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ORIGINAL ARTICLE

Advanced Nursing Practice and Advanced Practice Nursing roles within low and lower-middle-income countries

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Abstract

Introduction: Population health initiatives rely on the availability and skills of an appropriate workforce to meet required goals. One global workforce initiative with demonstrated ability to expand health care services and improve access to care is the development of Advanced Nursing Practice and Advanced Practice Nursing roles. Given the sparse published information about these roles in Low and Lower-Middle-Income countries, this study seeks to describe their development and application in these countries.

Design: The researchers developed a descriptive cross-sectional multilingual survey for online distribution to nursing experts within the targeted countries. Survey questions addressed demographic information on the population served, Advanced Nursing Practice and Advanced Practice Nursing titles, the time frame and rationale for creating the title, and how the roles relate to the International Council of Nurses' Advanced Practice Nursing guidelines characteristics of education, practice, and regulation.

Results: Of the 167 responses received, only 24 participants met the inclusion criteria. This represented five low-income countries and nineteen lower-middle-income countries from four World Bank regions. Seventy-one roles were identified. Roles emerged predominantly over the last 20 years, focusing on care for underserved populations, with an almost even spread across primary and acute care settings. There were differences in education, practice, and regulation amongst the roles. Roles that required a master's education or higher with practice-related characteristics had a broader scope of practice, which is consistent with international guidelines.

Conclusion: This paper describes how Advanced Nursing Practice and Advanced Practice Nursing roles from Low and Lower Middle-Income Countries have been implemented to address gaps in service and highlights disparities in education, practice and regulation compared to international guidelines. Maintaining and increasing support from organizations and universities internationally may be required to assist in developing and expanding educational programs for advanced nursing roles in these countries.

Clinical Relevance: Understanding how these advanced nursing roles are operationalized in relation to education, practice, and regulation in Low and Lower-Middle-Income countries can provide baseline information that will inform workforce development policies to address healthcare needs in similar jurisdictions.

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KEYWORDS
Advance Nursing Practice, Advance Practice Nursing, care delivery system, health care reform, health policy, quantitative methodology

INTRODUCTION

Population health is influenced by the social and economic environment (Scanlon & Reinisch, 2022; World Health Organization, 2021b). Countries identified as low-income countries (LICs) or lower-middle-income countries (LMICs) have insufficient healthcare resources and, as a result, have poorer population health outcomes (Bitton et al., 2017). Nurses working in Advanced Practice Nursing (APN) or Advanced Nursing Practice (ANP) roles can provide a wide range of care and treatment services and are an example of developing a workforce role that can address health care disparities. These nurses go by many role titles and have different skills, education, and regulatory requirements. This study examined nursing experts from LICs and LMICs views of ANP and APN roles in their specific countries.

Background

The World Bank Group sorts countries by their economy's gross national income reported in United States (US) dollars per capita group (The World Bank group, 2020). Per capita, low-income economies earn less than $US 1036 per annum (p.a.), and Lower-middle income economies earn between $US 1036–4045 p.a. (The World Bank group, 2020). In contrast, high-income countries, i.e., US etc, earn greater than $US 12,535 p.a. (The World Bank group, 2020). In 2020–2021, there was 27 LICs and 50 LMICs worldwide (The World Bank group, 2020). International efforts have attempted to address disparities in LICs and LMICs through initiatives that include healthcare workforce development (Ajuebor et al., 2019; Fields et al., 2021).

Globally, ANP and APN have contributed to service delivery across healthcare systems, each with unique conditions and restrictions (OECD, 2016). These nurses play a vital part in healthcare. The modern era of ANP and APN gained significant momentum in the late 1960s in parts of the US and Canada, when it was recognized that registered nurses (RN) could be educated to meet the gaps in service brought on by general and specialty physician shortage as well as the increasing complexity of care (Bryant-Lukosius et al., 2010; Ford & Silver, 1967). Other countries experienced similar difficulties. As a result, these roles were translated, implemented, and further developed by the early 1990s (the United Kingdom and the Netherlands) and continued into the early 2000s (Australia, Ireland, and New Zealand) (Barton et al., 2012; Duffield et al., 2009; Roberts & Floyd, 2011; The Commission on Nursing, 1998).

