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ORIGINAL ARTICLE

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Nurses and the doctorate: A mixed study in French health care organizations

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Abstract**Aim:** This research aims to understand the place and role of nurses holding a PhD or PhD students (nurse doctor [ND]/nurse doctoral students [NDS]) in health care organizations in France.**Context:** Worldwide, many nurses are undertaking doctoral studies. France is no exception. However, in France, there is no doctorate dedicated to nursing. The question of ND/NDS integration into health organizations is thus raised in a specific manner.**Methods:** We used a two-stage mixed methodology. The first stage used data from questionnaires that were sent to 165 ND/NDS in France. To contextualize issues raised by these data, we used qualitative methods which comprised 45 semi-structured interviews with nurses, 10 interviews with health managers and chief nurses and 27 h of in situ observations with research coordinators.**Results:** Seventy-nine participants (47.9% response rate) completed questionnaires. The data showed that work organization in some departments—intensive care units (ICUs), oncology and psychiatry—favoured the development of scientific expertise among nurses. Favourable elements promoting the professional and academic development of ND/NDS included the potential for medical teaching in healthcare services, participation in research projects and, most importantly, medical proximity. Conversely, our data also identified poor visibility and recognition of nursing doctoral courses in French health organizations: A lack of task missions, a lack of suitable posts and poor integration into the nursing profession. Currently, French nurses define their profession as providing direct care to patients and their families—yet this definition fails to consider other important professional elements, such as research.**Conclusions:** Our study identified how proper ND/NDS integration is important to health care organizations. We identified key organization factors facilitating the integration of ND/NDS, such as participating in research teams and providing research support management.

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Implications for Nursing Management: In recent years, the nursing profession has significantly evolved. We are interested in the impact of these changes in work organizations following the development of new scientific skills. Our study investigates all aspects of the nursing profession (teaching, practice, research and organizations). Our study advocates managerial roles, among others, to improve ND and NDS integration into work organizations. We directly observed work organizations that helped develop nursing research. Our study is also aimed at managers who have roles as decision-makers in promoting and facilitating research and nurse researchers.

KEYWORDS

nurse doctor (ND)/nurse doctoral students (NDS), working relations

1 | INTRODUCTION

For several decades, the number of nurses enrolling in doctoral programs has increased globally. The literature has provided comprehensive descriptions of nurses (and profiles) who have embarked on doctoral paths particularly in North America (American Association of Colleges of Nursing, [n.d.](#); Brant, 2015; Broome et al., 2016; Edwards et al., 2018; Fang et al., 2016; Fitzpatrick & McCarthy, 2014; Grimes Stanfill et al., 2019; Rice, 2016; Trautman et al., 2018). This body of work has dissected the motivation driving academic nursing careers (Fang et al., 2016) and the impact of doctorates on patient care (Broome & Corazzini, 2016; National Academies of Sciences Engineering, and Medicine, 2021). However, to our knowledge, no study has investigated PhD or PhD students (nurse doctor [ND]/nurse doctoral student [NDS]) from a French managerial perspective, thereby questioning their integration into health care organizations.

Nurse training is a major issue. Historically and currently, the United States remains a pioneer in nurse doctoral training (Rice, 2016). In 2018, 136 doctoral schools in the US (Trautman et al., 2018). The ND represents 2% of the 4 million of nurses (American Association of Colleges of Nursing, [n.d.](#)). In France, although nurses are undertaking doctorates in other disciplines, no university courses exist for their training.

Although France has fallen behind the ‘academicization’ of the nursing profession, in recent years, processes have accelerated. Importantly, a range of legislative frameworks and hospital policies are in place to encourage more nurses to undertake research (Circulaire n°DHOS/MOPRC/RH1/2009/299, 2009; Décret n°2002-482, 2002; Décret n°2019-1107, 2019; Ministère de la Santé, 2016). Different decrees and reports have provided a valuable rethink of nurse training by integrating university methods for several teaching units (Décret n°2002-482, 2002). This approach has formalized the teaching of introductory research courses as part of initial training and continued research training for specialties and health managers. One key element of the legislative framework is the establishment of research programs, starting with Nursing in 2010 and 2011 (Circulaire n°DHOS/MOPRC/RH1/2009/299, 2009). These programs financed research projects for nurses or non-medical caregivers. In 2019, the

creation of a university nursing department was mooted in the legislative framework (Décret n°2019-1107, 2019). For the first time, it permitted the appointment of nursing science teachers in France. However, no nursing departments exist at any universities. Study courses (bachelor’s, master’s and doctorate) are not organized due to a lack of teachers and structuring. Since 2009, initial nursing training was validated by a State diploma (authorized by the French State) and a Bachelor’s degree (authorized by medical faculties) (Table 1). University recognition encourages more nurses to pursue academic training up to doctorate stages. Thus, in the absence of a university nursing curriculum, French nurses enrol in other scientific disciplines (Policard, 2020) to explore research themes linked to clinical and/or educational activities.

