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RESEARCH ARTICLE

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Implementing advanced practice nursing in France: A country-wide survey 2 years after its introduction

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Abstract

Objectives: To examine the characteristics of the first Advanced Practice Nurses in France and to compare the French model to international standards.

Background: Common barriers and facilitators to their integration in healthcare provision have been identified internationally. In France, the legislative framework was introduced in 2016, and the first graduates entered the workforce in 2019.

Methods: The French model was examined in comparison with Hamric's conceptual framework and to the International Council of Nurses' guidelines and definitions. A cross-sectional survey was also conducted, using three self-administered online questionnaires. Two were distributed to 2019 and 2020 graduates and a third to the accredited programme directors. The characteristics of advanced practice nursing graduates were described and compared based on employment status and field of practice (primary vs secondary/tertiary care).

Results: Although the French model of advanced practice nursing meets Hamric's primary criteria and core competencies, it does not differentiate between Nurse Practitioner and Clinical Nurse Specialist roles. Of the 320 students enrolled in one of the 11 accredited training programmes 165 participated in the survey. Mean age was 40, and mean prior nursing experience was 15 years. By February 2021, 30% of respondents were still employed as Registered Nurses. Barriers to practice included insufficient income generation (primary care), the lack of position creation (secondary/tertiary care), the physician-dependent patient referral process and delays in prescription credentials approval.

Conclusions: The implementation of advanced practice nursing in France faces several barriers. Legislative adjustments and greater financial incentives to practice seem warranted. *Relevance to clinical practice*: as in other countries, France introduced advanced practice nursing to respond to the Public Health challenge of improving access to quality health care in the context of increasing chronic disease prevalence and limited resource allocation. Facilitating its integration in the healthcare provision landscape seems paramount.

KEYWORDS
advanced practice nursing, barriers and facilitators, French healthcare system, implementation, primary care

1 | INTRODUCTION

Since the 1960s, in response to the increasing need for greater access to care in the context of diminishing available resources, more than 70 countries have introduced advanced practice nursing or have planned to do so (International Council of Nurses [ICN], n.d). The ICN defines the advanced practice nurse (APN) as having acquired, through a Master's or Doctorate level education, the complex decision-making skills and advanced clinical expertise and competencies to give direct care to patients and their families (ICN, 2020). This definition includes clinical nurse specialists (CNS) and nurse practitioners (NP), whose roles and responsibilities are shaped by the healthcare context into which they are integrated (ICN, 2008). While NPs generally work autonomously, establish diagnoses, prescribe new medications and serve a broad patient population, the CNS scope of practice is more specialized and implies that the initial medical diagnosis had been made; it also involves a greater share of non-clinical responsibilities such as research and education (Schober et al., 2020).

The implementation of advanced practice nursing is complex and requires a systematic approach in defining roles and responsibilities (Andregård & Jangland, 2015). Hamric's conceptual framework of advanced practice nursing, first published in 1996, includes three primary criteria (graduate level education, national certification and patient/family-centred clinical practice), one central competency (direct clinical practice) and six core competencies (consultation, evidence-based practice, leadership, collaboration, ethical decision-making, and guidance and coaching) (Hamric et al., 2013). Hamric also identifies the contextual factors necessary for successful implementation: favourable healthcare policy, the development of a legal framework, adequate financing and compensation, organizational and cultural structure, partnership and communication, and performance evaluation (Hamric et al., 2013).

Experiences throughout the world have brought to light several barriers and facilitators to the integration of advanced practice nursing in healthcare provision, particularly in the primary care sector (Aguilard et al., 2017; Torrens et al., 2020). Facilitators include the involvement of nursing associations (Carter et al., 2010; Zug et al., 2016), governmental support through legislative action and the allocation of earmarked funds (Carter et al., 2010; Contandriopoulos et al., 2015; DiCenso et al., 2010), the education system's ability to train nurses in advanced roles (Kilpatrick et al., 2013; Zug et al., 2016) and a clear definition of APN roles (Lowe et al., 2012; Schober & Stewart, 2019). Conversely, commonly identified barriers include the opposition of physicians' associations (Delamaire & Lafortune, 2010; Zug et al., 2016) and a restricted legislative framework (Xue et al., 2016), particularly for medication prescription (Delamaire & Lafortune, 2010).

What this paper adds

- A first overview of the implementation of advanced nursing practice in France, 2 years after the first graduates entered the workforce.
- Initial analysis of the French model of advanced practice nursing, which does not differentiate between nurse practitioners and clinical nurse specialists.
- Several barriers and facilitators to its implementation were identified: insufficient income generation, physician-dependent patient referral process, lack of positions created and administrative issues.

In France, the legislative framework authorizing the implementation of advanced practice nursing was published in 2016 (Journal Officiel [J.O], 2016), and regulatory measures were introduced in 2018 (J.O, 2018a, 2018b). As in most high-income countries over the past 50 years, the ageing of the population and the increasing prevalence of chronic diseases, along with advances in science and technology, have put pressure on the healthcare system. This demand for- and cost of healthcare services have increased while economic constraints and public policy have reduced resource allocation (Seixas et al., 2021). Additional pressure from the decrease in the number of practicing physicians has led to rising inequality in access to healthcare services, particularly in remote rural areas and high-density low-income urban districts (Anguis et al., 2021).