The evolution of ANP and APN requires the ongoing acquisition of knowledge, skills, and education. This is necessary to meet the challenges of ever-increasing demands of practice, influenced by changes in population needs, practice patterns, new models of care, and legal and policy developments (Barton et al., 2012; De Geest et al., 2008; Kaasalainen et al., 2010; Stordeur & Léonard, 2010). To define these roles, the International Council of Nurses (ICN) developed APN guidelines in 2002, which were updated in April 2020. These guidelines outline expectations of ANP and APN roles by describing a set of characteristics that differentiate them from one another. The characteristics broadly address how APN functions in relation to educational preparation, nature of practice, and regulatory mechanisms beyond that of an RN (Schober et al., 2020). ANP roles, expand the RN's scope of practice (SOP) through the integration and application of graduate nursing education (Schober et al., 2020). Advanced Nursing Practice is considered an extension or expansion outside the original RN SOP but does not address the minimum characteristics as outlined for APN.

According to the ICN APN, educational preparation for an APN requires a master's degree delivered through an accredited or approved educational program. This educational preparation leads to a system of licensure, registration, certification, or credentialing (Schober et al., 2020). The nature of practice outlines the nurses' roles and responsibilities in the work environment. These nurses are expected to integrate research and education with practice and management. They are recognized as the first point of contact, have professional autonomy, can independently manage a caseload, demonstrate advanced health assessment, decision-making skills, diagnostic reasoning skills, and provide consultant services to health providers (Schober et al., 2020). Finally, regulatory mechanisms, such as legislation specific to the role, protect the title and delineate the SOP through "authority" related to particular practice components. For APN, this includes the authority to diagnose, prescribe medications and therapeutic regimens, order diagnostic tests, initiate referrals to other services and professionals, and admit and discharge patients to hospital and other services (Schober et al., 2020).

The terms ANP and APN are sometimes used interchangeably. However, there are distinct differences when these two titles are compared using the ICN APN guidelines. The APN roles have clearly defined education, regulation, and practice requirements such as the Nurse Practitioner (NP), Clinical Nurse Specialist (CNS), and Advanced Practice Nurse (APN*). ANP roles are not as prescriptive. Minimum educational and regulatory requirements are not required to be addressed to be considered ANP. Thus, titles should be regarded as ANP unless they are seen to meet all ICN APN characteristics. It must be noted that national, regional, and local organizational interpretation can impact the application of these guidelines in specific jurisdictions.

Although these advanced roles are shared globally, there is little in the published or gray literature related to these positions in LICs or LMICs. A recent integrative review by Scanlon et al. (2020a) found

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that just 18 of the 77 LICs and LMICs reported ANP or APN roles. The focus of these publications was mainly on education, to a lesser extent focusing on practice and regulation of advanced practice nurse's roles (Scanlon et al., 2020a). A follow-up review of publications found on the websites of Nursing Regulatory Authorities (NRA) and National Nursing Associations (NNA) in these countries found only limited information describing ANP or APN roles (Scanlon et al., 2020b). Scanlon et al. (2020b) found that only 10 NRAs and four NNAs referenced ANP or APN roles, with most of the information, focused on education. No single or series of documents from any website fully met the ICN APN guideline characteristics published.

This study describes ANP and APN roles in LICs and LMICs. These are critical roles in under-resourced health systems, where they can expand healthcare services and improve access to care and overall population health. The ICN APN Guidelines (2020) are used to capture LICs and LMICs nursing experts' understanding of identified ANP and APN roles and their development and current operationalization in specific countries.

METHODS

This survey instrument was designed in two phases. The study team of nurse and public health researchers designed the questions, based on their combined knowledge of the content area and experience with survey (Siedlecki et al., 2015). The survey's purpose was to gather factual information at a point in time. Rockwood (2015) suggests that for single use surveys, "face validity is the only type of validity that is relied on and evaluated" (p. 328). The suitability of the survey questions to address the proposed research question (face validity) was assessed by nurse researchers with knowledge and expertise in advanced nursing roles who were independent of the study team, in accordance with recommended practice (Siedlecki et al., 2015). To assess test–retest reliability, the survey questions about the characteristics of APN/ANP roles were answered at two time-points by a group of nurses in Australia ($n = 2$) and the USA ($n = 3$). The percentage of agreement between the test and retest results ranged from 81.8% to 100%, with an average of 93.9%.