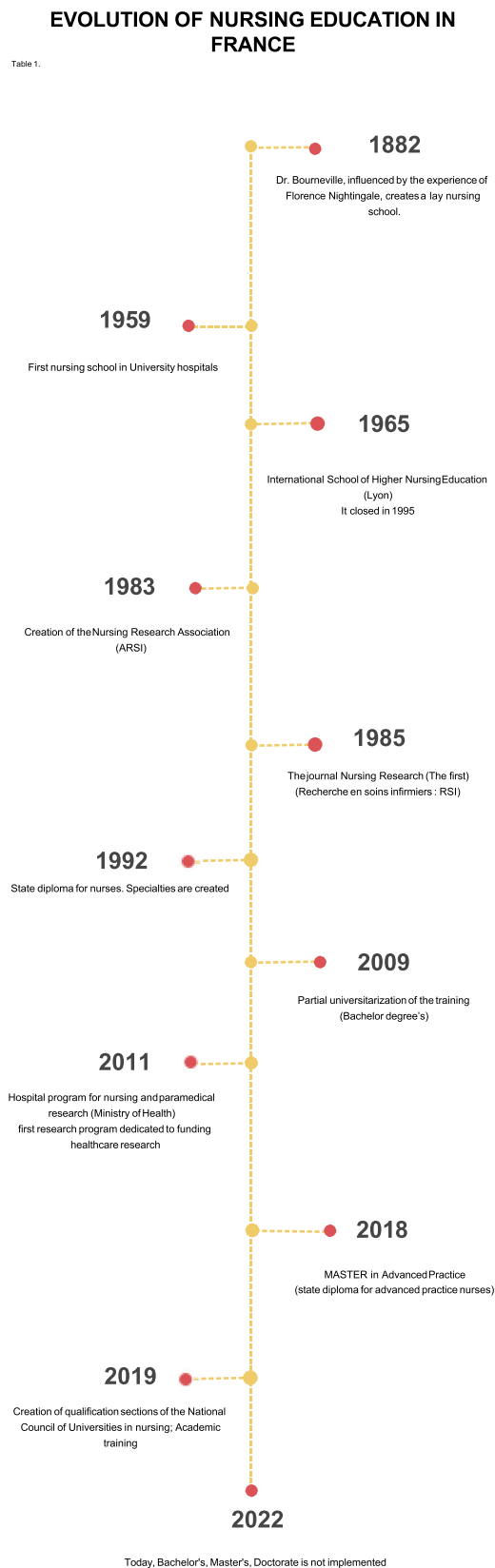
In the absence of dedicated funding, nurses must maintain professional activities in parallel with their studies, unlike other doctoral students who are generally younger and are 100% involved in their thesis work. In the past 10 years, several French studies addressed the development of nursing research (Debout et al., 2010; Lecordier et al., 2016), but these publications failed to promote the integration of nurse researchers and doctoral education for nurses. Associations and professional chairs are now calling for the formalization of nursing doctoral programs.

2 | BACKGROUND

This work was realized in an inductive approach. Our data encouraged us to use the following two concepts:

The concept of activity is from managerial theories (Allen, 2014), as well as what is sometimes understood as nursing work, that is, the tasks that comprise nursing care from a curative, preventive, educational and scientific perspective. The notion of research activity was not just for ND/NDS, but for all nurses holistically following the various works of Allen (2014) and Michel et al. (2017).

The research activity was also part of a broader view of the notion of nursing work. This echoed the work organizations and integration of this activity but also recognized the different relational dynamics that defined this work (Met & Waelli, 2020).

TABLE 1 Evolution of nursing education in France

These managerial elements impacted the definition of nursing activity and its involvement in research.

The second concept is a 'learning' organization as described by Amy Edmondson (Edmondson, 2012). She identifies a supportive managerial environment with a management system, fostering research activity and supporting ND/NDS careers.

