

Advanced Practice Nursing (APN) in the world: a comparative analysis of selected countries

Zaawansowana praktyka pielęgniarska na świecie: analiza porównawcza wybranych krajów

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STRESZCZENIE

ZAAWANSOWANA PRAKTYKA PIELĘGNIARSKA NA ŚWIECIE: ANALIZA PORÓWNAWCZA WYBRANYCH KRAJÓW

Wprowadzenie. Zaawansowana praktyka pielęgniarska (APN) odgrywa kluczową rolę w reagowaniu na globalne wyzwania zdrowotne, takie jak niedobór lekarzy, starzejące się społeczeństwa oraz rosnąca liczba chorób przewlekłych. Pielęgniarki zaawansowanej praktyki, jako wysoko wykwalifikowane specjalistki, zwiększają dostępność i jakość opieki zdrowotnej w różnych środowiskach klinicznych.

Cel pracy. Celem niniejszej pracy jest przedstawienie syntetycznej analizy porównawczej rozwoju i integracji ról pielęgniarstwa zaawansowanej praktyki (APN) w latach 2015–2025 w sześciu krajach: Stanach Zjednoczonych, Australii, Francji, Polsce, Japonii i Indonezji.

Materiał i metody. Badanie miało charakter opisu porównawczego i opierało się na przeglądzie literatury. Dane zostały zebrane z baz PubMed, Scopus i Embase przy użyciu hasła „Advanced Practice Nursing” w połączeniu z nazwami sześciu krajów: Stany Zjednoczone, Australia, Francja, Polska, Japonia i Indonezja. Analizowano publikacje z lat 2015–2025 zgodnie z przyjętymi kryteriami włączenia. Analiza została przeprowadzona w oparciu o cztery główne wymiary: ścieżki edukacyjne, ramy regulacyjno-prawne, zakres praktyki oraz integrację z systemem opieki zdrowotnej.

Wyniki. Kraje takie jak Stany Zjednoczone i Australia dysponują rozwiniętymi modelami APN z pełną autonomią zawodową i jasno określoną ścieżką edukacyjną. Francja, Polska, Japonia i Indonezja znajdują się na różnych etapach wdrażania APN, często ograniczanych przez bariery prawne, niedostateczne kształcenie i brak uznania zawodowego. Do najczęstszych wyzwań należą: niejednoznaczność ról, niedofinansowanie oraz opór ze strony środowisk lekarskich.

Wnioski. Wdrożenie ról APN na świecie jest nierówne – USA i Australia przodują, Francja reformuje system, a Polska, Japonia i Indonezja są na etapie wstępnym. Główne bariery to brak jasnych regulacji, niska świadomość roli APN, opór środowisk lekarskich oraz brak finansowania. Potrzebne są dalsze badania porównawcze i rozwój międzynarodowych standardów edukacji i regulacji APN.

Słowa kluczowe:

zaawansowana praktyka pielęgniarska, pielęgniarka praktykująca, polityka zdrowotna, zdrowie globalne, regulacja zawodu

ABSTRACT

ADVANCED PRACTICE NURSING (APN) IN THE WORLD: A COMPARATIVE ANALYSIS OF SELECTED COUNTRIES

Introduction. Advanced Practice Nursing (APN) plays a crucial role in addressing global healthcare challenges, including physician shortages, aging populations, and the rising burden of chronic diseases. As highly trained professionals, APNs enhance healthcare access and quality across diverse settings.

Aim. The aim of this study is to provide a concise comparative analysis of the development and integration of Advanced Practice Nursing (APN) roles between 2015 and 2025 in six countries - the United States, Australia, France, Poland, Japan, and Indonesia.

Material and methods. This study employed a descriptive comparative design based on a structured literature review. Data were collected from PubMed, Scopus, and Embase databases using the keyword “Advanced Practice Nursing” combined with six countries: the United States, Australia, France, Poland, Japan, and Indonesia. Publications from 2015 to 2025 were screened and selected according to inclusion criteria. The analysis focused on four key dimensions: educational pathways, regulatory and legal frameworks, scope of practice, and health system integration.

Results. Countries like the United States and Australia have mature APN frameworks with full practice authority and clear educational pathways. In contrast, France, Poland, Japan, and Indonesia are at varying stages of APN development, often limited by restrictive legislation, fragmented training systems, or lack of professional recognition. Common challenges include role ambiguity, insufficient funding, and resistance from medical bodies.

Conclusions. APN implementation varies globally, with the United States and Australia leading the way, France is implementing reforms, while Poland, Japan, and Indonesia remain in the early stages. Key barriers include lack of clear regulation, limited awareness, medical resistance, and insufficient funding. Further comparative research and the development of international standards in APN education and regulation are needed.

Key words: Advanced Practice Nursing, Nurse Practitioner, health policy, global health, nursing regulation

INTRODUCTION

Advanced Practice Nursing (APN) has become an indispensable component of modern healthcare systems worldwide, serving as a response to key global health challenges. These include the persistent shortage of physicians, particularly in primary care, the increasing burden of chronic and non-communicable diseases, and demographic changes associated with aging populations. Together, these factors have led to a sharp rise in the demand for healthcare that is accessible, efficient, and cost-effective, with APNs being particularly well-equipped to address such needs [1,2].