The final survey was created using Qualtrics XM © study software and consisted of 13 sections. These included Multiple Choice Questions (MCQ) (forced choice) and Short Answer Questions (SAQ) (free text). The number of questions an individual responded to depended on whether none of the nominated APN titles were present ($n = 67$) or if all six nominated APN roles were present (additional questions per role $n = 41$). The survey was developed in English and professionally translated into Spanish and French, which aligned with the main languages of the ICN as well as LICs and LMICs.

Data collection

Section one of the survey addressed the participants' demographics by identifying the organization they work for and country they currently live in (MCQ $n = 2$). Section two explored the presence and practice of roles commonly used to describe APN and respondent-nominated titles for APN roles. Nominated APN roles included APN*, CNS, and NP in line with the ICN APN guidelines. As there may be differences in local nomenclature or even interpretation of language, additional titles such as Nurse Consultant (NC), Nurse Specialist (NS), and Specialist Nurse (SN) were included (Stasa et al., 2014) (MCQ $n = 6$, SAQ $n = 1$). This was done so roles within the SOP of the APN would not be overlooked purely based on name. Sections three through six were only completed if one or more of this APN roles was nominated. Questions in these sections related individually to each of those roles identified. Section three addressed the year these roles were created, the rationale for their implementation, and the populations served (MCQ $n = 3$, SAQ $n = 2$). Sections four, five, and six consisted of questions related to the ICN APN Guidelines' characteristics of educational preparation (MCQ $n = 8$, SAQ $n = 3$), nature of practice (MCQ $n = 12$, SAQ $n = 2$), and regulatory mechanisms including determinants of APN (MCQ $n = 9$, SAQ $n = 2$). Sections seven through 12 replicated sections two through six, focusing on nursing roles that the expert respondent did not consider APN but exhibited similar attributes (MCQ $n = 28$, SAQ $n = 6$). Section thirteen's questions related to how ANP and APN have or potentially could contribute to their country's healthcare priorities (MCQ $n = 21$, SAQ $n = 2$). Finally, participants were asked if they had any comments at the end of the survey (SAQ $n = 1$). Section thirteen and the final question are addressed in this publication.

Recruitment

Nursing experts currently working within LICs and LMICs were enlisted to undertake the survey. They were identified through the NRA in each country via a search of the Global Regulatory Atlas© (National Council of State Boards of Nursing, 2020) and NNAs by searching the ICN member' list. If no contact details were discovered using this method, an internet search was conducted using the NRA or NNA's name (in English, French, or Spanish). This procedure identified 88 NRA contacts from a possible 104 NRAs and 48 of a possible 77 NNAs. The discrepancy in relation to NRA and NNA is that all countries except one have a national NRA and not all NRA or NNAs have websites or associated email addresses.

India was the only country whose regulation of nursing was not national but rather province based. India has 35 provinces but only 28 NRAs. Togo has a combined NRA and NNA. This search yielded 136 email addresses for NNA and NRA, which were emailed monthly for 5 months. An additional email request was sent to nurse colleagues known to the researchers and representatives from the World Health Organization (WHO) nursing and healthcare regulator collaborating centers to assist recruitment and augment both searches. It is unknown how many additional experts were yielded from this process. It could be extrapolated that those expert responses from non-NNA or NRA backgrounds were recruited via this process as the request included a description of the study and the online survey link.

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The study invitation email was sent to all identified potential participants, and requested recipients undertake the survey or forward the email to colleagues with expert knowledge of nursing in their country if they could not respond. Data collection occurred between September 2020 and March 2021.

Data analysis

Free text responses were reviewed and translated as required. Results were excluded if less than 10% of the survey was completed or the country identified by the expert was not from a low or lower-middle-income country. When multiple survey responses were received from one country, the responses were ranked using a hierarchal approach. The organization and percentage of items completed for the survey determined inclusion, so there was one response per country. The highest rank was assigned to answers from an NRA (responsible for regulating nursing practice), followed by NNA (responsible for representing the nursing profession), hospital and healthcare (responsible for overseeing the practice of these roles), universities and colleges (responsible for further educating these roles), other governmental agencies within the country, and intergovernmental organizations and finally nongovernmental organizations. If there was more than one response from the same chosen type of organization, the most complete survey was included. Descriptive analyses were undertaken for all items using IBM SPSS version 28.

