres.

5 | CONCLUSIONS

Our quantitative and qualitative results showed the value of implementing systemic interventions, targeting all hierarchical levels of the organization, in order to protect against a decrease in empowering leadership in hospitals. To our knowledge, this is the first controlled interventional study to test the effect of a multi-level intervention on the evolution of empowering leadership in a large organization. Regarding this point, we empirically confirmed some findings from ethnographic studies that have assessed the evolution of empowering or 'liberating' managerial practices in professional organizations (Carney & Getz, 2016; Davids et al., 2019; Getz, 2009), in particular the importance of transforming practices at all levels of the organization, starting with the CEO.

6 | IMPLICATIONS FOR NURSING MANAGEMENT

Although empowering leadership was largely more protective than exhausting, our results support the importance of adopting all the empowering behaviours to ensure positive effects on emotional exhaustion. More concretely, managers should be informed that they must be ready to share power, support and recognize employees' responsibility before inviting them to be autonomous. In doing so, they could help prevent employee emotional exhaustion. Conversely, managers who would engage selectively in autonomy-inviting behaviour without sharing power, supporting and recognizing employees' responsibility could foster emotional exhaustion.

Considering the systemic nature of empowering leadership and the effect we found of the intervention, we strongly encourage CEOs and top-managers to support middle and front-line managers in implementing all empowering behaviours. For this purpose, our results show the interest of combining (a) empowering leadership education, (b) direct field empowering leadership training and (c) coaching at all hierarchical levels of the facility. Furthermore, beyond support, our findings invite top-managers to personally engage alongside middle and front-line managers in meeting and empowering front-line employees. The fact that we were able to implement the intervention with two meetings per year per unit with top-managers, totalling 41 meetings in the intervention sub-centre, demonstrates that it is doable. However, we invite CEOs to ensure that they are prepared to sustain such a process over the long term, in order to foster a true and sustainable transformation of the managerial culture towards empowering leadership.

On this point, we believe that the effect of our intervention could be improved after some adjustments to the protocol. First, an informed consent form signed by the General director (or CEO) could be a criterion for including the hospital in the intervention, in order to reinforce the commitment of this essential stakeholder in the transformation of the facility (Davids et al., 2019; Getz, 2009). Second, individual coaching could be extended to the general director (or CEO), and performed by leaders with personal experience in such a transformation of their organization. Such a coaching could reinforce adherence to empowerment via identification mechanisms (Blume et al., 2010; Brown & Treviño, 2014) but also, more simply, reassure the directors in times of doubt inherent in the transformation (Davids et al., 2019).

In addition, the support of medical chief officers could be strengthened by preferring 'quality of care' to 'quality of life in the workplace' in the objectives of the intervention. Indeed, we repeatedly observed that 'quality of life in the workplace' was not a mobilizing topic for physicians, in particular for department heads. Considering their strong commitment to innovation in medical care, we could assume that the quality of care would be more mobilizing and would allow limiting the risk of medical opposition to empowering leadership.

In any case, our study strongly showed the protective effect of empowering leadership against emotional exhaustion at 1 year. However, we found that the effects of the tested protocol were moderate, although quite encouraging, considering the social tensions that hospitals are currently facing.

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CONFLICT OF INTEREST

The authors have no competing interest to declare.

ETHICS STATEMENT

The research protocol was approved by the Nantes University Hospital Ethics Committee (i.e., GNEDS, *Groupe Nantais d'Éthique dans le Domaine de la Santé*) under the reference number GNEDS02122018 and is registered in the [ClinicalTrials.gov](https://www.clinicaltrials.gov) register under the reference number NCT04010773. All methods were performed in accordance with guidelines of the Declaration of Helsinki. This study was conducted as part of the Chrysalide research project (Cougot et al., 2019).

AUTHOR CONTRIBUTIONS

BC and JG designed the study and took on the role of principal investigator and study coordinator, respectively. NG, DT, LM and IG participated in the design of the intervention. BC defined the psychometric indicators and formalized the psycho-social objectives of the research study under the supervision of NG. GFB and LM coordinated the design of the study methodology. BC performed the statistical analysis under the supervision of PC and NG. All authors contributed to the drafting of the present manuscript and proposed changes to the draft proposed by BC. All authors read and approved the manuscript.

DATA AVAILABILITY STATEMENT

The data collected in the study will be available from the corresponding author on reasonable request from 3 years after the end of the study.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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