The author describes four actions that characterize 'learning' organizations:

- Action 1 'Frame the situation for learning'
- Action 2 'Make it psychologically safe to team'
- Action 3 'Learn to learn from failure'
- Action 4 'Span occupational and cultural boundaries'

From the context, we asked ourselves the following questions: What are the working relationships nurses have with collaborating colleagues, physicians and supervisors? And also, what is their position, and what help do they get in health organizations?

The main objective of this research was to understand the place and experience of ND/NDS in healthcare organizations.

Specific objectives:

- To understand, through biographical journeys, the elements that trigger doctoral processes at the work organization level.
- To identify organizational resources for NDS to allow them conduct their research and integrate with their other activities.
- To characterize the working relationships ND/NDS have with peers, colleagues and management.

3 | METHODOLOGY

The study was based on a two-stage mixed methodology and was conducted between November 2018 and December 2020.

3.1 | Population

We focused on ND and NDS working in France. There is no doctoral school of nursing in France. ND/NDS students enrol in different academic disciplines (education, sociology, psychology, public health and management). This population is fragmented between different academic disciplines, and similarly, there is no register of registered nurses (RNs) holding doctorates in France. Two previous studies reported a growing number of nurses undertaking doctoral studies in France; 26 doctoral students and 28 doctors were identified in 2009 (Jovic & Isambart, 2010) and 131 NDs since 1976 (Policard, 2020). We identified current ND/NDS through professional contacts of the principal investigator (PI) (NM) and RésiDoc listings (a ND/NDS association). Then, a snowball effect (Vincent & Thompson, 2022) helped us identify others, and we mapped these French ND/NDS by looking beyond contacts and listed ND/NDS. Additionally, we explored

TABLE 2 Correlation matrix for past/present perspectives

	1.	2.	3.	4.	5.	6.
1. My colleagues in the department where I work or worked encouraged me to do a PhD.	—					
2. Professors or doctors in the health care unit where I work or worked encouraged me to do a PhD.	0.07	—				
3. My line manager where I work or worked encouraged me to do a PhD.	0.28*	0.02	—			
4. Have my colleagues been a resource for me during my PhD (from the beginning of the project until now)?	0.66***	0.32*	0.57***	—		
5. Has my line manager been a resource for me during my PhD (from the beginning of the project until now)?	0.34**	0.23	0.67***	0.61***	—	
6. Has my line manager (N + 2) been a resource for me during my PhD (from the beginning of the project until now)?	0.16	0.01	0.23	0.11	0.17	—
7. Has the care manager (hospital or nursing school) been a resource for me during my PhD (from the beginning of the project until now)?	0.05	−0.16	0.15	−0.06	0.19	0.66***
8. Has my head of department been a resource during my PhD (from the beginning of the project until now)?	0.31*	0.80***	0.36*	0.63***	0.30	0.17
9. Have doctors been a resource for me during my PhD (from the beginning of the project until now)?	0.18	0.45***	0.14	0.34*	0.25	−0.10
10. Have friends and family been a resource for me during my PhD (from the beginning of the project until now)?	0.10	−0.13	−0.16	0.03	−0.07	0.36**
11. Did my colleagues have any reaction when I announced my intention to do a PhD?	0.10	0.19	0.06	0.25	0.23	0.11
12. Did my line manager have any reaction when I announced my intention to do a PhD?	0.30*	0.04	0.54***	0.32*	0.38**	0.11
Mean ± Standard deviation	2.49 ± 1.50	2.43 ± 1.63	2.55 ± 1.73	2.39 ± 1.52	1.88 ± 1.40	1.89 ± 1.41

Note: Average age = 47.82 years (48 years); 77% female; 33% male; standard deviation = 9.75; variance = 93.65; 4.6 years of professional experience.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

TABLE 2 (Continued)