Additional descriptive tables are available online in the detailed supplementary tables in the appendix. These include the correlations between ANP and APN roles and ICN APN characteristics of educational preparation, Nature of Practice, and Regulatory Mechanisms as well as the relationship of master's level education or above with practice-related characteristics.

RESULTS

One hundred and sixty-seven responses were received. Seventy-seven survey responses met the initial inclusion criteria, and 24 were selected as the single representative for each country using the process described in Figure 1.

Respondent's region and roles

Table 1 lists the survey participants' countries, the organizations represented, and ANP or APN roles described.

Four of the seven World Bank regions are represented in the sample (Table 1). Survey responses were from Countries described as Sub-Saharan Africa ($n = 12$), followed by East Asia and the Pacific ($n = 5$), and South Asia ($n = 5$). The smallest number of responses were received from Latin America and the Caribbean ($n = 2$). Organizations represented included NRA ($n = 14$), Hospital and healthcare ($n = 5$), NNA ($n = 3$), Other Government Agency ($n = 1$), and University ($n = 1$). Five LICs and 19 LMICs are represented. Of the 24 responses completed, 19 were submitted in English, three in French, and two in Spanish. This demonstrated that the multilingual survey allowed a broader range of countries to be surveyed.

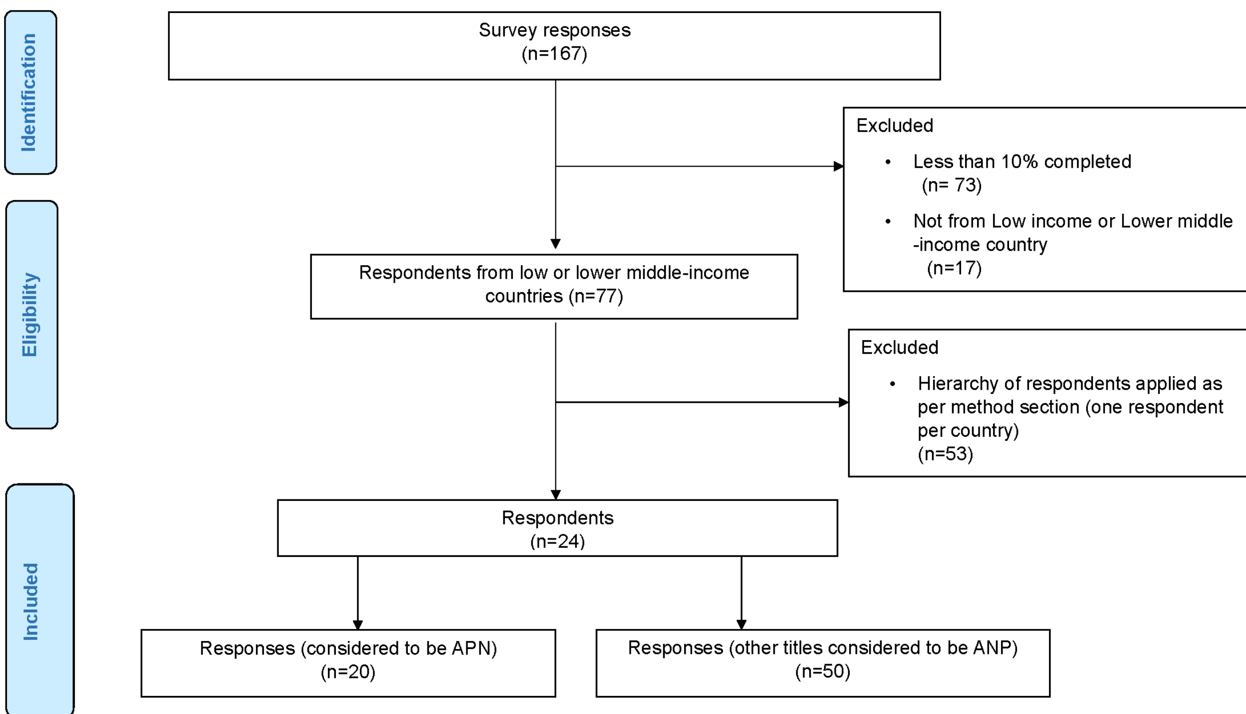

FIGURE 1 Responses

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TABLE 1 Country, income, source of information, nursing roles and the year created