APNs are nurses who have completed the master's education or doctoral level and have undergone specialized clinical training that enables them to provide advanced, often autonomous, healthcare services. Their scope of practice typically includes comprehensive health assessments, diagnosing and managing acute and chronic conditions, prescribing medications and therapies, ordering and interpreting diagnostic tests, and leading interdisciplinary healthcare teams [3].

In many countries, APNs serve as primary healthcare providers, especially in rural and underserved areas where access to physicians is limited. In addition to clinical care, they are involved in health promotion, public health initiatives, care coordination, scientific research, and the development of health policy, playing a significant role in improving both individual and population health outcomes [2].

In recent years, the number of countries implementing or expanding the APN roles has been steadily increasing. According to the International Council of Nurses (ICN), over 70 countries have adopted some form of APN, with the greatest progress observed in North America, Oceania, and parts of Europe. The United States alone, for instance, had over 355,000 licensed nurse practitioners (NPs) in 2023, and the number continues to grow, driven by policy support and rising healthcare needs [4]. Research confirms that APN-led care is associated with better patient outcomes, greater patient satisfaction, more effective chronic disease management, fewer hospital readmissions, and lower overall healthcare costs, making APNs a vital part of achieving universal health coverage and addressing workforce shortages [3,5].

Despite widespread recognition of the value of APNs, the implementation of their roles varies significantly across countries. Numerous barriers still exist, including:

- legal and regulatory challenges, such as the absence of the clear legislative frameworks that formally recognize APNs and define their scope of practice;
- professional resistance, especially from medical associations concerned about competition or overlapping roles;

- inadequate educational infrastructure, including the lack of graduate-level nursing programs aligned with international standards;
- financial and policy limitations, which hinder investment in the development of advanced nursing roles;
- cultural and systemic challenges, stemming from hierarchical healthcare systems that prioritize physician-led models of care [2,3].

In contrast, countries that have successfully integrated the APN roles tend to share certain enabling factors:

- supportive legislation that clearly defines the APN roles and responsibilities;
- a well-developed educational system offering standardized graduate-level programs;
- alignment with national healthcare strategies and funding models;
- strong interprofessional collaboration;
- evidence-based support from research demonstrating the clinical and economic value of APN practice [2,5,6].

AIM

The aim of this study is to provide a concise comparative analysis of the development and integration of Advanced Practice Nursing (APN) roles between 2015 and 2025 in six countries: the United States, Australia, France, Poland, Japan, and Indonesia. By examining differences and similarities in educational pathways, regulatory frameworks, scope of practice, and health system integration, the study seeks to identify key enabling factors, highlight barriers, and inform global strategies for advancing the APN workforce growth.

MATERIALS AND METHODS

Study desing

This study employed a qualitative, descriptive comparative design aimed at analyzing the status, development, and integration of Advanced Practice Nursing (APN) roles across six selected countries: the United States, Australia, France, Poland, Japan, and Indonesia. A comparative framework was applied to evaluate similarities, differences, barriers, and enabling factors in APN implementation within different healthcare contexts.

Study question

What are the key differences and similarities in the development and integration of Advanced Practice Nursing (APN) roles between 2015 and 2025 across the United States, Australia, France, Poland, Japan, and Indonesia in terms of education, regulation, scope of practice, and health system integration?

Search strategies

Data were collected through a structured literature review of peer-reviewed academic sources and official policy documents. The search was conducted in the following electronic databases PubMed, Scopus and Embase. The literature search was conducted in May, June, and July 2025.

The search terms used were: „Advanced Practice Nursing” AND („United States” OR „Australia” OR „France” OR „Poland” OR „Japan” OR „Indonesia”).

The inclusion criteria were:

- publications in English and Polish (English was chosen because it is the dominant language of international academic discourse and covers the majority of high-quality peer-reviewed publications in the field. Polish was included because one of the key aims of the study was to provide an in-depth analysis of APN implementation in Poland, for which many policy documents, reports, and studies are available only in Polish);
- published between 2015 and 2025;
- articles focusing specifically on APN (not only nurse practitioners or clinical nurse specialists unless explicitly within the APN framework);
- comparative studies, national reports, or country-level analyses of APN development (reviews, policy and legislative analyses, qualitative and quantitative research, mixed-methods studies, expert commentaries and case studies).

Exclusion criteria:

- studies focusing solely on clinical outcomes of NP/CNS roles without reference to APN system-level development;
- abstracts without full-text availability.

PRISMA Flow and study selection

The researchers initially identified 640 articles. After removing duplicates, 458 unique records remained. Following title and abstract screening, 118 articles were selected for full-text review. Based on predefined inclusion criteria, 32 articles were ultimately included in the analysis. The selection process is illustrated in Fig. 1. The included studies addressed various aspects of Advanced Practice Nursing (APN), including role implementation, regulatory frameworks, educational pathways and integration into healthcare systems across the six selected countries.