	7.	8.	9.	10.	11.	12
1. My colleagues in the department where I work or worked encouraged me to do a PhD.						
2. Professors or doctors in the health care unit where I work or worked encouraged me to do a PhD.						
3. My line manager where I work or worked encouraged me to do a PhD.						
4. Have my colleagues been a resource for me during my PhD (from the beginning of the project until now)?						
5. Has my line manager been a resource for me during my PhD (from the beginning of the project until now)?						
6. Has my line manager (N + 2) been a resource for me during my PhD (from the beginning of the project until now)?						
7. Has the care manager (hospital or nursing school) been a resource for me during my PhD (from the beginning of the project until now)?	—					
8. Has my head of department been a resource during my PhD (from the beginning of the project until now)?	−0.07	—				
9. Have doctors been a resource for me during my PhD (from the beginning of the project until now)?	−0.08	0.69***	—			
10. Have friends and family been a resource for me during my PhD (from the beginning of the project until now)?	0.08	0.05	−0.08	—		
11. Did my colleagues have any reaction when I announced my intention to do a PhD?	−0.05	0.31	0.27	0.20	—	
12. Did my line manager have any reaction when I announced my intention to do a PhD?	0.07	0.37*	0.10	−0.12	0.27*	—
Mean ± Standard deviation	1.82 ± 1.25	1.86 ± 1.49	2.56 ± 1.71	3.81 ± 1.39	2.87 ± 1.37	2.83 ± 1.56

Note: Average age = 47.82 years (48 years), 77% female; 33% male; standard deviation = 9.75; variance = 93.65; 4.6 years of professional experience.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

TABLE 3 Correlation matrix for future perspectives

	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. The PhD will or does help me develop my professional practice.	—								
2. The PhD will or does help me develop the team practice.	0.31**	—							
3. The PhD will or does help me improve my social status.	0.37**	0.36**	—						
4. The PhD will or does provide me with financial recognition.	0.36**	0.41***	0.60***	—					
5. The PhD will or does serve to enhance the value of nursing.	0.27*	0.40***	0.35**	0.19	—				
6. In the future, armed with my PhD, I would like to find employment as a research coordinator.	−0.27*	0.01	−0.02	−0.13	−0.08	—			
7. In the future, armed with my PhD, I would like to work in a dual position (University/Hospital).	0.02	0.24*	0.11	0.05	0.17	0.23	—		
8. In the future, armed with my PhD, I would like to take up a teaching-research position.	0.19	0.03	0.12	0.13	0.18	0.03	0.03	—	
9. Armed with my PhD, I wish to return or have returned to my original post.	−0.12	0.13	−0.11	−0.04	−0.03	0.10	−0.16	−0.29*	—
Mean ± Standard deviation	3.83 ± 1.38	3.44 ± 1.38	2.72 ± 1.39	2.08 ± 1.50	3.64 ± 1.42	2.10 ± 1.45	3.49 ± 1.45	3.38 ± 1.54	3.10 ± 1.64

* $p < .05$.** $p < .01$.*** $p < .001$.

LinkedIn® pages and scoured nursing research seminar and congress programs to locate unidentified ND/NDS. In France in 2020, we identified 201 ND/NDS (65 PhDs; 136 PhDs) out of 722,572 nurses (Insee, 2021). In the United States, nurse PhDs represent (Trautman et al., 2018) nearly 2% of 4 million nurses (American Association of Colleges of Nursing, n.d.).

3.2 | Data collection

The study was based on the results of a questionnaire sent to the selected population. Then, to clarify issues from questionnaire data, we analysed data from semi-structured interviews.

3.2.1 | Stage 1: Questionnaire

The questionnaire was sent to 165 ND/NDS who were pre-identified by mapping. Nurses could respond anonymously via the Framafom® platform.

Questions were designed to meet our secondary objectives.

The questionnaire grid collected the following elements:

- Academic background
- Professional experience
- Motivation to do a doctorate
- Work relations (collaborator and management)
- Job openings in the future

3.2.2 | Stage 2: Qualitative study

Semi-structured interviews and observations from paramedical research coordinators were conducted in different regions of France at teaching hospitals and a private establishment. Interviews were conducted until the data were saturated.

Participant recruitment was performed via direct contact and PI networks. Then, via the snowball effect (Vincent & Thompson, 2022), other ND/NDS were identified and asked to participate in interviews. Interviews with health officials and chief nurses were also conducted. These job profiles were selected due to their important roles as resources in ND/NDS activities.

The interview grid consisted of 42 questions (Tables 2 and 3).

Interviews were complemented by 27 h of shadowing (McDonald, 2005) paramedical research coordinators. Most were nurses who promoted and supported research projects by non-medical staff in hospitals. Importantly, some interviewees were neither studying for, nor held a PhD. We selected structures which promoted paramedical research—including one institution that had specific budgets for paramedical research. The observations of the research coordinators allowed us to observe the integration of research activity with nurses. The role of the coordinators is to

accompany the paramedical teams in carrying out research projects. Research coordinator profiles were very interesting because hospitals primarily recruited nurses with doctorates for these positions; their role was to integrate research into health organizations. Structured note-taking was conducted during observations (Dacos & Mounier, 2010) to preserve key moments during shadowing (McDonald, 2005) and interviews. Notes helped the researcher retrace stories and cross-check information at analysis.