			Roles considered APN			Roles considered ANP									
Country	Income	Organization	APN*	CNS	NP	NC	NS	SN	Community nurse +	NA+	Nurse +	Nurse midwife +	Nursing officer +	Orientator +	Public health nurse +
Afghanistan	LIC	NRA	—	—	—	—	—	—	—	—	#	—	—	—	—
Bangladesh	LMIC	UNI	—	—	—	—	—	—	—	—	Unsure	—	—	—	—
Bhutan	LMIC	NRA	—	—	—	—	—	—	—	—	Unsure	—	—	—	—
Bolivia	LMIC	NNA	—	—	—	—	2001	2001	—	—	—	—	—	2001	
Burkina Faso	LIC	OGA	—	—	—	—	Unsure	Unsure	—	—	—	—	—	—	—
Cote d'ivoire	LMIC	NRA	Unsure	—	Unsure	—	Unsure	Unsure	—	—	1991	—	—	—	—
El Salvador	LMIC	NRA	—	—	Unsure	—	—	—	—	—	*	—	—	—	—
Gambia	LIC	NRA	—	—	—	—	—	—	—	—	—	—	Unsure	—	—
Ghana	LMIC	NRA	2014	—	2014	2014	2014	2014	—	—	—	Unsure	—	—	Unsure
India (Tamil Nadu)	LMIC	NRA	—	—	—	—	—	—	—	—	#	—	—	—	—
Kenya	LMIC	NNA	—	2020	—	—	—	2020	1978	—	—	—	—	—	—
Kiribati	LMIC	HHC	—	—	Unsure	—	—	Unsure	—	—	Unsure	—	—	—	—
Lesotho	LMIC	HHC	—	—	Unsure	Unsure	Unsure	—	—	—	—	—	—	—	—
Liberia	LIC	NRA	—	—	—	—	2019	2019	—	—	—	—	—	—	—
Malawi	LIC	NRA	2018	—	2018	—	2018	—	—	—	Unsure	—	—	—	—
Myanmar	LMIC	NNA	1971	1971	—	—	1971	1971	—	—	Unsure	—	—	—	—
Nepal	LMIC	NRA	—	—	—	—	—	—	—	—	2016	—	—	—	—
Nigeria	LIC	HHC	—	—	Unsure	Unsure	Unsure	—	—	—	—	—	Unsure	—	—
Papua New Guinea	LMIC	NRA	—	Unsure	Unsure	Unsure	Unsure	Unsure	—	—	—	—	—	—	—
Senegal	LIC	HHC	—	—	—	—	—	—	—	—	—	—	1960	—	—
Sierra Leone	LIC	HHC	—	—	—	—	—	—	—	Unsure	-	Unsure	—	—	—
Solomon Islands	LMIC	NRA	—	—	—	Unsure	Unsure	—	—	—	—	—	—	—	—
Eswatini/ Swaziland	LMIC	NRA	Unsure	—	Unsure	—	—	—	Unsure	-	Unsure	Unsure	—	—	—
Vanuatu	LMIC	NRA	2017	2017	2017	2017	2017	2017	—	—	—	1987	-	—	—
		Totals	6	4	10	6	12	10	2	1	10	4	3	1	1

Abbreviations: #, not APN role but unnamed and year created given; —, not nominated; +, role nominated within the survey identified by the participant; APN*, Advanced Practice Nurse; CNS, Clinical Nurse Specialist; HHC, Hospital and healthcare; LIC, Low Income Country; LMIC, Lower Middle-Income Country; NA, Nurse Anesthetist; NC, Nurse Consultant; NNA, National Nursing Association; NP, Nurse Practitioner; NRA, Nursing Regulatory Authority; NS, Nurse Specialist; OGA, Other Government Agency; SN, Specialist Nurse; UNI, University or College.