Data analysis

Data for this comparative review were collected between May and July 2025. In order to select articles for inclusion or exclusion in the review, the Rayyan tool

(<https://www.rayyan.ai>) was used to facilitate the organization and evaluation of the results. To assess the quality of the selected articles, the Mixed Methods Appraisal Tool (MMAT), version 2018 was used [7]. This tool enables critical appraisal of qualitative, quantitative, and mixed-methods studies. Each criterion was rated as “Yes,” “No,” or “Can’t tell.” Subsequently, the extracted data were synthesized narratively.

Collected data were analyzed using thematic content analysis. Each country was reviewed separately along the four dimensions, and then compared against one another. Key similarities, differences, challenges and enabling factors were identified and summarized in both narrative and tabular formats.

RESULTS

The final analysis included a total of 32 studies addressing the roles and regulatory frameworks of Advanced Practice Nursing (APN) across six countries—the United States, Australia, France, Poland, Japan, and Indonesia.. The study selection process, encompassing initial identification, removal of duplicates, title and abstract screening, and full-text review according to predefined inclusion criteria, is illustrated in Fig. 1.

The findings of the literature review are synthesized in Tab. 1, which presents key studies related to the implementation and regulation of APN roles in different healthcare systems. The table summarizes the geographical scope, methodological approaches, and principal findings of each study, providing a foundation for identifying both common trends and country-specific factors influencing the development of APN roles.

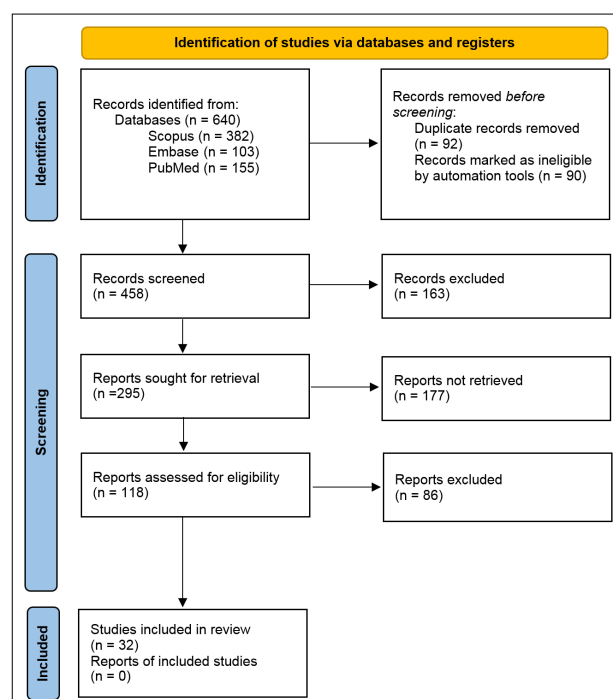


Fig 1. Study selection process (PRISMA 2021)

■ Tab. 1. Comparison of key studies on APN roles and regulations in selected countries

| Publication | Methodology | Countries Covered | Key Results |
|--|---------------------------------|--|--|
| Lopes-Júnior (2021) [8] | Narrative review | US, Australia, Canada, Hong Kong | APNs expand access to PHC. They highlights policy gaps. Australia and Canada adapted the US APN model. Local legislation shapes scope and autonomy. |
| Maier (2015) [9] | Scoping review | Europe, U.S., Canada, NZ, Australia | Governance is crucial for task-shifting to nurses. National regulation and up-to-date laws enable APN practice. Decentralized regulation leads to uneven practice. |
| Wheeler et al. (2022) [10] | Cross-sectional survey | Global | Significant variation in APN regulation and practice. |
| Colson et al. (2021) [11] | Qualitative field study | France | Reports on early experiences with APN in France. |
| Sastre-Fullana et al. (2020) [12] | International comparative study | Global (respondents) | Diversity in scope of practice. Lack of consistency. |
| Brownwood, Lafortune (2024) [13] | OECD policy review | OECD countries | Progress in primary care APN. Challenges remain. |
| Buck (2021) [14] | Policy review | USA | Overview of progress under the Consensus Model. |
| Whitehead et al. (2022) [15] | Scoping review | Australia | Barriers and enablers in NP candidacy programs. |
| Parker, Hill (2017) [16] | Narrative review | U.S., Canada, Australia, Hong Kong | Comparison of APN development across systems. |
| Schwingrouber et al. (2023) [17] | Case study | France | Implementation progress and local variation. |
| Toniolo et al. (2024) [18] | Mixed-method study | France | APNs improve continuity and collaboration. APN roles are evolving with expanded competencies, but face role ambiguity and resistance. |
| Colson et al. (2021) [19] | Qualitative field study | France | Describes the creation and implementation of APNs in France. Highlights challenges and supporting factors. |
| De Rosis et al. (2024) [20] | Case study analysis | France | Shift from clinic-based to network-based care. |
| Heale, Buckley (2015) [22] | Narrative review | Multiple | Regulatory differences in APN practice. |
| Scanlon et al. (2022) [23] | Narrative review | Low- and lower-middle-income countries (including Indonesia) | Role definitions and systemic challenges. APN roles are emerging, with disparities in education, practice, and regulation compared to international guidelines. |
| Scanlon et al. (2020) [24] | Integrative review | Low and LMICs | Barriers to APN development in LMICs. |
| Kazakidis, Kryczka (2021) [29] | Narrative review | Poland | APNs as potential solution to workforce gaps. |
| Tsumura et al. (2022) [30] | Narrative review | Japan | Need for national recognition of the NP role. |
| Ohta et al. (2024) [31] | Mixed-methods study | Japan | NPs enhance access in rural Japan. |
| Igarashi et al. (2022) [32] | Cross-sectional study | Japan | Collaboration patterns between NPs and physicians. |
| Igarashi et al. (2021) [33] | Thematic analysis | Japan | Identifies NP competencies in Japan. |
| Suzuki et al. (2024) [34] | Descriptive study | Japan | Barriers and facilitators to the implementation of NP. |
| Juanamasta et al. (2021) [36] | Historical/policy review | Indonesia | History of nursing development in Indonesia. |
| Efendi et al. (2018) [37] | Situational analysis | Indonesia | Describes gaps in education and workforce. |
| Barroso-Castaño et al. (2025) [38] | Scoping review | Multiple | Regulatory challenges in acute paincare. |
| Colson, Galfout, Schwingrouber (2024) [39] | Policy analysis | France | Evaluation of 5 years of APN in France. Legislative advances have expanded APNs' autonomy, but implementation faces economic and professional barriers. |