The French healthcare system is organized around regional public and private hospitals, local clinics and a national network of self-employed healthcare professionals (i.e. physicians, nurses, physiotherapists and pharmacists) who practice on a freelance basis (CLEISS, 2020). Healthcare financing is based on a single-payer system derived from the Bismarck model: medical insurance is mandatory and funded by tax-based revenue (OECD, 2019). Complementary private insurance plans can be purchased on an individual basis to pay for services not included in the basket of goods and services covered by the State, such as those given in private clinics and by certain independent providers in private practices (OECD, 2019). Most chronic diseases, cancers and psychiatric conditions, benefit from 100% state coverage (through direct payment or reimbursement) for consultations, medications, hospitalizations, diagnostic tests and ambulatory care (AMELI, 2021). The increase in the prevalence of chronic illnesses and cancers, along with prolonged life expectancy, has therefore resulted in escalating government spending.

Over the past 10 years, several healthcare reforms bills have attempted to tackle this challenge by focussing on healthcare efficiency, relevance, coordination and distribution. The introduction of advanced practice nursing aimed at improving access while reducing costs, both in primary care by emphasizing prevention, and in the secondary and tertiary sectors by reinforcing coordination between hospitals, outpatient services and freelance community-based professionals (i.e. general practitioners, pharmacists and nurses). Advanced practice nursing also introduces new career and educational options in the nursing field, thus increasing the attractiveness of the profession, which until recently offered few opportunities for professional growth.

The nursing profession is tightly regulated and any modification to the practice framework requires legislative action. Nursing training consists in three years of undergraduate education and confers a professional qualification recognized as a Bachelor's degree (Debout et al., 2012). Nurses could later pursue careers in the management or specialization in surgery, paediatrics or anaesthesia, only the last of which is recognized as postgraduate education. Certificates and short courses in palliative care, pain management and wound care are also available. Experiments in skill transfers, which are mainly implemented at the hospital unit level on an individual basis (*protocoles de cooperation*), allow nurses and allied health professionals to take on medical responsibilities such as treatment monitoring and modification in very specific areas (e.g. diuretic titration in chronic heart failure).

The introduction of advanced practice nursing in the 2016 healthcare reform bill therefore represented a great leap forward. The training and clinical practice requirements of APNs, as well as their roles and responsibilities, were defined and voted into law in July 2018 (J.O, 2018a). In September 2018, eleven French universities were accredited to deliver advanced practice nursing training at the Master's level. As with the Bachelor's degree, the title confers both professional qualification and certification. After a common first year course of study, students specialize in one of three domains, extended to four in 2020: (i) stable chronic diseases, primary care and prevention (eight diseases are listed); (ii) oncology and haematology; (iii) nephrology, dialysis and kidney transplantation; and (iv) psychiatry and mental health. An emergency medicine specialty was introduced in September 2021. Although admission into the training programme is possible immediately after obtaining the nursing degree, an APN must have three years' prior nursing experience in order to practice.

The first graduates of the two-year Master's level programme obtained their diploma in July 2019, from the eleven accredited universities. By March 2021, 323 APNs had graduated and 1,393 students were enrolled, including 729 in first year and 664 in second year (UNIPA, 2021), in 22 accredited training programmes. The government's goal is to train 3,000 new APNs by 2022 and 5,000 by 2024. Introducing an additional 700 new APNs per year into the healthcare system while ensuring a high level of patient care and safety will face challenges, which will require the collaboration of physicians, legislators and administrators. In order to facilitate the process and promote multidisciplinary engagement in the process, not only in France but also in other countries that are considering introducing advanced practice nursing, it seems important to examine the current state of affairs in France and to identify the factors that have contributed to, and hindered, its implementation. Indeed, research conducted in countries that have introduced advanced practice nursing can help others identify the main barriers and facilitators and facilitate the implementation process, in their own healthcare system.

This study therefore aims at exploring the French model of advanced practice nursing and the circumstances in which the first APNs have entered clinical practice. The primary objective is to compare the French model with the international standards defined by the International Council of Nurses. Secondary objectives include (i) describing the characteristics of the first two cohorts of APNs in terms of background and integration into the work force after graduation; (ii) identifying potential factors associated with employment status by comparing those who had found employment as APNs by February 2021 to those who had not and (iii) comparing the characteristics of APNs that practice in primary care and prevention to those of APNs who practice in secondary/tertiary care settings.

2 | METHODS

2.1 | Study design

The comparison of the French model of advanced practice nursing with international standards and guidelines was based on the analysis of the legislative documents that regulate the profession and on a survey of accredited training programmes. Hamric's conceptual framework (Hamric et al., 2013) was used to verify whether the role of the APN in France meets core competencies (direct clinical practice, expert coaching, consultation, research, clinical and professional leadership, collaboration and ethical decision-making). In addition, the French model was examined against the International Council of Nurses' definitions of advanced nursing practice and the description of the roles and responsibilities of nurse practitioners and clinical nurse specialists (Schober et al., 2020).

