


Low- and lower middle-income countries advanced practice nurses: an integrative review

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Aim: To review published literature descriptions of advanced practice nurses' roles in low- and lower middle-income countries.

Background: Advanced practice nurse roles have the potential to address insufficient healthcare resources in low- and lower middle-income countries.

Introduction: This integrative review highlights advanced practice nurses' roles in the delivery of healthcare services in low- and lower middle-income countries.

Methods: Three electronic databases PubMed, CINAHL complete and ProQuest Health & Medicine were searched. No limits by year or language were set. The names for low- and lower middle-income countries and combinations 'related to advanced practice nurses' titles were used to identify papers. In addition, a review of publication type was performed. Themes found within the publications were assessed against the advanced practice nurses' International Council of Nurses' characteristics. An integrative review facilitated an appraisal of the papers identified.

Results: The initial search identified 5778 publications in 16 languages. This number was reduced to 23, from 18 low- and lower middle-income once exclusion criteria were applied. Six publications were from 1977 to 1999, and six between 2000 and 2010, with the remaining 11 from 2011 to 2018. Zambia had the most publications. Notably, 63 countries were not represented. Of those meeting inclusion criteria, the majority addressed education with a lesser extent focusing on practice and regulation of advanced practice nurse's roles. The majority were published during the last decade.

Discussion: This review of the published literature identified advanced practice nurses' roles and function within some healthcare systems. However, not all components were reported. Examination of the grey literature could provide additional information about the actual and potential benefits of advanced practice nurses' in low- and lower middle-income countries.

Conclusion: The published literature that referred to advanced practice nurses' identified their contribution to positive impacts on health care over the last 40 years. However, with only 11 publications identified in the last 7 years, further review is required to understand the advanced practice nurses' roles in these countries.

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Implications for nursing and/or health policy: Further development of advanced practice nurses' in low- and lower middle-income countries is supported by the lack of published literature.

Keywords: Advanced Practice, Credentialing, Developing Countries, Nursing Education, Nursing Regulation, Nursing Policy, Registration, Workforce Issues

Introduction

Globally, it is known that countries with low gross national income (GNI) have difficulty delivering healthcare services (Pickett & Wilkinson 2015; UNICEF 2016; WHO 2013). The development and introduction of advanced practice nurse (APN) roles to improve access and delivery of healthcare services has been recommended in these countries (Bryant-Lukosius & Martin- Misener 2016; Stark et al. 1999; WHO 2016a; WHO 2016b; WHO 2016c). The following paper is a review of the published literature of APN roles and contributions to health care and outcomes, in low- and lower middle-income countries.

Background

The World Bank has categorized countries according to four levels of income: 'high-, upper middle-, lower middle- and low-income countries'. In low-income countries (LICs), per capita earning is less than \$995 United States dollars (USDs) annually (World Bank Group 2018a). Among lower middle-income countries (LMICs), earnings range from \$996 to \$3895 (USD) annually (World Bank Group 2018c).

Low and LMICs are recognized as having poorer health outcomes for their population due, in part, to insufficient healthcare resources (Bitton et al. 2017). International efforts have attempted to address this disparity for LICs and LMICs through healthcare workforce development initiatives (Bodenheimer & Bauer 2016; Bryant-Lukosius & Martin- Misener 2016; Campbell et al. 2013; Moreira & Lafortune 2016; OECD 2016; United Nations 2017; WHO 2016a; WHO 2016b; WHO 2016c).

Registered nurses (RNs) have achieved sustainable changes through a variety of initiatives based on their understanding of the local community, education and ability to expand their skills and knowledge to address identified healthcare needs (Horton et al. 2016). Additionally, long established models of APN education and practice from high-income countries (HICs) have been adapted as a basis for new care delivery services in other countries (Shamian & Ellen 2013; Zug et al. 2016). The nurse practitioner (NP) role is seen as the most prominent of all APNs and has been examined in detail. Nurse practitioners or advanced practice nurses are described by the International Council of Nurses (ICN) as:

...a registered nurse who has acquired the expert knowledge base, complex decision-making skills and clinical competencies for expanded practice, the characteristics of which are shaped by the context and/or country in which s/he is credentialed to practice. A master's degree is recommended for entry level. (ICN Nurse Practitioner-Advanced Practice Nursing Network 2002)

Within the definition, the ICN has also described categories to characterize NP/APN roles globally. It should be noted that the ICN NP/APN definition and characteristics are offered as recommendations and are not a requirement in all countries. The categories include regulation, practice and education.