3.3 | Data analysis

Empirical investigations were punctuated by iterative reference to the literature which allowed us identify themes for analysis and were based on the Howard Becker inductive approach (Becker, 2002).

3.3.1 | Stage 1

Because questionnaires were mainly exploratory and provided leads for further exploration in the qualitative section of the study, analyses mainly consisted of descriptive statistics (numbers and proportions related to categorical responses and means and standard deviations of responses expressed on a Likert scale). Correlations (and *p* values) were calculated between different items to estimate relationships between reported phenomena and participant expectations. Analyses were conducted in R software.

3.3.2 | Stage 2

Interviews were recorded and transcribed, and thematic analyses from interviews and observations were conducted. We applied interpretive coding based on issues highlighted by Step 1, for example, motivational aspects, professional experience and work relationship dynamics. Different data triangulation (interviews with nurses, managers and other professionals) was performed to highlight variations in perspective.

3.4 | Ethical issues

As this study relates to professional practices and not patients, it did not require ethics committee approval in France (as in many countries) (Loi Jarde n°2012-300, 2012). However, the project was validated for methodological and ethical vigour by colleagues in the School of Advanced Studies in Public Health. They checked that the usual ethical rules, such as informing participants and anonymizing interviews, were respected. No personal data were collected. Additionally, we voluntarily requested a review of the research protocol by the ethics committee of the hospital where the first author worked. This committee approved our research.

However, such studies may require administrative authorization from some establishments, which we obtained. All institutions and

study participants were informed of the research, and permission and consent (oral or written) were attained. We were committed to protecting the confidentiality and anonymity of respondents and services.

4 | RESULTS

4.1 | Non-homogeneous profiles

Seventy-nine individuals completed questionnaires, and 45 interviews of 88 min average duration were conducted. Questionnaire analyses identify a typology of French ND/NDS, which was a significant minority of the total nurse population in France. The average age of respondents was 48 years (Table 2) when compared with 45 years at the national level (Direction de la Recherche, des Etudes, de l'Evaluation et des Statistiques [DREES], 2022). Thirty-three percent (Table 2) of the ND/NDS population were men, but they represented only 13.4% (DREES, 2022) of RNs in France. This was similar to other professions and reflected men's elevation in the nursing hierarchy. It also suggested it was easier for men to access a doctorate. In comparison, male nurse anaesthetists represented 31% (Circulaire DHOS/SDO n°2003-413, 2003) of the total population. These figures did not allow us to hypothesize clear assumptions on PhD accessibility for men. This observation agreed with Williams (1992) who demonstrated the advantages men experienced in advancing in predominantly female professions.

On average, our ND/NDS cohort had on average 4.6 years professional experience (Table 2), ranging from 1 year for one ND/NDS to 32 years for four participants but who were retired and remained active in research and teaching. However, nurse researcher age indicated a younger enrolment status at the PhD level in recent years.

Mapping (Figure 1) made it possible to identify different practices. Mapping showed that ND/NDS worked mostly in large teaching hospitals, including 31 ND/NDS at the Assistance Publique des Hôpitaux

de Paris (APHP). In addition to health care, the APHP focused on research and innovation and had its own research foundation.

ND/NDs were based in several scientific disciplines, but our results identified two main disciplinary trends. One trend showed a doctoral orientation group from the applied sciences; the vast majority of which were in the education sciences (30%). Indeed, 'universitization' (entry of nursing education into the university, now partial) has created this need for doctoral education among this category of nurses. The other group was mainly composed of young ND/NDS (average age 25) with little experience (1 to 5 years of experience). This group of young nurse researchers were enrolled primarily in public health doctoral schools.

4.2 | Care units for learning: The doctor as a motivational lever

Some organizations are favourable to research activity. We have seen that the proximity of the medical professions correlates with the organization of work on certain care units, which are levers for ND/NDS. 'Spending 12 hours (of work) with the doctor brings it closer' (A., ND/NDS).

First, intensive care units (ICUs) contained the highest number of ND/NDS who either worked or were working (29%) there. Like psychiatric departments (25%) and oncology departments (19%), ICUs organized care work to reinforce proximity between doctors and nurses.