To describe the first two cohorts of APN students and identify the barriers and facilitators to their integration into the healthcare provision framework, a cross-sectional study was conducted, following STROBE guidelines (von Elm et al., 2008). APN characteristics were described and compared by sector (primary versus secondary/tertiary care) and by employment status after graduation.

2.2 | Data collection

A questionnaire was distributed in June 2019 to the programme directors of the eleven universities delivering accredited Master's level APN training programmes (University questionnaire) in order to gain an initial overview of the number of students enrolled, and

candidate selection criteria, curriculum design and delivery, and tuition and funding. Two reminders were sent in July and August 2019. The questionnaire included 30 closed questions took about 15 minutes to complete. The universities were also asked to send their first and second year students the link to an online questionnaire (APN student questionnaire), which explored their educational and professional background. The questionnaire was distributed between June and August 2019. In addition to information on the sociodemographic characteristics and prior professional experience and education of APN students, the APN student questionnaire also addressed their motivations for enrolling and their professional prospects after graduation. It included 30 closed questions and took approximately 15 min to respond to. The last question asked whether they would agree to be contacted again to respond to a follow-up APN questionnaire 18 month later.

Another online questionnaire (follow-up APN questionnaire) was distributed by email in 6 February 2021 to 18 months after graduation, to those who had participated in the initial 'Student questionnaire' and agreed to be contacted again for follow-up. Two reminders were sent in March and April 2021. It took about 10 min to fill and aimed to collect data on employment status and work conditions. It included five generic questions on overall characteristics and 10 specific questions based on employment status, that is practicing in an APN position or not. For those that were employed, the questionnaire explored status recognition and satisfaction about their working conditions and practice environment. For those that were not employed, it explored the barriers to entry into the profession. Inclusion criteria for the follow-up APN questionnaire included having participated in the APN student questionnaire distributed in June 2019 and graduating in 2019 or 2020. Exclusion criteria included not obtaining the diploma and having participated in the study's design and/or data analysis (two of the authors belong to the cohort of APN students that graduated in 2019).

All questionnaires were designed by the authors for the purposes of this study. They were piloted with two groups of five nurses to test for validity and reliability (Dillman et al., 2014). The wording of the questions and answer options was adjusted based on the feedback from the first group of five nurses, and the final version was tested again with a new sample of five nurses, who had no further suggestions. Any personal information allowing the reader to identify individual respondents was removed prior to data analysis. Information about the study's goals was given in the email that was sent and in an introductory section of the online questionnaires.

2.3 | Research Ethics Committee approval and informed consent

Participants were free to opt-out of the study at any time and were assured their data would not be used if they chose so. Consent was obtained in the 'APN student' questionnaire, which included a specific question asking respondents to agree to be contacted for follow-up after graduation and to give their personal email address if they agreed to do so. Following French regulations given that this study did not involve any patients or interventions and that participants were informed of the study's goals prior to filling the questionnaires, and could not be identified after the removal of personal information, research ethics committee approval from an institutional review board was not required.

2.4 | Data analysis

The comparison of the French APN model to international standards followed Hamric's conceptual framework (Hamric et al., 2013). The APN roles that are described in the legislation regulating the profession were examined against the core competencies outlined by Hamric (direct clinical practice, expert coaching, consultation, research, clinical and professional leadership, collaboration and ethical decision-making). The characteristics of French APN were also compared with the International Council of Nurses' definitions of advanced practice nursing and the 12 characteristics of nurse practitioners and clinical nurse specialists which describe activities, level of autonomy and prescriptive authority (Schober et al., 2020).

All survey data were coded, and identifiers were removed after combination of the two questionnaires responses. Participant characteristics are described as numbers (percentages) for categorical variables and as means (standard deviations) for continuous variables. Two univariate analyses were conducted. The first compared the characteristics of advanced practice nurses working in primary care (as freelance independent providers and/or in a community clinic setting) and those working in secondary/tertiary settings (public and private hospitals, cancer treatment centres, dialysis clinics and long-term care facilities). The second comparison examined graduates that were employed in an APN position in February 2021 and those whose roles and responsibilities did not include their new credentials.

The statistical significance of the differences in characteristics between groups was assessed using Chi-squared tests for binary and categorical variables and Student's *t*-test for continuous variables. A p value $<.05$ was considered to give sufficient statistical evidence to reject the null hypotheses of no difference between groups. No multivariable analyses were conducted due to small sample size. Stata® 13.1 software was used for all analyses.

3 | RESULTS

3.1 | The French model in comparison with international standards

Overall, the French model of advanced practice nursing meets Hamric's primary criteria and core competencies (Hamric et al., 2013). A two-year Master's level education, national professional certification and practice focussed on patient- and family-centred care are

recognized in the legislative framework (J.O, 2018a, 2018b). The training curriculum includes courses on advanced clinical pathophysiology and patient care, ethics, English, research, healthcare evaluation, patient care coordination and nursing science (J.O, 2018a, 2018b), all of which give the theoretical foundation needed for direct clinical practice and the six core competencies. During two clinical rotations of 2 months in first year and 4 months in second year (J.O, 2018a, 2018b), students can acquire more practical skills in multidisciplinary teams in the setting of their choice. A Master's thesis is also required for graduation, thus introducing students to applied research methods and to the principles of evidence-based practice (J.O, 2018a, 2018b).