- Regulation is central to support this form of nursing practice. Regulatory mechanisms such as licencing by nursing regulatory authority, legislation to protect the title 'advanced practice nurse or nurse practitioner' as well as approved APN competencies to inform practice are considered to be key.
- Education preparation must be at a higher level (a masters level is preferred), required to be accredited (by the nursing regulatory authority or equivalent) and may lead to a process of credentialing of this level nursing practice.
- Practice should not only incorporate advanced health assessment and diagnostic skill beyond that of the registered nurse (RN) but also be informed by their advanced accredited education, current research and thus best practice. The NP or APN should demonstrate professional autonomy, independently managing their practice and provide the first point of contact for care and consultant services (ICN Nurse Practitioner-Advanced Practice Nursing Network 2002).

However, the ICN definition and characteristics are offered as recommendations and although it is commonly referred to when addressing APN issues, globally, they are not a requisite for any country.

Over 70 countries globally have identified APN roles (ICN Nurse Practitioner-Advanced Practice Nursing Network 2018b). There is variation in the healthcare environments in which APN roles are operationalized and the specific titles used to identify these nurses. Clinical nurse specialist (CNS) and NPs are most commonly referred to in the literature. Other titles include nurse specialist (NS), specialist nurse (SN), among others (Duffield et al. 2009; European Specialist Nurse Organisation 2015; Pulcini et al. 2010). advanced

practice nurse titles have been found to use the identifier 'nurse' in combination with words such as 'advanced', 'consultant', 'specialist' or 'practitioner' (Delamare & Lafortune 2010; Duffield et al. 2009; Heale & Rieck Buckley 2015; ICN Nurse Practitioner-Advanced Practice Nursing Network 2018a; Maier & Aiken 2016; Maier et al., 2017; Pulcini et al. 2010; Sheer & Wong 2008; Stordeur & Léonard 2010). This is important to consider in the identification of APN roles in non-English speaking countries. It is uncertain whether roles such a NP or CNS exist or directly translate to APN roles, as defined by the ICN. This may be further complicated by the practice of using the title 'nurse' interchangeably with 'nurse practitioner' in clinical settings internationally.

Justification of RN roles and titles being categorized as APN is widely debated and complex. Some recognized APN roles meet the ICN definition and characteristics whereas others do not (Carney 2016; Carryer et al. 2018; Dowling et al. 2013; Gardner et al. 2016; Kleinpell et al. 2014; Lamb et al. 2018; Lowe et al. 2012; Scanlon et al. 2015; Schober et al. 2016; Stasa et al. 2014). Nurse midwife, nurse anaesthetist and registered nurse first assistant titles fall within this debate. Nurse midwife is often used to refer to lay non-nurse midwives. In some countries, midwifery is categorized as a separate profession. The title, nurse anaesthetist and registered nurse first assistant in the countries identified within this review are associated with episodic care typically performed during a medical procedure where autonomy of nursing practice is not absolute or does not fully comply with areas of practice referred to in the ICN NP/APN definition. Additionally, within the countries reviewed, there have been a plethora of publications specifically focusing on the nurse midwife, nurse anaesthetist and registered nurse first assistant roles. This is not to say these are not APN roles within a specific country context of practice, rather it would detract from reviewing other nursing roles internationally which are commonly identified as APN.

Terms and phrases are also commonly associated with APN practice, including extended/expanded practice or 'task shifting or sharing', 'mid-level providers' or 'physician extenders'. These terms have been and continue to be used to describe aspects of practice for APNs and RNs (Hoyt 2012; OECD 2016). The use of these terms adds to the confusion between the roles of APNs and RNs within the nursing profession and the professional healthcare community (Gardner et al. 2007; Hoyt 2012; Stasa et al. 2014).