Advanced Practice Nursing in the United States and Australia. Mature and autonomous APN models

The United States and Australia represent two of the most advanced and structured models of Advanced Practice Nursing (APN) globally. In both countries, APNs operate under well-established national or state-level regulatory frameworks, are required to complete graduate-level education (typically a master's degree or higher), and enjoy an extensive scope of clinical authority. Their responsibilities include independent diagnosis, treatment planning, prescribing medications and direct management of patient care. APNs provide a critical contribution to both primary and specialized healthcare services, and their roles are supported by strong systems of credentialing and professional accreditation [8-12].

The United States has been a global pioneer in APN development since the 1960s, when Nurse Practitioner (NP) programs emerged in response to physician shortages. Today, APNs are foundational to the United States healthcare system, especially in primary care and underserved areas. There are four recognized APN roles: Nurse Practitioner (NP), Clinical Nurse Specialist (CNS), Certified Nurse Midwife (CNM), and Certified Registered Nurse Anesthetist (CRNA) [8,9]. Each requires advanced education and specialized clinical training beyond the registered nurse level. In 27 states, NPs have full practice authority, meaning they can diagnose, treat, order tests, and prescribe medications independently, without physician's oversight [13]. In order to qualify, NPs must complete a Master of Science in Nursing (MSN) or Doctor of Nursing Practice (DNP) program and pass national

certification exams. The DNP is increasingly being adopted as the preferred entry-level degree for advanced practice, reflecting a shift toward equipping APNs with competencies in evidence-based practice, leadership, informatics, and healthcare systems improvement. APNs in the United States contribute significantly to improving healthcare access, particularly in rural areas, and provide care with quality and patient satisfaction comparable to that of physicians. Their services are reimbursed under Medicare, Medicaid, and private insurances, and in some jurisdictions, they are authorized to run independent practices. Nonetheless, APNs still face challenges, such as state-level legislative variation in state regulations, resistance from medical associations and inconsistent educational pathways. National nursing bodies continue to advocate for standardized APN regulation and full practice authority across all states by 2030. More than 355,000 licensed Nurse Practitioners (NPs) in the United States in 2024. NPs play a critical role across various healthcare settings, including primary care, acute care, mental health, women's health, pediatrics, and other specialties. In recent years, the Doctor of Nursing Practice (DNP) has been increasingly promoted as the terminal degree for advanced practice nursing roles, reflecting the profession's growing emphasis on clinical leadership, evidence-based practice and advanced clinical expertise [14].

The Nurse Practitioner (NP) role was formally introduced by the Australian Government in 2000 as part of a strategy to enhance healthcare access, particularly in underserved populations [15]. In order to receive a Nurse Practitioner, candidates must have a master's degree in nursing and meet a minimum clinical experience requirement [13]. Regulation and licensure are overseen by the Australian Health Practitioner Regulation Agency (AHPRA), which ensures adherence to national standards [14]. Australian NPs are granted full practice authority, enabling them to independently diagnose conditions, develop and manage treatment plans, prescribe medications, and order diagnostic tests [15]. They work in a wide range of settings, including general practice, emergency departments, aged care, mental health, and chronic disease management. Additionally, the Medicare Benefits Schedule allows for the reimbursement of certain NP-delivered services, embedding NPs into the publicly funded healthcare system. Despite this progress, limitations in funding and role visibility continue to pose barriers to the optimal utilization of NPs in Australia. National professional organizations are actively working to increase public awareness, expand the role integration, and advocate for broader Medicare access and systemic recognition of NP contributions. According to recent data, there are over 2,000 certified Nurse Practitioners (NPs) currently practicing in Australia. In recent years, there has been a growing demand for their services, particularly in rural and underserved areas where access to healthcare is limited. Existing policy frameworks support the continued integration of the NP role into both the public and private sectors, promoting the expansion of their competencies and broader utilization within the healthcare system [8,9,16].