However, one specificity of the French model is that there is no distinction between the clinical nurse specialist (CNS) and the nurse practitioner (NP). The French APN's roles and responsibilities correspond more closely to the International Council of Nurses' definition of the CNS, which include training, research, leadership and patient care coordination, alongside specialized clinical care (J.O, 2018a, 2018b). The legal framework specifies the diseases and/or patient population that the APN can follow, based on their choice of specialization during the second year of training, thus implying clinical expertise in an identified specialty and for patients with an established diagnosis (J.O, 2018a, 2018b). For the 'stable chronic diseases, prevention and primary care' stream, the law lists only eight conditions: stroke, heart diseases, peripheral artery diseases, types 1 and 2 diabetes, chronic respiratory insufficiency, neuro-cognitive disorders, Parkinson's disease and epilepsy. The 'nephropathy, dialysis and kidney transplantation' pathway is very specific, while the 'oncology and hematology' and 'psychiatry and mental health' specialties remain broad (J.O, 2018a, 2018b). French APNs can only treat the aforementioned conditions, which are listed in the legislative framework and, for these conditions only, can renew or adapt medications but not prescribe new treatments.

Conversely, the autonomy of the NP that is described in the ICN's definition does not fully apply to French APNs. Although they are allowed to renew medication prescriptions, to prescribe and interpret laboratory and imaging diagnostic tests (the list of which is also defined by law), and to refer patients to a specialist, they cannot prescribe new medications or make a medical diagnosis. Patients are addressed to the APN by the physician after a diagnosis has been made. This is not the case for NPs in the ICN's definition, which emphasizes the right to diagnose and initiate treatment (Schober et al., 2020). Furthermore, in France, APNs must practice with a physician with whom they have signed a contract (*protocole d'organization*) specifying the type of patient they can follow, including disease and stability criteria, the clinical signs that warrant a follow-up visit with the physician and the frequency with which they meet with the physician to discuss patient care (J.O, 2018a, 2018b).

Finally, self-employed APNs working in primary care are paid by the social security administration through a mix of capitation and fee for service, the amounts of which are capped and regulated (J.O, 2020). Non-clinical activities, such as care coordination and case management, training or research, do not receive compensation, thus limiting their participation in these fields.

3.2 | Background and characteristics of the first APNs, based on employment status

All of the eleven accredited programme directors responded to the 'university questionnaire'. Three of them offered Master's level education in nursing science prior to 2018, and two allowed direct entry into the second year of the programme in 2018 for students who held a Master's degree in Public Health or Nursing Science. These two universities accounted for 51% of students. The mean number of applications received per university was 75 (min 8, max 250) with a total of 825 candidates in 2018, 38.7% of which were admitted (Table 1). The number of students enrolled in the programmes ranged from five to 97, with a mean of 29. Only five universities offered full-time training, three offered part-time in-person study combined with distance learning, and another three held courses 2 weeks per month in order to allow students to continue working. Tuition rates varied based on whether the student was self-funded (27% of respondents) or received funding through their employer or a government grant (73%), but were less than 8,000 euros per year (Table 1). During the 2018/2019 academic year, 260 students were enrolled in first year and 63, who held a previous Master's degree in Public Health or Nursing Science, were admitted directly into second year.

Of the 320 students enrolled in 2018, 233 (73%) responded to the 'student questionnaire'. Ten of them did not obtain their diploma, and another five did not give an email address for follow-up. Of the 215 who were sent the 'graduate questionnaire', 165 responses were received, yielding an overall response rate of 51% and a secondary response rate of 77% (Figure 1). The mean response rate per university was 47% and ranged from 15% to 82%.

The majority of respondents were enrolled in the 'stable chronic diseases' specialty in second year (60%), 23% chose oncology, 13% nephrology and 6% mental health. The mean age was 40, and they had 15 years of prior nursing experience on average (Table 2). More than half had obtained a professional certificate in wound care, palliative care, pain management or patient education, and 22% held a Master's degree in Nursing Science or Public Health (Table 2). Three students had less than three years' experience prior to enrolment and were therefore required to work in nursing positions after the diploma.

In 2021, 116 of 165 respondents (70%) were employed as APNs; 22% had been self-employed and working freelance as home care nurses and 78% had held salaried positions in healthcare settings such as public and private hospitals, long-term care facilities, cancer treatment centres and dialysis clinics (Table 2). Among the 116 practicing APNs in 2021, 25 (22%) had APN roles and responsibilities without having obtained status recognition, that is their job titles and salaries were the same as prior to enrolment in the training programme. Ninety-five (82%) worked exclusively in APN positions, suggesting close to a fifth (18%) still worked in their previous roles concurrently (Table 2).