Regardless of controversies surrounding the title/role, APNs have a documented record of delivering high-quality health care in collaboration with and when compared to more traditional medical models of practice (Collins et al. 2014; Hughes et al. 2015; Kapu et al. 2014; Martin-Misener et al. 2015;

Martsof et al. 2015; Newhouse et al. 2011; Rich 2016). The relatively lower cost for educating APNs compared with medical providers (Riley et al. 2016) and the improved outcomes associated with their delivery of care (Hughes et al. 2015; Martin-Misener et al. 2015; Martsof et al. 2015; Rich 2016) makes these RNs ideal to address identified healthcare disparities in LIC and LMICS countries in both primary and specialty healthcare settings.

Methods

Nursing roles regarded as being 'APN' implemented in LICs and LMICs were reviewed in the published literature was examined. An integrative review method was utilized as it provides a systematic and rigorous process which is designed to enable a comprehensive understanding of problems in health care and policy, by incorporating and synthesizing a number of data sources (Whittemore & Knafl 2005).

Literature searches of PubMed, CINAHL complete and ProQuest Health & Medicine electronic databases were conducted in October 2018. The search used the terms low-income countries, lower middle-income countries as well as identifiers for 34 LICs (World Bank Group 2018a) and 47 LMICs (World Bank Group 2018b) as well as including the identifier of 'nurse' in the title with combinations including the words such as 'advanced', 'consultant', 'specialist', 'clinician' or 'practitioner' as outlined in Appendix S1.

Results from the database searches were not limited by year of publication or simply to the English language. If non-English language articles were found, titles and abstracts, or if required the entire article, was translated into English via Google translate© to determine relevance. All included publications were reviewed as full text by one author. Data extraction included identification of the country of origin, the name used to describe the APN role and how the description in each particular publication related to the ICN characteristics of education, practice and regulation was determined. Additionally, a review of publication's type was performed. If the publication was research then the type of study, number of participants, a summary of each publication was recorded.

All references found were downloaded into an Endnote© library (citation manager), and duplicates were removed. The review of the publication's title, abstract and then the paper itself was performed to identify the country and APN title. Included articles were searched and reference lists were examined for articles, which could be included in the review.

The APN titles and roles identified within the publications were taken at face value. Themes found within the publications were assessed against the ICN NP/APN definition and characteristics.

Exclusion criteria

To ensure that only the nursing roles in question were to be reviewed, exclusion criteria were required to further refine publications discovered during the database search. Roles identified as not originating from RN practice or those which included 'nurse midwife', 'nurse anaesthetist' and 'registered nurse first assistant' were excluded from the literature search. Additionally, publications were excluded if they pertained to humanitarian missions, military deployment or student placement that originated outside the LIC or LMICs. Publications were excluded when country-specific data for APN practice were not identified or outlined proposed APN workforce initiatives rather than current practice within the country.

All publications reviewed were full text. When reviewing each of the publications, country of origin and name of APN roles was noted. Additionally, how each particular publication related to the ICN NP/APN characteristics of education, practice and regulation was determined through carefully reading each document and categorizing information from each into appropriate themes in an excel sheet.

Results

The initial search identified 5778 publications from the three electronic databases. The initial search found 16 languages. After English, French and Hebrew were the most dominant languages. However, once exclusion criteria were applied, this number was reduced to 23, as outlined in Figure 1.

The review of the literature found 23 publications which identified 18 LIC and/or LMICs. The publications were categorized, and the results were tabled in reverse chronological order: Table 1. There were six publications published between 1977 and 1999, and six between 2000 and 2010, with the remaining 11 published from 2011 to 2018. In relation to countries included in the review, Zambia had the most publications with a total of 16% ($n = 4$) of the total publications. Using the World Bank definition of world, regions of sub-Saharan Africa were described in 61% of the publications ($n = 14$), followed by East Asia and Pacific 26% ($n = 6$) and South Asia 17% ($n = 4$) (World Bank Group 2018c). Notably, 63 countries were not represented within the publications found.

Regulation

There was also variability in the regulation of practice by professional regulatory authorities. One publication identified a local regulatory process for described APN roles for Angola, Bolivia and Sierra Leone (Heale & Rieck Buckley 2015). Other publications identified an established national requirement but did not describe a current process (Dias & Hooda 2018; Suba & Scruth 2015).