With a monitoring we see the patient all the time. And we can go to training. Some nurses even came in on their day off to attend this training, because it interested them. Either training courses or knowledge updates. Given by a doctor, head of department, manager or one of the nurses who had read something or

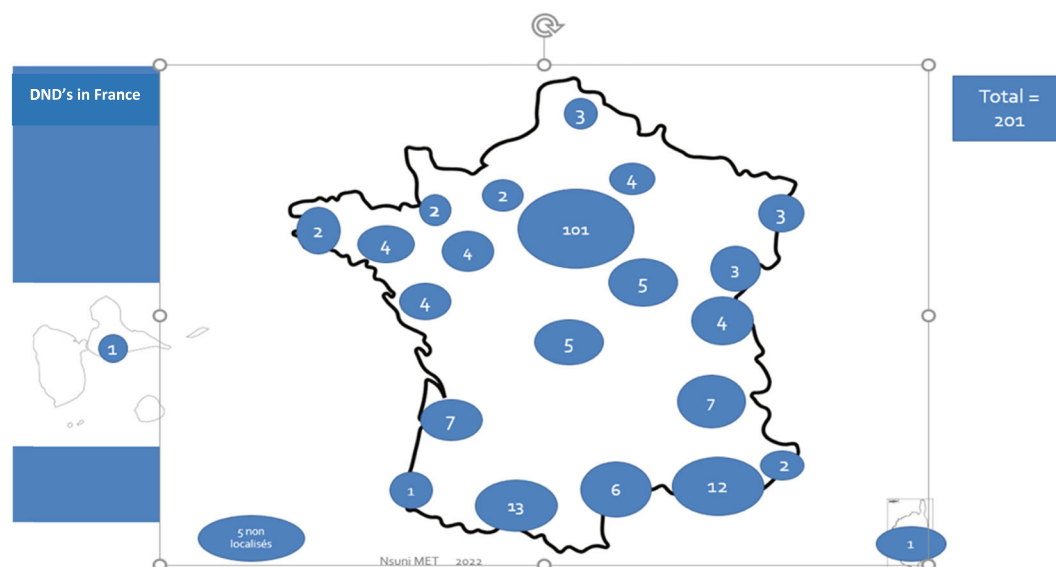


FIGURE 1 Cartography DNDs in France

wanted to share and discuss it with everyone. A bit of a practice exchange. And everyone, or almost everyone, came out happy. (F., ND/NDS)

These care units have many converging points, notably care organization. Monitoring patients by remote cardiac rhythm monitoring via remote screens allowed teams to attend courses and clinical meetings organized by doctors. These institutionalized medical classes were open to nurses. Mortality/morbidity reviews and feedback committees were integrated into units' organizations. These spaces, which allowed for practice and learning exchange, benefited care teams. This professional (ND/NDS) sharing created a sense of collaboration and identification with the medical profession. According to ND/NDS statements, these departments promoted considerable medical research. Doctors encouraged ND/NDS to participate in research and co-present at conferences. During interviews, ND/NDS described doctors as resources for PhD projects and how they made available financial and scientific support. By training and accompanying ND/NDS to conferences, doctors were often the first to identify the potential and/or desire to conduct research in ND/NDS.

Clearly, had I not come across Professor R, I wouldn't have gone into research and probably wouldn't have done a PhD afterwards. The fact that he involved me in his research and asked me to present at conferences made me want to do it. (D., ND/NDS)

These care units integrated research projects into their care organization.

There is one unit that has created a research group dedicated to paramedics, with the support of the head of the department. A research group dedicated to paramedics. [...] There were nursing assistants and nurses integrated into this group. It was not strictly closed, only for nurses. The paramedical team, orderlies, nurses were invited to the research project that concerned our patients. (G., ND/NDS)

It appeared that ND/NDS recognized assistance from the medical profession—medical support for ND/NDS was real lever; however, ND/NDS sought the same power as doctors. In terms of expectations (Table 2), some ND/NDS believed that a PhD could provide a new status ($M = 3.44^1$), whereas for others, it was about developing nursing through research activities ($M = 3.49$). The majority of ND/NDS (62%) had research experience before their nurse training; 18/49 participants were enrolled in medical school for 1 or 2 years before nurse training. This result corroborated the discourse of the ND/NDS on the influence of the medical profession on entry to the doctorate.

So, I did a year of medicine. No, two! And ... Nursing was Plan B.

We hypothesized that medical training prior to nursing training encouraged ND/NDS to model and idealize the medical profession. This modelling will be reflected in research themes.