Advanced Practice Nursing in France. From concept to implementation

France formally recognized APN, *Infirmiers en Pratique Avancée (IPA)*, roles in 2018, with a master's-level educational requirement and defined areas of practice (e.g., chronic disease, oncology, mental health). Initially, APNs could only see patients referred by physicians, but recent reforms have expanded their autonomy, including direct patient access and primary prescription rights in certain settings. Despite these advances, APNs in France face challenges such as role ambiguity, limited positions, physician dependence, and slow integration into primary care. Implementation is hindered by unclear funding, lack of national strategy, and professional resistance, though legislative changes are gradually increasing APN independence [11,17-20]. The legal basis for this reform stems from Decree No. 2018-629 of July 18, 2018, under the broader Health System Modernization Act of 2016 [21].

Poland, Japan, and Indonesia. Emerging and evolving APN roles

Poland and Japan have recognized APN roles, but with more restrictive regulatory frameworks and limited autonomy compared to the US, Australia, and (increasingly) France. APNs in these countries often require physician supervision, have narrower scopes of practice, and face barriers related to education, regulation, and professional recognition. Indonesia, as a lower-middle-income country, is in the early stages of APN development, with significant disparities in education, practice, and regulation. Barriers include lack of clear policies, insufficient training infrastructure, and limited legal authority for APNs [8,22-24].

Poland has made significant, though still incremental, progress in expanding the role of nurses toward the domain of Advanced Practice Nursing (APN), particularly since 2016. Although the role of Advanced Practice Nursing (APN) in Poland has not yet been formally regulated in a comprehensive manner, the first steps toward its development began in the second half of the 2010s, with the most significant changes occurring from 2016 onward. In 2014, a foundational legal milestone was the adoption of the Act on the Professions of Nurse and Midwife [25], which enabled nurses and midwives to obtain qualifications allowing them to independently prescribe certain medications and refer patients for diagnostic tests. While this act marked a notable expansion of professional competencies, it did not yet constitute the formal introduction of the APN role as defined in countries such as the United States or Australia [22]. In 2016, further progress was made through executive regulations that granted nurses and midwives with appropriate postgraduate education, typically a master's degree in nursing along with specialist training, the legal authority to write prescriptions, refer patients for specific diagnostic tests, and issue medical referrals [26,27]. Between 2021 and 2023, the concept of advanced practice nursing gained visibility within the professional and academic communities. Institutions such as the Polish Nursing Association (PTP), the Medical University of Gdańsk, and other stakeholders initiated discussions and published strategic documents advocating

for the formal establishment of the APN role in Poland. In 2025, the Ministry of Health responded to this growing interest by forming a Task Force for the Development of Advanced Practice Nursing [28]. The group's mandate includes preparing legislative proposals, defining the scope of practice, determining educational requirements, and exploring reimbursement models [26]. Consultations with universities, regulatory bodies, and professional associations are currently underway. Continued advocacy by nursing associations, expansion of postgraduate training opportunities, and alignment with international standards are key to establishing a robust APN role in the Polish healthcare system [29].

The APN system in Japan has not yet been fully established. However, several precursor nursing systems exist. Chronologically, these include the Certified Nurse Specialist (CNS) program launched in 1994, the Certified Nurse (CN) program launched in 1995, and the Certified Nurse Administrator (CNA) program launched in 1998, all accredited by the Japanese Nursing Association (JNA). In addition, in 2004, during an advisory council convened by the Minister of Health, Labour and Welfare, discussions were held on the possible introduction of nurse anesthetists similar to those in the United States. Following this, between 2007 and 2010, training programs for Japanese Nurse Anesthetists (JNAs) and Japanese Nurse Practitioners (JNPs) were launched, primarily through initiatives led by graduate nursing schools and hospitals. Each of these roles represented an important step toward advanced practice nursing by expanding nursing specialization. However, the systems remain only partially regulated. Subsequently, in 2015, as part of a national strategy to improve healthcare access in a super-aging society and to address workforce shortages, the Specific Medical Acts Training System for Nurses (SMATSNs) was introduced. While these developments mark important steps toward advanced practice nursing, each system continues to remain only partially regulated and lacks full national-level legal recognition. The Japan Association of Nursing Program in Universities (JANPU) has announced plans to position CNSs and certain JNPs within a Japanese model of APN. However, barriers remain due to the fragmented development of diverse educational systems. Meanwhile, the defining feature of SMATS nurses and JNPs is that they must operate under the direct supervision of physicians and comply with hospital-approved clinical protocols [30]. This structure restricts the professional autonomy of JNPs but allows them to perform advanced procedures, coordinate patient care, and contribute to the management of complex medical conditions [31]. Currently, JNP candidates are required to complete a master's-level graduate program at an accredited university, and certification is overseen by the Japanese Organization of Nurse Practitioner Faculties (JONPF), which administers the qualifying examination and endorsement process. These programs typically include approximately 500 hours of clinical training, covering advanced diagnostics, pharmacology, and medical assessment. To obtain certification as a Japanese Nurse Practitioner (JNP), candidates must satisfy three key requirements. First, they are required to have a minimum of five years of clinical experience