Practice

Publications discussed health services provision for the population and identified gaps in the service in which the APN role functioned (Achema & Ncama 2016; Bienes 2006; Bruce et al. 2017; Huque 1993; Llamanzares 1977; Manasia et al. 2014; Mathunjwa 2000; Mathunjwa & Potgieter 2004; Moran 1992; Morrow & Amoako 1980; Msidi et al. 2011; Mullan & Frehywot 2007; Ortin 1978; Schaepe et al. 2011). The practice of nurses was identified by title and area of specialty practice. Within the publications, titles such as NP ($n = 13$), NS ($n = 5$), CNS ($n = 3$) and SN ($n = 3$) were most frequently identified. Areas of specialization included human immunodeficiency virus and acquired immunodeficiency syndrome ($n = 4$), primary care ($n = 5$) and community health ($n = 3$) as outlined in Table 1. Despite describing aspects of care delivered within the title and specialization, the full scope of practice was never described in any of the articles included in this review.

Education

APN educational requirements described within the LICs and LMICs varied in length from 48 hours to 3 years. The type of education ranged from continuing education and non-accredited post-registration diploma to masters within and outside the country in which they operated: see Table 1 (Bruce et al. 2017; Bruce et al. 2018; Dias & Hooda 2018; Heale & Rieck Buckley 2015; Huque 1993; Mathunjwa 2000; Mathunjwa & Potgieter 2004; McCulloch et al. 2016; Moran 1992; Morrow & Amoako 1980; Msidi et al. 2011; Mullan & Frehywot 2007; Munjanja et al., 2005; Sivaraman 1979; Wahidi 2010). A number of publications referred to the necessity of standards for practice or the appropriateness of education in the identified APN practice, but none were nationally endorsed (Dias & Hooda 2018; Heale & Rieck Buckley 2015; Manasia et al. 2014; Mathunjwa 2000; Msidi et al. 2011; Suba & Scruth 2015).

Discussion and recommendations

Once exclusion criteria were applied to the 5778 records, manuscripts from 18 countries were included. Sixty-three countries were not represented in the published literature. This may indicate that APNs have little or no presence in these countries.

The dramatic drop in the number of articles from initial search resulted from the search terms used. As terms to describe APNs in the literature lacked consistency, we deliberately started with a broad set of search terms. Therefore, the initial search terms included articles which may be considered APN, but which were subsequently excluded, such as those