4.3 | Integration into professional groups: Making room for research activity

The decision to do a PhD was part of a personal trajectory. Unlike students with traditional academic backgrounds, ND/NDS did not always get funding, with 68% holding down jobs during their thesis.

Some ND/NDS felt isolated during their endeavours and were out of step with their colleagues. The vast majority (Table 2) did not feel encouraged ($M = 2.87$) by their peers during their PhD studies.

I do not think they understand what I do, or they do not care at all. They're not interested, to them it's a nerd thing. (F., ND/NDS)

Like physicians, supervisors were identified by most ND/NDS as supportive, whereas managers were not supportive ($M = 1.82$). These results highlighted solitary ND/NDS patterns.

Although not directly involved in patient care, ND/NDS felt that a PhD could help them develop their professional practice and that of their colleagues ($M = 3.83$).

ND/NDS hoped to have the same status as physicians; they sought both research and teaching activity in the university and hospital.

Currently, lecturer positions require ND/NDS to leave the nursing profession and integrate into new posts, far removed from patient care. For ND/NDS, becoming a researcher meant mourning the nursing profession.

At the same time, I was leaving caregiving completely. Even though I still liked it. And at the same time, there were other things I wanted. (J., ND/NDS)

Several ND/NDS indicated that their new roles as researchers no longer allowed them to wear the gown, to have offices in the care units (they are located in the administrative parts of the establishments), to no longer discuss care with colleagues and, above all, to no longer treat patients. To maintain ties with the nursing profession, they adopted several strategies; they were more likely to be involved in projects strongly rooted in clinical care, participate in advanced practice nursing education and/or become activists for the nursing discipline.

4.4 | The development of new scientific skills

ND/NDS considered their new scientific skills as evolutionary steps in professional nursing practice ($M = 3.83$). Paradoxically, they had little or no ambition to increase their salary ($M = 2.08$) or status ($M = 2.72$)

after obtaining a PhD. Their ambition was to pursue hospital-based activities within the nursing profession, while also retaining university ties. This dual status ($M = 3.49$) reflected the medical model and was considered by ND/NDS to be the best configuration. Two career options were available to ND/NDS: One was to work in the hospital as a 'coordinator' in paramedical research. The other was to pursue an academic career as a 'teacher-researcher' ($M = 3.38$). Nursing is not yet established at the university level in France; academic positions are few and far between, and career development in hospitals is easier.

So far, they have not offered me a post. Because my post is being replaced. And the person has been hired on a permanent basis. So I cannot go back to my previous post. I do not know how it's going to go when I'm done. (F., ND/NDS)

F. is a third year PhD student. Although funded by her employer, she has no prospect of integration, with only a few months before the end of her thesis.

5 | DISCUSSION

We explored ND/NDS experiences in French health care organizations and identified an important gap between the institutional willingness to promote research in nursing and the reality of work organization in a French context. These results build on our previous research and highlight the difficult working relationships of ND/NDS (Met & Waelli, 2020). Our previous study showed an ambiguous relationship between ND/NDS and doctors, tensions with managers and difficulties integrating with non-research nurse colleagues.

5.1 | The learning organization: A positive element in ND/NDS pathways

ND/NDS career paths often emerged in ICU, oncology and psychiatry departments, which brought together several four actions that characterized learning organizations (Edmondson, 2012).

Action 1 'Frame the situation for learning': The aforementioned services allowed nurses to attend physician-led courses and multidisciplinary team meetings. This dynamic situation facilitated different knowledge inputs (Edmondson, 2012), as described by the nurses when attending medically organized classes.

Action 2 'Make it psychologically safe to team': The technical demands in these services require a working atmosphere where everyone can express their doubts, questions and wishes (Edmondson, 2012). ND/NDS describe patient monitoring equipment that allows for participation in research activities and promotes a safe working atmosphere. The physician/nurse pairing (which is close in departments such as ICU, ER or OR) allows for more horizontal

communication. Leadership influences the organization of work; research introduces cross-functional approaches to team management practices.

Action 3 'Learn to learn from failure': During interviews, most ND/NDS mentioned the impact of incentives and financial and scientific resources from the medical professions, which could be used to mitigate possible failures in ND/NDS research.

This individualized support and guidance provided ND/NDS with the confidence to implement their own research projects. Both ICU and psychiatric wards regularly conducted mortality/morbidity reviews and professional practice assessments, which gave everyone a voice.