TABLE 1 Characteristics of the accredited university training programmes in 2018/2019 ($n = 11$)

Course of study (n)	
Full time	5
Two weeks per month	3
Part time (<2 weeks per month)	3
Tuition (euros)	
Self-funded, mean (min-max)	3,535 (1,200-5,180)
Employer or government funded, mean (min-max)	5,225 (4,200-8,000)
Candidates, mean (min-max)	75 (8–250)
Students enrolled per university, n (%)	
Aix-Marseille[b]	68 (21)
Besançon[a]	12 (4)
Brest[a]	15 (5)
Lorraine[a]	30 (9)
Nantes[a]	26 (8)
Nîmes-Montpellier[a]	15 (5)
Normandie[a]	18 (6)
Paris (Descartes, Diderot, Sorbonne, Créteil)[b]	97 (30)
Rennes[a]	18 (6)
Toulouse[a]	16 (5)
Versailles-Saint Quentin en Yvelines, Paris Sud[a]	5 (2)

[a]University that provided the first year of training.
[b]University that provided the first and second year of training.

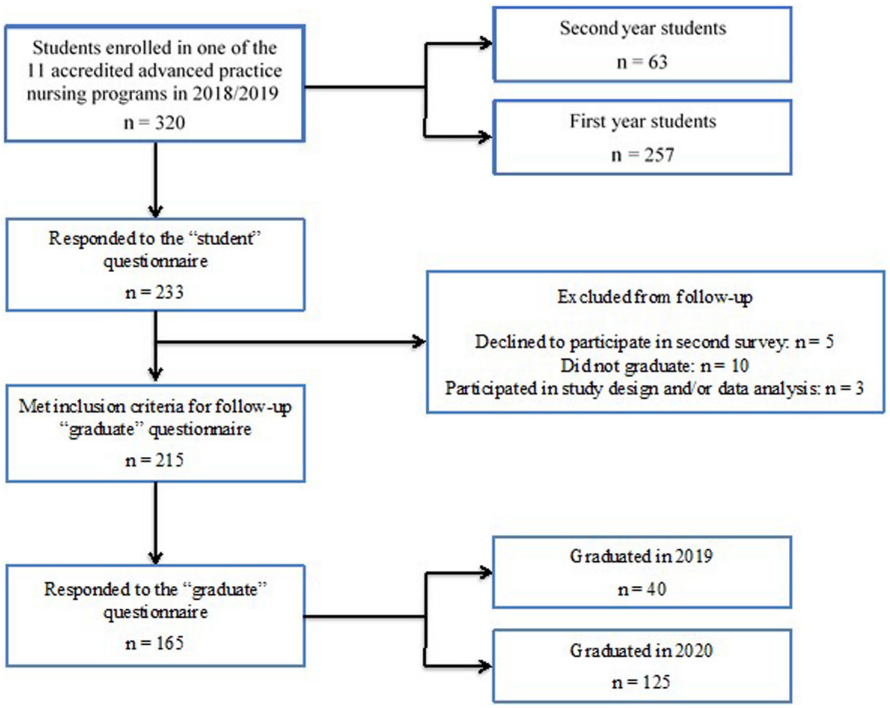

FIGURE 1 Participant inclusion flow chart

3.3 | Potential factors associated with employment status

Those that had been working in a position that involved care coordination or case management ($n = 60$, 34%), and/or who secured postgraduation employment prior to enrolling ($n = 86$, 69%), were more likely to practice as APNs ($p = .039$ and $p = .042$ respectively). Nevertheless, 20 respondents who had secured an APN position with their employer before enrolling in the programme were not practicing as such in March 2021 (Table 2). Among the

TABLE 2 Characteristics of APNs enrolled in one of the 11 accredited training programmes in France ($n = 165$)

	Total ($n = 165$)	Not working in an APN position ($n = 49$)	Employed as an APN ($n = 116$)	p-value[a]
Women, *n* (%)	132 (80)	40 (81.6)	92 (79.3)	.773
Age in 2021, years, mean (±SD)	40 (7.8)	40 (8.6)	41 (7.4)	.664
Prior nursing experience, years, mean (±SD)	15 (7.5)	14 (7.9)	16 (7.3)	.197
Graduation year, *n* (%)				
2019	40 (24.2)	14 (28.6)	26 (22.4)	.399
2020	125 (75.8)	35 (71.4)	90 (77.6)	
Specialty, *n* (%)				
Stable chronic diseases	97 (58.8)	35 (71.4)	62 (53.5)	**.032**
Oncology	38 (23.0)	11 (22.5)	27 (23.3)	.908
Nephrology	21 (12.7)	3 (6.1)	18 (15.5)	.098
Mental Health	9 (5.5)	0 (0)	9 (9.8)	**.045**
Type of employment prior to enrolment, *n* (%)				
Salaried position	127 (77.9)	36 (73.5)	91 (78.5)	.435
Freelance	36 (22.1)	13 (26.5)	23 (19.8)	
None	2 (1.2)	0 (0)	2 (1.7)	
Prior Master's degree, *n* (%)	36 (21.8)	14 (28.6)	22 (19.0)	.172
Prior professional certificate, *n* (%)	86 (52.1)	22 (44.9)	64 (55.2)	.227
Motivations for enrolment, *n* (%)				
Professional growth	89 (53.9)	30 (61.2)	59 (50.9)	.222
In care coordination or case management position	60 (36.4)	12 (24.5)	48 (41.4)	**.039**
Prior Master's degree	27 (16.4)	9 (18.4)	18 (15.5)	.651
Improving healthcare access	8 (4.9)	2 (4.1)	6 (5.17)	.766
Received funding for tuition, *n* (%)	121 (73.3)	34 (69.4)	87 (75.0)	.456
Employer/ management support, *n* (%)	53 (32.1)	13 (26.5)	40 (34.5)	.318
Postgraduation employment secured, *n* (%)	86 (68.8)	20 (55.6)	66 (74.2)	**.042**

[a]Chi-squared test for binary and categorical variables, Student's t-test for continuous variables.