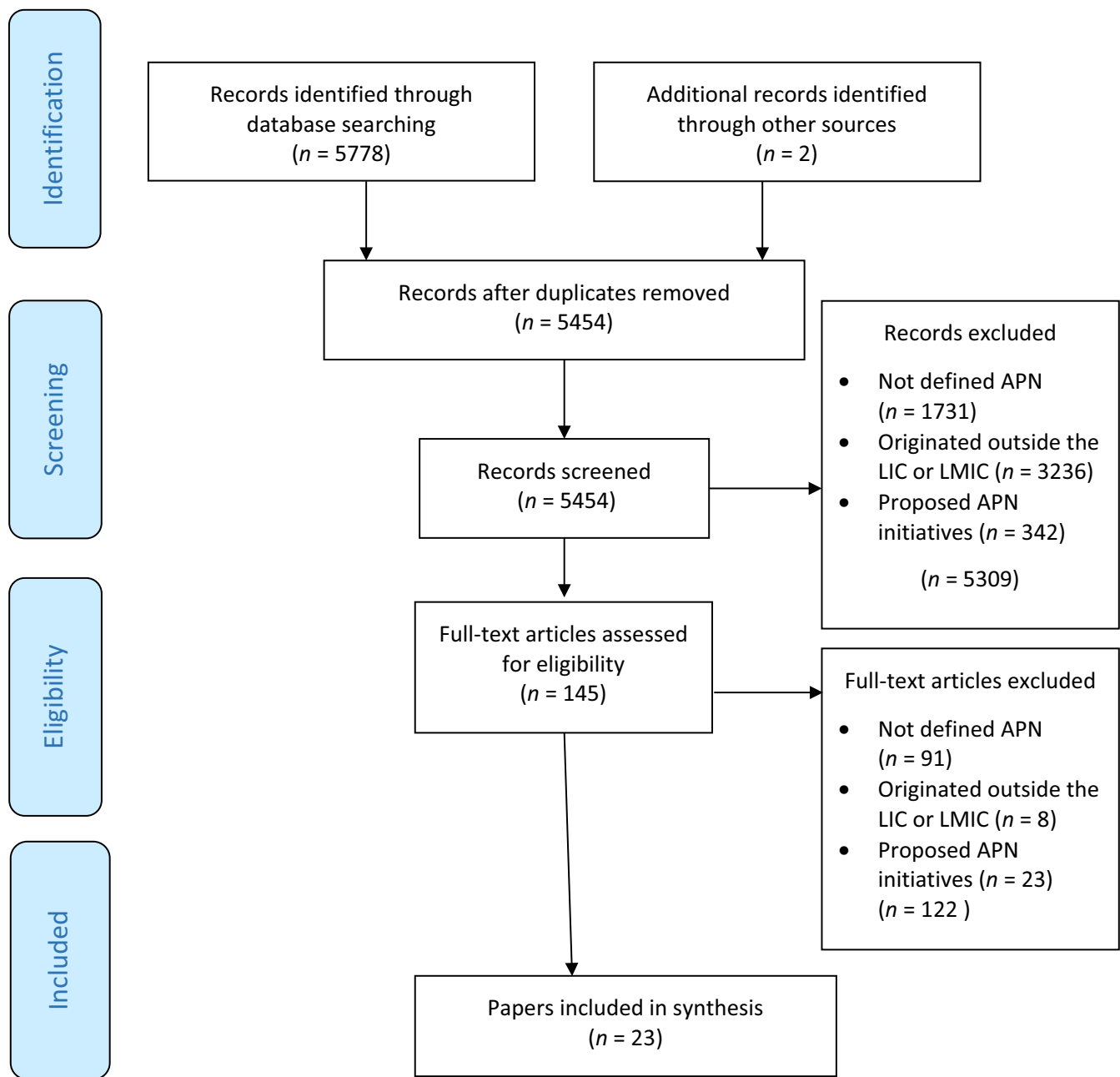


Fig. 1 Literature review

reporting on programmes originating from non-LIC and LMICs or being about other nursing roles excluded from the search.

When search terms were applied to the databases, it did not block articles which may have identified APN roles but were subsequently excluded, such as articles describing roles in middle- or high-income countries or other nursing and

midwifery roles. Further, the exclusion of articles referring to non-RNs, nurse midwife, nurse anaesthetists and RN first assistants removed a substantial number of articles ($n = 1403$). Although these were considered APN roles in some countries and as such were identified as APN in databases searched, they were not consistent with our criteria that reflect ambiguity in relation to descriptions of APN roles and

Table 1 Summary of articles found in integrative review

Author year	Article	Summary	Design sample population	Country	APN roles identified	Specialization	ICN NP/APN characteristics	Regulatory mechanism
						Education preparation		Nature of practice
Bruce et al. (2018)	<i>Intercountry Master's Degree In Nursing: Policy Implications For The Mozambican Health System</i>	<i>An evaluation of education provided to nurse specialists</i>	Mixed methods (n = 12)	Mozambique	• NS	• Maternal and neonatal health • Critical care and trauma	<ul style="list-style-type: none"> Advanced level (Masters) No formal recognition of educational programmes, licensure, registration, certification and credentialing Hospital-based certification programme (Not masters level) No formal recognition of educational programmes and credentialing 	<ul style="list-style-type: none"> Integration of research, education to practice Skills not fully identified No further information found in cited paper (NFI)
Dias & Hooda (2018)	<i>Setting Up A Cardio Thoracic Nurse Practitioner (NP) Program in Pakistan: Challenges Encountered And Lessons Learnt</i>	<i>Outline of the development of a nurse practitioner programme</i>	Case study (n = 5)	Pakistan	• NP	• Cardio thoracic	<ul style="list-style-type: none"> Integration of education to practice Advanced clinical competencies but not recognized nationally NFI 	• NI
Bruce et al. (2017)	<i>Advancing Nursing Scholarship: The Mozambique Model</i>	<i>An evaluation of education provided to Specialist Nurse</i>	Case study (n = 11)	Mozambique	• SN	• Maternal and neonatal health • Critical care and trauma	<ul style="list-style-type: none"> Advanced level (Masters) No formal recognition of educational programmes, licensure, registration, certification and credentialing 	<ul style="list-style-type: none"> Integration of research, education to practice Advanced skills but not fully identified NFI
Achena & Naama (2016)	<i>Exploring Family-Centered Care for Children Living With HIV And AIDS In Nigeria</i>	<i>Exploring the role of nurse practitioners there in family-centred care in supporting children living with HIV and AIDS</i>	Qualitative research (n = 36)	Nigeria	• NP	• HIV/AIDS	<ul style="list-style-type: none"> NI 	• NI