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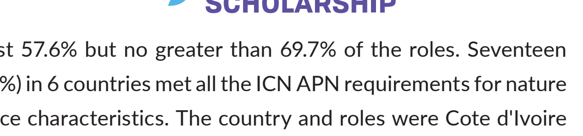

ANP and APN roles present

ANP and APN role titles identified by survey participants as present in their country were Advanced Practice Nurse or APN ($n = 6$), CNS ($n = 4$), NP ($n = 11$), NC ($n = 6$), NS ($n = 12$), and SN ($n = 10$). Sixteen countries identified at least one of the named APN roles.

Self-nominated roles not considered APN using the nominated titles but having components or characteristics related to advanced practice nursing were Community Nurse (Health or Mental health) ($n = 2$), Nurse (Anesthetist) ($n = 1$), Nurse (clinical, general, practitioner, professional, registered, staff or state) ($n = 10$), Nurse Midwife ($n = 4$), Nursing Officer (senior/principal) ($n = 3$), Orientator ($n = 1$), and Public Health Nurse ($n = 1$). Sixteen countries described at least one role with another title.

A total of 72 roles were described. Most representatives were unsure when the described roles were developed (APN roles $n = 10$ and self-nominated roles $n = 10$).

The year roles were created

Those countries that identified named APN roles as present indicated these roles were created within the last 20 years ($n = 6/7$). Roles identified as other nursing roles were reported to have been developed earlier, between 1960 and 1997 ($n = 5/7$).

Reason for role creation

Caring for underserved populations was the most common reason for developing the APN ($n = 13$) and other nursing roles ($n = 7$). The second most reported reason was primary care physician shortage necessitated APN ($n = 12$) and other roles ($n = 5$).

Educational preparation

Concerning the educational requirements, program accreditation, and credentials for the 70 identified roles, only seven countries and 12 (16.7%) roles met all educational requirements. The countries whose roles met the criteria were Bolivia (Orientator), Cote d'Ivoire (SN role), El Salvador (unnamed nurse), Ghana (NM/ Public health Nurse), India (unnamed nurse), Malawi (roles APN*, NP NS) and Nigeria (NC NP, NS roles). Overall, 18% of positions required a master's degree program or higher level of education. Fifty-five (83%) had some form of accreditation for the necessary education, and 33 (50%) linked to some form of credentialing.

Nature of practice

Nature of practice characteristics of these ANP and APN roles varied. Each of the individual practice characteristics was reported as present in at least 57.6% but no greater than 69.7% of the roles. Seventeen roles (25%) in 6 countries met all the ICN APN requirements for nature of practice characteristics. The country and roles were Cote d'Ivoire (APN*, NS, SN), Kiribati (NP, SN, and other nurses), Myanmar (CNS, NS, SN, and other nurses), Nigeria (NC, NP, NS), Papua New Guinea (CNS, NC), and Myanmar (APN*, CNS, NS, SN, and other nurses).

Determining factors related to the level of practice of ANP and APN were also assessed. Common amongst these were education (41%), licensure (37%) and state or federal regulation (28%). Amongst APN roles, licensure (40%) was the highest factor, followed by education (30%) and then state or federal regulation (10%). For ANP roles, education (46%), was followed by licensure (36%) and state or federal regulation (36%).

Regulatory mechanisms

Regulatory mechanisms were grouped into direct- and indirect-practice-related. Direct practice-related characteristics can be seen in the delivery of care. This includes diagnosis, prescribing (medication and treatment), referral and admission, and discharge from care. Indirect practice-related regulatory mechanism characteristics support or inform care. Examples of indirect practice-related regulatory mechanism characteristics are legislation, regulation, and title protection.

There was significant variation in the uptake of these characteristics within countries. Three countries (12.5%) met all regulatory requirements. These countries were Malawi (APN* and other nurse roles), Solomon Islands (NS and other nurse roles), and Vanuatu (SN). The presence of individual direct practice-related regulatory mechanism characteristics ranged from 51.5% to 71.2%, and non-direct practice-related regulatory mechanism characteristics ranged from 37.9% to 51.5% in six countries.