49 (30%) who were not practicing under their new credentials, 14 (29%) had obtained their diploma more than 18 months earlier and close to 70% ($n = 34$) had received funding from their employer for tuition (Table 2). They were also more likely to have chosen the chronic stable diseases specialty ($p = .032$). There was no statistically significant difference in the other specialty fields, apart from psychiatry and mental health (all nine students were employed after graduation), or in terms of age, nursing experience, type of employment prior to enrolment or previous credentials (Table 2).

The main barriers identified by graduates that were not employed in APN roles in 2021 were the fact that no position had been created in their institution (47%), and, for freelance APNs, administrative issues blocking prescription credentials (37%),

insufficient patient referrals from physicians (27%) and insufficient income generation in primary care practice (20%) (Figure 2).

3.4 | Characteristics of APNs working in primary vs. secondary/tertiary care settings

Advanced practice nurses that worked in the primary care sector ($n = 35$), as self-employed practitioners and/or in an outpatient community-based clinic, were more likely to combine APN practice with previous nursing responsibilities ($p = .003$) and to have been self-employed prior to training ($p < .001$) (Table 3). In fact, 63% of freelance APNs practicing in primary care after graduation had been freelance nurses prior to enrolment, while 96% of APNs employed in the secondary/tertiary sectors had been in salaried hospital or clinic positions ($p < .001$). Close to half of secondary/tertiary sector APNs had employer and/or management support for training, compared with only one of 35 of those in primary care ($p < .001$) (Table 3). The secondary/tertiary care settings that were listed by respondents as their place of employment after graduation were mostly the same as those they worked in prior to enrolment.

There were no statistically significant differences between APNs working in primary care and those in secondary/tertiary care in terms of age, background, funding or motivations to enrol in the Master's programme (Table 3). However, APNs in primary care were less likely to be satisfied with their practice conditions ($p = .007$), and 63% identified the patient referral system as an important barrier, compared with 17% in the secondary/tertiary sectors ($p < .001$). Other issues identified by both groups included lack of autonomy, insufficient compensation and the limitations of the contract signed with physicians (Table 3).

4 | DISCUSSION

Although the French model of advanced practice nursing meets Hamric's primary criteria and core competencies, the legal framework does not differentiate between CNS and NP roles and it meets international criteria for CNS practice but only partially for NP practice. By February 2021, 30% of the 165 APN surveyed were still not employed in an APN position. Among those that did not work as APNs, the main identified barriers were the absence of APN positions in their institution and administrative issues, mainly about prescription credentials. The main facilitators were having secured a position prior to training and prior experience in care coordination or case management.

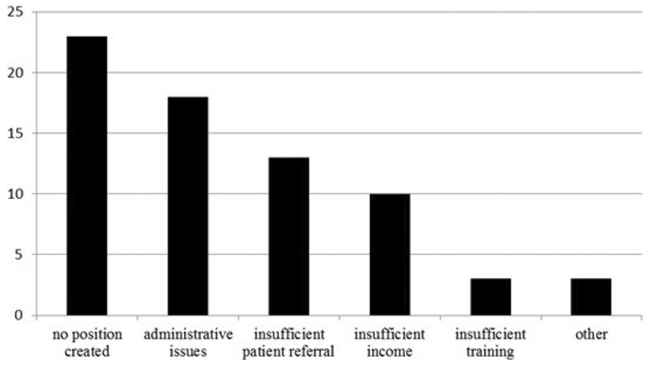

FIGURE 2 Barriers to APN employment identified by those who did not practice as APNs after graduation ($n = 49$)

4.1 | Meeting healthcare needs

As in other countries, the implementation of advanced practice nursing seeks to answer unmet healthcare needs, particularly in primary care, where the shortage of physicians has introduced large disparities in access to care and prevention (French Ministry of Health, 2017). One of the specificities of the French healthcare system is the network of 120,000 self-employed nurses who work at the community level, particularly in medically underserved areas, providing direct home-based care. Their understanding of population needs and available healthcare resources is particularly relevant to the development of advanced practice nursing in primary care. The proportion of freelance nurses in our sample (22%) was comparable with that found in the national nursing census of 2018 (DREES, 2018).