Table 1 Continued

Author year	Article	Summary	Design sample population	Country	APN roles identified	Specialization	ICN NP/APN characteristics	Nature of practice	Regulatory mechanism
McCulloch et al. (2016)	Supervisors' Perceptions Regarding the Zambian HIV Nurse Practitioner Program And Integrating Graduates Into The Zambian Health System: A Descriptive Cross-Sectional Survey	Analyse the perceptions of supervisors of HIV graduates of HIV nurse practitioner programme	Cross-sectional survey (n = 60)	Zambia	• NP	• HIV/AIDS	• Educational preparation at advanced level • Zambian Ministry of Health and Zambian General Nursing Council authorized educational programme • NFI	• NI	• NI
Heale & Rieck Buckley (2015)	An International Perspective Of Advanced Practice Nursing Regulation. International Nursing Review	The findings demonstrated inconsistency in regulation of APN and called for a stronger focus on monitoring regulation as well as dissemination of evidence to support advanced practice nursing to further influence its development within health policy	Descriptive study (n = 36)	Angola Bolivia Mongolia Togo	• CNS • NP • NP • APN	• NI • NI • NI • NI	• Masters level • NFI • Masters and post-masters certificate • NFI • NI • Masters level education • Post-basic certificate (non-academic) • NFI • Post-basic certificate (non-academic) • NFI • Post-basic certificate (non-academic) • NFI	• NI • NI • NI • NI	• Role regulated but unclear how • Role unregulated but unclear how • Role regulated but unclear how • Role unregulated but unclear how • NI • Post-basic certificate (non-academic) • NI • Post-basic certificate (non-academic) • NI • Post-basic certificate (non-academic) • NFI

Table 1 Continued

Author year	Article	Summary	Design sample population	Country	APN roles identified	Specialization	ICN NP/APN characteristics	Regulatory mechanism	
							Education preparation	Nature of practice	
Suba & Scruth (2015)	A New Era of Nursing In Indonesia And A Vision For Developing The Role Of The Clinical Nurse Specialist	Compare and contrast the Indonesia nurse specialist with specialist from the USA	Literature review (NA)	Indonesia	• CNS	• Maternity • Community health	• Masters • NFI	• NI	• Role unregulated but unclear how
Mulenga et al. (2015)	Follow-Up Evaluation of First Two Cohorts of Graduates Of The Zambian Program	Evaluation of perceptions of the graduates, their supervisors and their clients of the training programme and assessment of the quality of care provided based on chart audits first two cohorts of the Zambian HIV nurse practitioner	Descriptive study (n = 128)	Zambia	• NP	• HIV/AIDS	• 1-year post-basic education preparation	• Advanced health assessment skills, decision-making skills and diagnostic reasoning skills • Advanced clinical competencies but unclear if they are recognized • NFI	• NI
Manasia et al. (2014)	Therapeutic Hypothermia Post-Cardiac Arrest: A Clinical Nurse Specialist Initiative in Pakistan	This pilot project of hypothermia in adult post-CA patients was implemented in a university hospital in Pakistan by a clinical nurse specialist	Case series (n = 3)	Pakistan	• CNS	• Critical Care	• Unknown length of post-basic education preparation • NFI	• NI	• Role unregulated but unclear how
Msidiri et al. (2011)	The Zambian HIV Nurse Practitioner Diploma Program: Preliminary Outcomes from First Cohort Of Zambian Nurses	Description of project development. Findings may assist in nurse practitioner curriculum development locally and regionally	Descriptive study (n = 30)	Zambia	• NP	• HIV/AIDS	• Four months post-basic education preparation • NFI	• NI	• NI