as a registered nurse to ensure adequate professional practice before entering the advanced role. Second, candidates must complete a graduate-level JNP education program, providing them with the specialized knowledge and competencies necessary for advanced clinical practice. Finally, they must successfully pass the JNP certification examination, which is administered by the Japanese Organization of Nurse Practitioner Faculties (JONPF). The curriculum places particular emphasis on acute care, gerontological nursing, and interprofessional collaboration within hospital settings [32-34]. JNPs are primarily employed in university hospitals and large medical centers, functioning not as independent practitioners but as clinical support specialists. Their responsibilities include conducting physical assessments, interpreting test results, proposing treatment plans, and participating in clinical rounds. However, they do not possess any prescriptive authority, while they may recommend medications, prescriptions must be issued exclusively by supervising physicians.

Indonesia is in the early stages of developing Advanced Practice Nursing (APN) as a strategic response to expanding healthcare access in underserved and remote regions. Although there is currently no nationally recognized APN role comparable to the Nurse Practitioner (NP) or Clinical Nurse Specialist (CNS) models found in high-income countries, various pilot programs and international partnerships have laid important groundwork for future implementation. In 2014, the government enacted the Nursing Act (Law No. 38/2014), which formally recognized the nursing profession and introduced a tiered education system comprising vocational (diploma), professional (bachelor's), and specialist (master's) nursing levels. While this legislation created a legal foundation for the development of advanced roles, it did not establish a national framework or regulatory definitions for APN-level practice [35-37]. Although Indonesia is developing its nursing education infrastructure, the APN role has not yet been formally defined or integrated into the healthcare system. Progress is evident, but there remains a need for legal frameworks, political support, funding, and public recognition for advanced practice nurses to meaningfully contribute to improving the accessibility and quality of healthcare.

Barriers and facilitating factors in APN role development

Across all countries examined, the development and implementation of Advanced Practice Nursing (APN) roles are shaped by a combination of systemic barriers and enabling factors. A recurring challenge is the lack of consistent definitions for APN roles, which results in variability in scope of practice, educational requirements, and regulatory recognition. This inconsistency hampers international comparability and creates confusion among healthcare professionals, patients, and policymakers. Regulatory and legislative hurdles are another major barrier. In many settings, national legislation does not fully recognize the APN role, or it imposes limitations that restrict autonomy, such as mandatory physician supervision or restricted prescriptive authority. These legal constraints often stem from unclear or outdated regulatory frameworks that do

not reflect current healthcare demands or the evolving competencies of advanced practice nurses. Additionally, there is often a lack of role clarity, particularly in countries where APN is a newly introduced concept. Without clear role delineation, APNs may face overlaps with existing healthcare professions, leading to professional resistance, especially from physicians who may perceive APNs as encroaching on their traditional domains. This resistance can slow policy adoption and obstruct integration into clinical settings. Despite these barriers, several facilitating factors have been identified across successful APN implementations. These include strong stakeholder engagement involving nursing associations, policymakers, educators, and patient advocacy groups, all of whom play a crucial role in driving reform. Effective leadership at institutional and national levels helps to champion the APN role and secure political and financial support. Interprofessional collaboration has also proven critical, fostering mutual respect and team-based care models that optimize the contributions of each professional group. Furthermore, supportive policy environments, such as inclusion in national health strategies, access to funding, and formal recognition in legislation, create the conditions necessary for APNs to practice to the full extent of their training [10,12,19,22,38-40].

■ Tab. 2. Key claims and support evidence identified in these publications

| Claim | Reasoning | Publications |
|--|---|--|
| The United States and Australia have the most established and autonomous APN roles. | Multiple studies confirm the robust regulation, high level of education, and broad scope of practice. | Lopes-Júnior L. 2021 [8], Maier C. 2015 [9], Wheeler K. 2022 [10], Sastre-Fullana P. 2020 [12], Parker JM. 2017 [16], Colson S. 2021 [19] |
| France has made significant legislative progress but faces implementation barriers | Recent reforms have expanded the autonomy of APN, but challenges remain in practice. | Schwingrouber J. 2023 [17], Toniolo J. 2024 [18], Colson S. 2021 [19], De Rosis C. 2024 [20], Colson S. 2024 [39] |
| Poland, Japan, and Indonesia have less developed and more restrictive frameworks for APNs. | Literature shows limited autonomy, regulatory barriers, and emerging roles. | Lopes-Júnior L. 2021 [8], Heale R. 2015 [22], Scanlon A. 2022 [23] |
| Inconsistent definitions and regulations hinder the role development of APNs globally. | Multiple reviews highlight lack of standardization as a barrier. | Maier C. 2015 [9], Sastre-Fullana P. 2020 [12], Colson S. 2021 [19], Heale R. 2015 [22], Barroso-Castaño P. 2025 [38], Wheeler K. 2022 [10], Colson S. 2024 [39] |
| Stakeholder engagement and leadership facilitate the implementation of APNs. | Case studies and qualitative research emphasize the importance of collaboration. | Schwingrouber J. 2023 [17], Toniolo J. 2024 [18], Colson S. 2024 [39], De Rosis C. 2024 [20] |
| Economic, professional and systemic barriers persist in all countries. | Reports of funding problems, role ambiguity, and resistance are common. | Schwingrouber J. 2023 [17], Toniolo J. 2024 [18], Colson S. 2021 [19], Scanlon A. 2022 [23], Colson S. 2024 [39] |

DISCUSSION

Advanced Practice Nursing (APN) plays an increasingly vital role in modern healthcare systems worldwide. Its development, however, is strongly influenced by the legal, educational, and clinical frameworks unique to each country. A comparative analysis of APN implementation between 2015 and 2025 highlights significant variation in maturity, autonomy, and integration.