However, our study shows that after graduation, APN role implementation in primary care has been problematic. Most APN students who were freelance nurses continued working during their training and transitioned to working as self-employed APNs, serving the same population, after graduation. They reported that the income generated from their APN practice has been insufficient to sustain a viable business model. The dependence on physicians for patient referrals, limited prescription authority, the inability to establish a diagnosis and the requirement of a contract being signed with several general practitioners were mentioned as barriers to practice. These same factors were also reported as limiting APN role implementation at the community level in other countries (Torrens et al., 2020; Xue et al., 2016). Yet the legal right to diagnose and to prescribe new medications are two of the main features of the nurse practitioner's role (Jakimowicz et al., 2017) and are a necessary requirement for population based, patient-centred care (Unruh et al., 2018). Furthermore, many complex patients have more than one condition and require regular physician intervention because many conditions are not eligible to APN management in France.

Interestingly, the diseases listed in the specialty streams closely match the list of the most costly conditions published in the latest report of the social security agency (CNAM, 2019). This demonstrates that, from a public health policy perspective, the introduction of advanced practice nursing aims at reducing healthcare costs. Indeed, the conditions associated with the greatest share of healthcare spending in 2018 were, in decreasing order: psychiatric diseases (mental health stream); cancer (oncology stream); cardiovascular diseases and neurological disorders (stable chronic diseases stream); chronic kidney failure (nephrology stream) and chronic

TABLE 3 Characteristics of APNs working in primary care settings compared with those in secondary/tertiary settings

Characteristics	Practicing in primary care ($n = 35$)	Practicing in secondary & tertiary care ($n = 81$)	p-value[a]
Women, *n* (%)	28 (80.0)	64 (79.0)	.904
Age in 2021, years, mean (±SD)	42 (8.4)	40 (6.9)	.113
Prior nursing experience, years, mean (±SD)	17 (8.4)	15 (6.7)	.133
Graduation year, *n* (%)			
2019	7 (20.0)	19 (23.5)	.682
2020	28 (80.0)	62 (76.4)	
Specialty, *n* (%)			
Stable chronic diseases	33 (94.3)	29 (35.8)	**<.001**
Oncology	0 (0)	27 (33.3)	**<.001**
Nephrology	2 (5.7)	16 (19.8)	.076
Mental Health	0 (0)	9 (11.0)	**.049**
Type of employment prior to enrolment, *n* (%)			
Salaried position	13 (37.1)	78 (96.3)	**<.001**
Freelance	22 (62.9)	1 (1.2)	
None	0 (0)	2 (2.5)	
Prior Master's degree, *n* (%)	8 (22.9)	14 (17.3)	.482
Prior professional certificate, *n* (%)	23 (65.7)	41 (50.6)	.133
Employer/management support, *n* (%)	1 (2.9)	39 (48.2)	**<.001**
Postgraduation employment secured, *n* (%)	12 (42.9)	54 (88.5)	**<.001**
Motivations for enrolment			
Professional growth	19 (54.3)	40 (49.4)	.628
Already in APN-like position	14 (40.0)	34 (42.0)	.843
Prior Master's degree	6 (17.1)	12 (14.8)	.751
Improving health care access	4 (11.4)	2 (2.5)	.046
Received funding for tuition, *n* (%)	23 (65.7)	64 (79.0)	.129
Exclusive APN roles and responsibilities, *n* (%)	23 (65.7)	72 (88.9)	**.003**
APN status recognition, *n* (%)	30 (85.7)	61 (75.3)	.211
Level of satisfaction about conditions of practice, *n* (%)			
Very satisfied	8 (22.9)	27 (33.3)	**.007**
Mostly	12 (34.3)	43 (53.1)	
Not very	10 (28.6)	8 (9.9)	
Not at all	5 (14.3)	3 (3.7)	
Reasons for dissatisfaction, *n* (%)			
Limited scope of practice	3 (8.6)	14 (17.3)	.223
Lack of autonomy	14 (40.0)	19 (23.5)	.070
Limited skill recognition	8 (22.9)	21 (25.9)	.726
Insufficient compensation	21 (60.0)	44 (54.3)	.572
Patient referral mechanism	22 (62.9)	14 (17.3)	**<.001**
Requirement of a contract with physicians	12 (34.3)	19 (23.5)	.226
Lack of official recognition	3 (8.6)	6 (7.4)	.830

[a]Chi-squared test for binary and categorical variables, Student's t-test for continuous variables.

respiratory diseases (stable chronic diseases stream) (CNAM., 2019; J.O, 2018a, 2018b). Although the specialty streams may be relevant to CNS roles in the secondary/tertiary sectors, which require expertise in a specific clinical domain, they are too circumscribed for primary care practice under the NP role, which emphasizes a population approach and greater autonomy (Schober et al., 2020). The lack of distinction between the two roles therefore represents a major regulatory barrier and shows there is a contradiction between the

narrow definition of the APN's scope of practice and wider health policy goals in France.