Table 1 Continued

Author year	Article	Summary	Design sample population	Country	APN roles identified	Specialization	ICN NP/APN characteristics		
							Education preparation	Nature of practice	Regulatory mechanism
Schaeppe et al. (2011)	A Spider in The Web: Role of The Palliative Care Nurse Specialist In Uganda—An Ethnographies Field Study	The paper concludes that the role of the palliative care nurse specialist is multifaceted, with links to many parts of the health system. Findings may assist in nurse specialist development locally and regionally	Ethnographic field study (n = 20)	Uganda	• NS	• Palliative Care	• NI	• NI	• NI
Wahidi (2010)	The Development of Wound Clinical Nurse Specialist Through Focus Interest Group (FIG) In Dharmais National Cancer Centre	Outlines the development of the wound clinical nurse specialist development locally and regionally	Case report (NA)	Indonesia	• NS	• NI	• NI	• NI	• NI
Mullan & Frehywot (2007)	Non-Physician Clinicians In 47 Sub-Saharan African Countries	Overview of the non-physician clinicians in 47 sub-Saharan African countries	Literature review (NA)	Rwanda	• NC	• Primary care	• 1-year post-basic education preparation	• NI	• NI
Bienes (2006)	Cardiovascular Nursing: The Philippine Perspective	Outlines the development of the cardiovascular nursing specialization in the Philippines	Literature review (NA)	Philippines	• NP	• Cardiovascular	• NI	• NI	• NI

Table 1 Continued

Author year	Article	Summary	Design sample population	Country	APN roles identified	Specialization	ICN NP/APN characteristics	Nature of practice	Regulatory mechanism
Mathurijwa (2000)	<i>A Continuing Education Programme for Family Nurse Practitioners In Swaziland</i>	Current nurse practitioner practice is examined and needs experienced by FNPs were identified	Mixed methods (n = 68)	Eswatini/Swaziland	• NP	• Primary care	<ul style="list-style-type: none"> • 12-month post-basic education preparation • NFI 	<ul style="list-style-type: none"> • Integrates, education, practice and management • High degree of professional autonomy and independent practice • Case management/own case load • Advanced health assessment skills, decision-making skills and diagnostic reasoning skills • Recognized advanced clinical competencies • Provision of consultant services to health providers • Plans, implements and evaluates programmes • Recognized first point of contact for clients 	<ul style="list-style-type: none"> • NI
Huque (1993)	<i>Specialisation in Nursing</i>	Outlines the development of nursing specialist in India	Literature review (NA)	India	• NS	<ul style="list-style-type: none"> • Community health • Psychiatric • Cardiac • Neuro • Occupational health 	<ul style="list-style-type: none"> • Masters level (but can be diploma or certificate) • NFI 	<ul style="list-style-type: none"> • NI 	<ul style="list-style-type: none"> • NI
Moran (1992)	<i>Swazi Safari... Family Nurse Practitioners in Action</i>	Outlines the development of the nurse practitioner in Swaziland	Case study (NA)	Eswatini/Swaziland	• NP	• Primary care	<ul style="list-style-type: none"> • Three 16-week terms post-basic education preparation 	<ul style="list-style-type: none"> • Health assessment skills, decision-making skills and diagnostic reasoning skills 	<ul style="list-style-type: none"> • NI • NFI

Table 1 Continued

Author year	Article	Summary	Design sample population	Country	APN roles identified	Specialization	Education preparation	Nature of practice	Regulatory mechanism
Morrow & Amoako (1980)	An Expanded Role For Nurses As Pediatric Health Care Providers In Ghana	Outlines the development of the nurse practitioner in Ghana	Case study (NA)	Ghana	• NP	• Paediatric	• 48 hours post basic education preparation • NFI	• Recognized first point of contact for clients • NFI	• NI
Sivaraman (1979)	Spotlight on Specialist Nurse	Outlines the development of nursing specialist in India	Literature review (NA)	India	• SN	• NI	• NI	• NI	• NI
Ortin (1978)	The Leveriza Project - A demonstration of primary care nursing. The Philippines	Outlines the development of the nurse practitioner programme in the Philippines	Case study (NA)	Philippines	• NP	• Primary care	• Unknown length of post-graduate health assessment post-basic education preparation • NFI	• High degree of professional autonomy and independent practice • Case management/own case load • Advanced health assessment skills, decision-making skills and diagnostic reasoning skills • Recognized advanced clinical competencies • Provision of consultant services to health providers • Plans, implements & evaluates programmes • Recognized first point of contact for clients	• NI