As described by one ND/NDS, care units and equipment are at the service of learning organizations. The tele-transmission of critical patient data in ICU allowed nurses to participate in practice analysis times. In care units, this culture was still in its infancy, but time spent analysing professional practices helped research projects emerge and reflect on the organization of care.

Action 4 'Span occupational and cultural boundaries': As presented in the results, the supportive organization allows each team member to participate in scientific endeavours—whether in courses or research projects—to dynamically unite the teams. The collaborative and interdisciplinary aspects of the knowledge sharing moments encourage multidisciplinary teams to contribute to common projects, such as research projects.

5.2 | Research as a satellite nursing activity

Nursing tasks are diverse, and many are little known or poorly understood. Allen (2014) estimated that 60% of nursing activities were 'invisible' as historically, the nurse's role was exclusively bedside-based. Visible work, which is formal work, is therefore authorized and a documented activity (Hughes, 1996). Nursing work is exemplified by belonging to a group, wearing gowns and preparing care (especially technical), time of transmission of information around the patient. These were elements the ND/NDS no longer shared, or shared too little of. Currently, medical, technological and legal advances are moving nurses away from direct care. These transformations call into question the integration of certain activities into 'nursing mandates'—with research being one. ND/NDS used several strategies to compensate for the remoteness caused by this nursing mandate; they maintained either a care activity or a thesis subject directly related to patient care.

Recent research highlighting 'administrative' work levels in nursing activities has suggested that the nursing mandate is also restructuring health care organizations (Michel et al., 2017) and that the integration of invisible activities is mostly a managerial issue.

For nursing management, the challenge is to use health care management to initiate organizational reflection which draws out and fully acknowledges all nursing role aspects across all care establishments (Michel et al., 2017).

6 | CONCLUSIONS

Currently, France is developing nurse training so as to offer university courses up to doctorate levels. Our study, from a nursing management perspective, identified how important correct ND/NDS integration was to health care organizations. Our results highlighted the positive influence of learning organizations, and we invite health care organizations to implement them. The approach must encompass the nursing mandate so that professional groups integrate all nursing activities, such as research.

We propose the following recommendations to facilitate ND/NDS integration:

From organizational perspectives,

- Organize care to allow nurses participate in research. This is possible with remote monitoring that allows nurses attend training and seminars on care services, in order to facilitate interdisciplinary research projects,
- Legislate for nurse ratios to facilitate nurse availability for cross-sectional activities such as research,
- Integrate research activity into professional nursing practice, education, and management,
- Value work practices through the implementation of care protocols derived from ND/NDS theses, and
- Encourage evidence-based nursing.

7 | IMPLICATION FOR NURSING MANAGEMENT

We investigated all aspects of the nursing profession from teaching, practice, research and organizations. The nursing profession has evolved significantly in recent years.

We are interested in the impact on work organizations following the development of new scientific skills. This work advocates managerial reflections on how care units can act favourably towards nursing careers in research. Our study not only identified the pivotal role of managers in avoiding obstacles and promoting research activity for doctoral nurses but also the nursing profession outside doctoral perspectives.

Improved integration of research activities by the nursing profession requires:

- A collective awareness of the importance of this activity,
- Strengthened research training for managers, particularly in France,
- Incentives for managers to organize their working hours so as to integrate research activities and promote nurse scientific careers.

These elements must be accompanied by the implementation of learning organizations as described in our research.

CONFLICT OF INTEREST

All authors declare no conflict of interest.

ETHICS STATEMENT

In France (as in many countries), this type of study, which relates to professional practice and does not involve patients, does not require the approval of an ethics committee (Loi Jarde n°2012-300 du 5 mars 2012 relative aux recherches impliquant la personne humaine. www.legifrance.gouv.fr). However, the thesis project was first validated by the teachers of the School of Advanced Studies in Public Health (EHESP) for the methodological and ethical aspects. They checked that the usual ethical rules such as informing participants and anonymizing interviews were respected. No personal data was collected. In addition, we requested, on a voluntary basis, the review of the research protocol by the ethics committee of the hospital (where the first author works), which also approved our research.

However, such studies may require administrative authorization from the establishments concerned, which we have obtained. All institutions and study participants were informed of the research, and permission and consent (oral or written) were sought. We are committed to protecting the confidentiality and anonymity of respondents and services.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

ENDNOTE

¹ Average (M) was calculated from a Likert scale, scoring 1–5.

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