Relationship between master's level education or above with practice-related characteristics

When considering whether practice-related characteristics were present for roles that required master's level education or higher, all of the named APN roles met between 93% and100% of practice characteristics. In contrast, only 25% of the other self-nominated roles or ANP had 81% or more of the practice characteristics. Unfortunately, none of the roles identified CNS role within this study met this criterion, so it could not be added.

DISCUSSION

Respondent's region and roles

Global studies have compared and identified ANP or APN roles. Pulcini et al. (2010) reviewed the characteristics of education, practice, and regulation in 32 countries and all seven world regions,

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including one LICs and four LMICs (Pulcini et al., 2010). More recently, Heale's (2015) review examined 24 countries from all seven regions. This review identified two countries from LICs and two from LMICs.

Regional studies have also addressed aspects of these characteristics. Zug et al. 2016 reviewed 26 Latin America and Caribbean countries. Within this group, four were from LMICs (Zug et al., 2016). Kim et al. 2021 review of ANP and APN roles in the Western Pacific and Asia collected data from 14 countries, of which seven were LMICs (Kim et al., 2021). Recently, Wheeler et al. (2022) surveyed 23 countries in relation to APN education, practice, and regulation. The majority of responses within this global study again were from high income countries with only three from LMICs.

Within this study, there were 77 respondents from five LICs and 19 LMICs. After applying a hierarchal approach to select a single survey from each country, responses were from 24 countries in four regions, and participants were mainly from their NRA. This makes this study the most representative and novel to date of any investigation relating to ANP or APN roles in LICs and LMICs.

The year roles were created

The evolution of these nursing roles appears to be similar to those of high-income countries, albeit delayed (approximately 30 years from the initial start date) as higher-income countries began their development in the 1960s and further refined them into the early 2000s. Within this study, the majority of APN roles described were reported to have only developed in the last 20 years. LICs and LMICs will require further support to develop these roles to a similar level as those in high-income countries.

Reason for role creation

The main reason for developing such roles in LICs and LMICs was to care for underserved populations. This differs from many high-income countries, where APN functions address physician or specialty care shortages, which was the second main reason for LICs and LMICs in this study. This may reflect the accepted and established work environment in these countries.

A systematic comparison of areas of practice of these roles globally cannot be performed because there is no formal publication with information collated regionally or within the low, lower-middle, upper-middle- and high-income countries.

Educational preparation

As previous research has shown and this study confirms, there is significant variation in the education requirements for ANP and APN (Beauchesne et al., 2020; Heale & Rieck Buckley, 2015; Kim et al., 2021; Pulcini et al., 2010; Wheeler et al., 2022; Zug et al., 2016). This study found that APN roles in the majority of participating LICs and LMICs did not meet all the educational requirements of the ICN APN guidelines, mainly being at master's level or above. Nevertheless, this does not preclude these nurses from obtaining knowledge and implementing practice-related skills, as most of the ANP and APN roles identified met some of the practice characteristics.

Nature of practice

Other studies identifying ANP or APN role practice did not directly relate to all the nature of practice characteristics (Heale & Rieck Buckley, 2015; Kim et al., 2021; Pulcini et al., 2010; Wheeler et al., 2022; Zug et al., 2016). Within this study, about 50% of all the roles described addressed each of the characteristics of the nature of practice. Considering this was no higher than 68% per practice characteristic, this would indicate a possible disparity in knowledge and thus skill in these roles. This finding portrays a potential inequity in either educational preparation or why specific practice characteristics are implemented and warrants further investigation.

ANP and APN determinants of practice favored education. Although not explicitly reviewed in the research literature, the role of education as a basis for ANP and APN roles has long been touted (Ackerman et al., 1996; Beauchesne et al., 2020; Jeffery et al., 2020; Manley, 1997; Sheer & Wong, 2008). Even though the requirement of education in determining nursing practice is self-evident, the finding of this study highlights its importance. The value of licensure was also emphasized as a determining factor. This is in keeping with regulatory requirements seen in such roles globally (Heale & Rieck Buckley, 2015).