Table 1 Continued

Author year	Article	Summary	Design sample population	Country	APN roles identified	Specialization	ICN NP/APN characteristics	Regulatory mechanism
Llamanzares (1977)	The Child Psychiatric Nurse Specialist as Nurse Practitioner	Compare current nurse specialist with possible nurse practitioner Practice Current aspects of nurse specialist practice are explored	Literature review (NA)	Philippines	• NS	• Child Psychiatric	Education preparation • NI	Nature of practice • High degree of professional autonomy and independent practice • Case management/own case load • Provision of consultant services to health providers • Plans, implements and evaluates programmes • NFI

APN, advanced practice nurse; CNS, clinical nurse specialist; NC, nurse clinician; NI, no information found in cited paper; NP, nurse practitioner; NS, nurse specialist; NFI, no further information found in cited paper; SN, specialist nurse;

practice. This lack of clarity of the APN role further highlights that research and publications around this topic are difficult but vital.

This review used English language databases to learn about APN education and practice in countries where English is not necessarily the dominant language of expression. It is conceivable that data published in non-English language journals may have been omitted. Researchers from developing countries have described difficulty publishing in English language journals (Rezaeian 2015). When non-English manuscripts were found, Google Translate© was used only as a last resort. Although not an ideal method (given the complexities of translating), it was primarily utilized for screening of abstracts if they were not available in English ($n = 192$). Of these screened all identified roles in the exclusion criteria and were excluded. Even with this low number, it is feasible that the nuances of language did not translate effectively and publications were missed.

The results of the search strategy identified literature providing mostly historical information related to APNs. Some publications provided information about APN roles in LIC and LMIC in the late 1970s with little follow-up in current publications. Aspects of APN roles may have changed for the better during the interim. Conversely, some APN roles may no longer exist at all in these countries.

Although a need to align with ICN NP/APN definition and characteristics as well as developing national standards/competencies practice was reported in some articles, there was limited information regarding adherence to an international or national standard or competency for APN. The ICN NP/APN definition and characteristics, and most education and training programmes did not meet a master’s level education, which is recommended although not mandated by the ICN NP/APN definition and characteristics. Educational programmes ranged from weeks to 3 years of training. The cost and time required to deliver and implement such programmes at a tertiary education level are likely to affect the training requirements in each country.

Although variation in practice was found in the literature, all APN roles addressed a local need through primary care or practice specialization. The literature did not fully describe the scope of practice. It would be difficult to compare the APN roles in any individual country to an international standard or other country.

When reviewing articles for inclusion/exclusion, the terms ‘task shifting’ or ‘non-physician clinician’ or ‘mid-level providers’ were used in some countries to describe roles that could be APNs. However, the exact role and function of these

health professionals were not stipulated sufficiently to include them in the study.

To address the limitation of reviewing only the published literature and to fully explore this issue, it will be necessary to identify and review sources of official but 'grey literature'. This could be sourced specifically from LIC and LMIC department/council/ boards of nursing, national nursing associations and possibly intergovernmental sources to gain a current picture. A search of relevant websites would be performed utilizing information from renowned global nursing association websites and/or nursing regulatory databases.

Implications for nursing and health policy

All of the LICs and LMICs face individual challenges related to how nursing and related health policy can meet all of their country's needs. Although touted as a possible solution and despite an RN's ability to upskill, the APN role may not be feasible to implement in countries with limited available resources. This would require further development and partnership with countries to meet education and regulation goals to establish APN roles in practice. This would not only strengthen these roles nationally but also assist in those roles meeting the ICN NP/APN characteristics/definition.

Conclusion

This literature review found roles that could be identified as APNs in LIC and LMIC are diverse and occur in varied practice environments. According to the publications reviewed, APNs have been providing healthcare services for vulnerable populations for the past 40 years. The examples of APN roles found in the literature did not refer to current government or professional nursing associations' documents in support of the descriptions of their titles, education and regulatory frameworks. An expanded examination targeting APN practice within the grey literature, sourced specifically from LIC and LMIC regulatory bodies and nursing associations' websites would further add to this review and should provide current information.

Author contributions

Study design: AS.

Data collection: AS.

Data analysis: AS, MM and JS, VL.

Study supervision: MM, JS and VL.

Manuscript writing: AS, MM and JS, VL.

Critical revisions for important intellectual content: AS, MM and JS, VL.

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Supporting information

Additional Supporting Information may be found in the online version of this article:

Appendix S1 Search terms used