The United States and Australia represent the most advanced models of APN practice. In these countries, clearly defined national or state-level regulatory frameworks, rigorous graduate-level education (typically at the master's or doctoral level), and broad scopes of clinical practice have enabled APNs to function with high degrees of independence. These include prescriptive authority, diagnostic rights, and leadership in care coordination. APNs in these systems are integral to both primary and specialized care, supported by robust accreditation, reimbursement structures, and public policy [6,9,10,12,16,19].

In France, legislative progress has been notable, particularly since the formal introduction of the *Infirmier en Pratique Avancée* (IPA) role in 2018. Recent reforms have granted expanded autonomy in specific domains such as chronic disease management, mental health, oncology, and nephrology. However, implementation remains uneven due to challenges such as unclear funding mechanisms, limited public awareness, professional resistance particularly from medical associations and the continued requirement for physician collaboration in many care settings [17,18,20,39].

Poland and Japan have formally recognized APN roles, but the scope of practice remains more restricted compared to leading countries. In Poland, legislative and educational reforms are underway, but APNs still lack widespread recognition and autonomy. Similarly, in Japan, despite strong academic infrastructure and localized NP models, national legal recognition and standardized practice rights remain limited [8,22,23,41,42]. Indonesia, along with other lower-middle-income countries, is in the early stages of APN development. Progress is hindered by multiple structural barriers, including insufficient graduate-level nursing education, absence of clear regulatory frameworks, limited funding, and minimal integration into healthcare delivery systems. These constraints significantly reduce the potential impact of APNs in addressing access gaps and health disparities [24].

A major finding of this analysis is the lack of standardization across countries in defining APN roles, core competencies, certification requirements, and levels of autonomy. This variation complicates efforts in international workforce mobility, comparative research, and the development of global best practices in advanced nursing.

Nevertheless, a clear global trend is emerging: the expansion of APN roles to address critical healthcare challenges such as workforce shortages, growing chronic disease burdens, and unmet care needs in underserved populations. APNs are increasingly recognized as cost-effective, patient-centered providers, particularly in primary care [9,10,12,19,22,38-41,43,44].

■ Tab. 3. Advanced Practice Nursing in the study selected countries

| | USA | Australia | France |
|--------------------|---|--|---|
| Year | 1965 | 2000 | 2018 |
| Main APN roles | <ul style="list-style-type: none"> Nurse Practitioner (NP) Clinical Nurse Specialist (CNS) Certified Nurse Midwife (CNM) Certified Registered Nurse Anesthetist (CRNA) These roles are nationally recognized and regulated at the state level. | <ul style="list-style-type: none"> Nurse Practitioner (NP) There are no separate roles like CNS (Clinical Nurse Specialist) under the APN title, NPs are the formal and recognized APN designation | Infirmiers en Pratique Avancée (IPA) <ul style="list-style-type: none"> Chronic diseases and multiple comorbidities Oncology and hematology Nephrology and dialysis Psychiatry and mental health Additional areas such as pediatrics and geriatrics are under consideration for future inclusion. |
| Education required | <ul style="list-style-type: none"> Master of Science in Nursing (MSN) or increasingly a Doctor of Nursing Practice (DNP). National certification in a population focus (e.g., Family NP, Adult-Gerontology, Pediatrics, etc.) State licensure is required, and requirements vary by state | <ul style="list-style-type: none"> Master's degree in Nurse Practitioner Studies (or equivalent) Must be a registered nurse (RN) with advanced clinical experience, typically 5,000 hours in the area of specialty | <ul style="list-style-type: none"> 2-year Master's degree in Advanced Practice Nursing Minimum of 3 years of professional experience as a registered nurse prior to admission |
| Scope of practice | <ul style="list-style-type: none"> Diagnose and treat health conditions Prescribe medications (including controlled substances in most states) Order and interpret diagnostic tests Manage chronic and acute illnesses Scope of practice varies by state (regulated by state Nurse Practice Acts) | <ul style="list-style-type: none"> Autonomous clinical decision-making Assessment, diagnosis, treatment, and management of patients Prescribing rights (including medications on the Pharmaceutical Benefits Scheme – PBS) Ordering and interpreting diagnostic tests Referring patients to medical specialists | <ul style="list-style-type: none"> Conducting follow-up consultations and health assessments Monitoring and adjusting treatment for specific chronic conditions Prescribing certain medications and diagnostic tests (within authorized limits) Must work in collaboration with a referring physician: shared-care model |
| Autonomy | Full practice authority in 27 states (NPs can practice independently without physician oversight). In other states, NPs may require collaborative agreements or physician supervision | <ul style="list-style-type: none"> Full clinical autonomy NPs can operate independently or in collaborative teams | <ul style="list-style-type: none"> APNs cannot diagnose new conditions independently Not autonomous - their practice is tied to collaboration agreements with physicians Their scope of responsibility is defined by legal regulations and employer contracts |
| Reimbursement | NPs are eligible for reimbursement under: <ul style="list-style-type: none"> Medicare Medicaid Private insurers They can bill directly for services (though reimbursement rates may be lower than for physicians) | <ul style="list-style-type: none"> NPs can bill Medicare for services (though item numbers are more limited than for physicians) They can also prescribe medications listed under PBS (Pharmaceutical Benefits Scheme) | <ul style="list-style-type: none"> Partial reimbursement by the French national health insurance APNs' services are not billed independently like those of physicians but can be integrated into institutional care reimbursement models |