Regulatory mechanisms

There was significant variation in the presence of regulatory mechanism characteristics. Direct practice-related regulatory mechanism characteristics were more frequently present than those considered to be indirect practice. This possibly reflects that direct practice-related regulatory mechanism characteristics either preceded formal regulation or are more visible than indirect ones. Moreover, only 25% of all roles met all these requirements. Again, this variation of characteristics present may indicate the need for further education to address potential gaps in service. This variation has been described in other global studies (Heale & Rieck Buckley, 2015; Kim et al., 2021; Pulcini et al., 2010; Wheeler et al., 2022; Zug et al., 2016).

Relationship between master's level education or above with practice-related characteristics

There was an association between APN roles with master's level education or above and the presence of practice-related characteristics. Areas that need to be addressed through education and skill upgrade have been highlighted in this study. The level and quality of

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education and components (including its accreditation and credentialing) are considered vital for any nursing practice, especially those practicing at an advanced level. This reflects the WHO strategic direction for Nursing and Midwifery to support nursing education and enhance practice (World Health Organization, 2021a).

This study suggests a lack of regulation for ANP and APN roles in some LICs and LMICs, which may hamper the development, education and practice of such roles. As regulation is required once nurses develop advanced clinical abilities beyond their original SOP. As a result, it is incumbent on the NRA responsible for the jurisdiction to ensure that these nurses' skills and education are accredited and credentialed to protect the public. Again, this is consistent with the ICN's Report to the World Health Assembly 2021, which clearly outlines policy considerations for all countries' support of advanced and specialist nurses in relation to practice and regulation (Burton, 2021).

Complex geopolitical, cultural, and social issues also influence such decisions (Allen et al., 2021; Berger & Miller, 2021; World Health Organization, 2018). Future ANP and APN research should investigate all influences related to nursing practice within these countries or internationally. This would require the involvement of local NRA, NNA, hospitals and healthcare facilities, universities, colleges, and intergovernmental organizations like the (WHO or United Nations) and nongovernmental organizations like ICN.

Limitations

The survey distribution could have been a potential limiting factor. Some countries had multiple responses, whereas responses were not received from other countries. This limitation has been described in similar studies (Pulcini et al., 2010).

There are a possible 20 official languages of the countries targeted. Only three languages were utilized, consistent with languages used within official ICN publications and the most common languages within the targeted regions. However, this initial language barrier may have dissuaded potential responses.

Finally, the COVID-19 pandemic may have affected the uptake of the number of participants in this survey. Although not foreseen when developing the study, the pandemic was prevalent during the study administration period. Given other priorities, these nursing experts (regulators, nursing associations, universities, and healthcare) from within these countries would have been facing, the response rate was expected.

CONCLUSION

This study is the most comprehensive to date to capture nursing experts' knowledge of ANP or APN in their LICs or LMICs. As such, it can provide an overview of these roles within the 24 countries examined. Findings illustrate how these nursing roles have been implemented to address service gaps and highlight disparities in education, practice, and regulation compared to international guidelines.

Given competing challenges for the healthcare dollar, it may be difficult to obtain financial support in developing such roles from within these countries. Maintaining and increasing support from organizations and universities from high-income countries to assist the development and expansion of educational programs to upskill these nurses would be vital to increasing such roles and thus addressing the health needs of the population they serve. Although it is evident that education is required to upskill these nurses, further research is needed to identify the necessary resources so these nurses can meet their full potential SOP, mainly when individual countries may require a tailored response.

CLINICAL RESOURCES

- Advanced Practice Nursing: An Essential Component of Country Level Human Resources for Health—https://www.who.int/workforcealliance/knowledge/resources/icn_policy_brief/en/
- Health workers with right skills in right places needed—https://www.oecd.org/health/health-workers-with-right-skills-in-right-places-needed.htm
- Global Regulatory Atlas—https://www.regulatoryatlas.com/
- Global strategic directions for nursing and midwifery 2021–2025—https://www.who.int/publications/i/item/9789240033863
- International Council of Nurses Members' Address list—https://www.icn.ch/sites/default/files/inline-files/Public_NNAs%20Address%20list_Feb_2022_Eng.pdf
- International Council of Nurses. Guidelines on Advanced Practice Nursing—https://www.icn.ch/system/files/documents/2020-04/ICN_APN%20Report_EN_WEB.pdf

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CONFLICT OF INTEREST

The authors declare that they have no competing interests.

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