Another barrier to APN practice is inadequate compensation. In our study, 60% of APNs working in primary care on a self-employed basis mentioned insufficient income generation to sustain their APN activity. In the secondary/tertiary sector, 54% of respondents considered that their compensation was inadequate. On average, French APNs will see a 10% increase in salary in comparison with their income as nurses (Emploi-Collectivités, 2012). This is considerably lower than the 95% increase seen in Australia (Health Times, 2021) and 49–57% in the USA (Bucceri Androus, 2021). In the public sector, status recognition and salary increases for 2019 and 2020 graduates were expected in December 2021, but the financing of APN positions has been delayed due to resource allocation issues. In addition, staff shortages have limited the opportunity of replacing them in their previous jobs, with many APNs practicing both sets of responsibilities concurrently. Although the COVID-19 pandemic has no doubt played a role in extending the timeline, insufficient compensation and delayed status recognition are likely to have a negative impact on the attractiveness of the profession. Previous international experiences suggest that adequate funding and compensation are important factors for the successful implementation of the advanced role (Torrens et al., 2020).

4.2 | Limitations

Our study has several limitations. First, selection bias is likely given the final response rate of 51%. Our sample may therefore not be representative. There may also have been some degree of responder bias, with those least satisfied with their practice more likely to participate. A second limitation was the use of two questionnaires that were not validated through the peer-reviewed process prior to distribution. It is therefore possible that certain aspects or opinions were not accounted for in the data. The differences observed may have been more (or less) evident had questions and answers been worded differently. In addition, the sample size did not allow multivariable analysis, so potential confounders and effect modifiers were not accounted for. However, the study's primary goal being descriptive, the comparative analyses sought to identify differences between groups rather than to evaluate the degree of association between exploratory variables and outcomes. Finally, the survey was conducted less than 2 years after the graduation of the first cohort of APNs, in the context of a global pandemic that took a toll on the healthcare system, particularly in terms of available resources, which is likely to have impacted the roll out of APN positions and prescription credentials.

4.3 | Perspectives

This paper describes the background and characteristics of the first APNs to enter the profession and integrate healthcare teams. The motivations and resources needed to pioneer a new profession may be very different from those of the following cohorts of students. For example, although the minimum prior nursing experience required to practice in APN roles is 3 years, our respondents had a mean experience of 15 years, and many had additional certificate or graduate level training. The recognition of their nursing expertise seems to have been one of the main motivations for pursuing the APN degree. This trend will likely change in future, as pursuing advanced nursing education opens more opportunities for professional advancement, skill mix and role definitions.

Our data show that the current regulatory and economic framework in France has hindered the full deployment of advanced practice, particularly in primary care, where a loss of income may be observed. In countries that have experienced the integration of the APN profession in the healthcare provision landscape, one of the main facilitators is early anticipation of needs and resource allocation (Contandriopoulos et al., 2015). The participatory, evidence-based, patient-focussed process, for advanced practice nursing (PEPPA) role development, implementation, and evaluation framework, first published by Bryant-Lukosius and colleagues in 2004, describes how to plan for and support the introduction of APN roles and long-term integration (Bryant-Lukosius et al., 2004). This process takes time and requires performance evaluations and clear communication between APNs, administrator(s), Public Health officials and other stakeholders to ensure that the support and resources necessary are identified and given (Bryant-Lukosius et al., 2004). This initial overview of the situation in France 2 years after the first graduates entered the workforce seeks to initiate the process.

The COVID-19 pandemic has shaken the foundations of healthcare systems throughout the world. In France, it has been an opportunity to raise awareness on inequalities in healthcare access and has accelerated a shift in policy priorities. The recognition of the role APNs can play as first-line providers in primary care and prevention has accelerated discussions on increasing their autonomy from physicians, particularly in terms of patient referral, diagnosis and prescription. An Emergency Medicine specialty has been available to second year students since September 2021.Though at the time of publication, the APNs that chose this stream have yet to enter clinical practice, the nature of patient care and management in the Emergency setting will require extending APN diagnosis and prescription rights. This will require legislative changes that should lift many of the barriers observed in our study by aligning the French APN roles and responsibilities on those of the NP. A similar shift was initiated in Quebec in 2007 when first-line NPs were introduced in order to improve healthcare access, although they had to wait 10 years for the legal framework to be amended to the necessary extent (Legisquebec, 2020).

Performance evaluations will be critical to demonstrating the benefits of introducing advanced practice nursing in the healthcare landscape. Rigorous economic analyses evaluating the cost-effectiveness of APN care, using robust patient outcome indicators, will be essential to legitimizing advanced practice nursing in France. Further research should also focus on evaluating physician and population expectations, using qualitative methods to explore

perceptions, in order to better understand potential cultural and institutional barriers.

5 | CONCLUSION

The French advanced practice nursing model has all the internationally recognized characteristics, apart from prescription and diagnosis autonomy and is therefore closer to the CNS model. As a result, the current legislative and regulatory framework do not seem sufficient for the full deployment of APNs in primary care. In addition, physician oversight and inadequate income generation for freelance practitioners are major barriers to the introduction of APNs at the community level, particularly in medically underserved areas. Finally, in secondary/tertiary care settings, which are better adapted to the CNS focus of the French APN model, delays in status recognition, position creation and salary increases have limited their integration into multidisciplinary teams. Further research will be essential in order to demonstrate the cost-effectiveness of integrating APNs in the healthcare landscape, to encourage role recognition, and to further describe the barriers and facilitators to implementation.

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CONFLICT OF INTEREST

The author reports no conflicts of interest for this work.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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