■ Tab. 4. Countries in the process of developing Advanced Practice Nursing (APN)

| | Poland | Japan | Indonesia |
|------------------------------|---|---|--|
| Status according to the year | <ul style="list-style-type: none"> 2016 – process initiation of the process APN not yet fully implemented In 2025, a national implementation team for APN was appointed Legislative and educational frameworks are still in development | <ul style="list-style-type: none"> 2015 – NP model introduced in hospitals Not fully recognized at national level | <ul style="list-style-type: none"> Pilot stage Development is driven by international partnerships and local innovation National APNs policy and regulation are pending |
| Main APN Role | Specialist nurse with partial prescribing rights | <ul style="list-style-type: none"> Nurse Practitioner (hospital-based) Despite formal NP training programs and certification, there is no national law defining the NP role | Community nurse (pilot projects) |
| Education Requirements | Postgraduate courses in selected areas (e.g., prescribing) | <ul style="list-style-type: none"> Certified NP training + national exam ~500 clinical hours Graduate-level education | <ul style="list-style-type: none"> Variable Education pathways differ by program and region |
| Scope of Practice | <ul style="list-style-type: none"> Limited prescribing rights and referrals (e.g., for diagnostics) No unified APN scope yet | <ul style="list-style-type: none"> Protocol-based practice under physician supervision Advanced procedures within hospital settings | <ul style="list-style-type: none"> Restricted and evolving Roles defined locally through pilot projects |
| Autonomy | Partial – limited independence, no national framework | Limited – must operate under hospital-approved protocols and direct physician oversight | No autonomy – practice fully dependent on local regulations and project guidelines |
| Reimbursement | No direct reimbursement for APN services | No separate reimbursement – NPs function as clinical support within hospital employment | No reimbursement – APN services not yet integrated into national payment systems |

To realize the full potential of APNs globally, ongoing reforms, multilevel stakeholder engagement, and international collaboration are essential. Such efforts can support the harmonization of APN roles, strengthen professional identity, and optimize the contribution of APNs to health system transformation and universal health coverage. Globally, there is a clear trend toward expanding APN roles as part of a broader strategy to address healthcare workforce shortages, improve access to care, especially in underserved areas, and enhance healthcare quality and cost-effectiveness. However, progress remains uneven, with high-income countries generally advancing faster due to stronger infrastructures, while lower- and middle-income nations face more pronounced challenges in legislation, education, and system readiness.

CONCLUSIONS

Based on a systematic review, the following conclusions have been drawn:

1. Diverse levels of APN implementation worldwide. The implementation of APN roles is highly heterogeneous, shaped by local health system needs, regulatory frameworks, and sociocultural factors. The United States and Australia represent the most advanced APN systems, with full practice authority and standardized education. France is undergoing rapid legislative changes. Poland, Japan, and Indonesia are in early stages of development, with limited scope of practice and lack of unified legal frameworks.
2. Common barriers to implementation. Countries developing APN systems face similar challenges, including fragmented or inconsistent legislation and lack of clear role definitions, limited public and professional awareness of APN competencies, resistance from medical associations concerned about role overlap, shortages in advanced nursing education and clinical training, absence of reimbursement and sustainable funding models for APN services.
3. Need for further research. There is a notable lack of comparative research on APN roles in Poland, Japan, and Indonesia, and limited data on the outcomes of recent reforms in France. Future studies should focus on evaluating the real-world impact of legislative reforms on autonomy and patient care, identifying and addressing implementation barriers in emerging APN systems, developing and applying international standards for APN education and regulation.

STRATEGIC RECOMMENDATIONS

To successfully integrate APNs into national healthcare systems, the following actions are recommended:

- legislative reform – formal recognition of APN roles with full practice authority based on competencies;
- educational standardization – implementation of harmonized postgraduate curricula and national certification aligned with international standards (e.g., ICN, WHO);

- interprofessional collaboration – promotion of team-based care and shared decision-making;
- systemic inclusion – integration of APNs into national health strategies and workforce planning;
- public engagement – awareness campaigns to educate the public on the value and role of APNs.

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