



## Review Article

# The essence, opportunities and threats to Advanced Practice Nursing in Sub-Saharan Africa: A scoping review



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## ABSTRACT

**Background:** The conditions that stimulated the implementation of Advanced Practice Nursing programmes all over the world have long been ignored in sub-Saharan Africa.

**Objective:** This study sought to explore the essence, opportunities and threats to the implementation of an Advanced Practice Nursing (Child Health Nurse Practitioner) programmes in sub-Saharan Africa.

**Methods:** A scoping review was conducted and findings reviewed by a multinational multidisciplinary health experts' team through a Delphi study.

**Results:** Children are the majority of the 70–90% of the sub-Saharan African population who reside in the rural areas where access to timely, quality and cost-effective healthcare is poor. The Child Health Nurse Practitioner programme offers an opportunity to provide quality, timely and cost-effective healthcare to sub-Saharan Africa children. Limited resources, opposition from the medical profession, poor nursing governance and lack of context-specific Advanced Practice Nursing benchmark programmes constitute threats to the programme.

**Conclusion:** The sub-Saharan Africa context provides opportunities that the nursing profession can harness to surmount such threats. Nursing governance structures, however, need to advocate for government and other stakeholders' support for the Child Health Nursing Practitioner programme.

## 1. Introduction

The World Health Organization (2016) stated that about 20–40 % of the wastages in the health system is due to the workforce inefficacies and weaknesses in health workforce governance. Training the right quantity of needed cadres of the health workforce to respond to the Universal Health Coverage demands is a global challenge. Having the right skill mix of the appropriate cadres of health workforce with effective and accountable governance is essential for health systems to respond to the UHC challenges in each country. A key objective of the WHO 2030 health workforce strategy is to enhance the capacity of country level institutions for effective HRH governance (World Health Organization, 2016).

Sub-Saharan Africa (SSA) consists of forty-nine of the fifty-four Africa countries, representing the region of Africa to the south of the Sahara desert (Federal Ministry for Economic Cooperation and Development Germany, 2017). The production of appropriate cadres of health workforce who are willing to take rural posts is pivotal to the achievement of Universal Health Coverage especially in rural SSA (Hiatt et al., 2017; Soucat et al., 2013). Advanced Practice Nurses (APNs) are such cadre of

health workforce capable of providing care to the underserved communities (Duffield et al., 2009; Kleinpell et al., 2014; Sheer and Wong, 2008; Swan et al., 2015). Advanced Practice Nursing (APN) programmes emerged because of the need for countries to improve access to quality and cost-effective healthcare services (Duffield et al., 2009; Sheer and Wong, 2008). Many studies (Hutt et al., 2013; Pirret et al., 2015; Swan et al., 2015) have shown that the care provided by the APN are of equal or higher quality to that of the general practitioner. Two major reports; the Boudreau Report in 1972 in Canada and the Post Registration Education and Practice Project (PREP) in the UK stated that the APNs demonstrated a higher level of thinking and clinical judgment in diagnosing and prescribing (Sheer and Wong, 2008). Despite the marked exclusion of the rural and hard to reach communities from quality healthcare in SSA, the implementation of APN programmes have not been approached with the urgency and commitment seen in other jurisdictions.

This study focused specifically on the introduction of APN programmes to prepare APNs to practice as child health nurse practitioners. The terms Advanced Practice Nurse and Child Health Nurse Practitioner are therefore used interchangeably in this paper.

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## 2. Main text

### 2.1. Aim

The aim of this paper is to report on a study that explored the essence, opportunities and threats to the introduction of Advanced Practice Nursing (Child Health Nurse Practitioner) programmes in the sub-Saharan African context.

### 2.2. Methods

A systematic scoping review using the framework developed by Arksey and O'Malley was conducted to describe the essence, opportunities and threats to the introduction of Child Health Nurse Practitioner (CHNP) programme in SSA context (Arksey & O'Malley, 2005). The findings of the scoping review were reviewed by a multidisciplinary team for its representation of the SSA context through a Delphi survey.

Systematic scoping reviews are either stand-alone or pre-systematic reviews that aim to explore the breadth and depth (in-part) of a research area using both grey and peer-reviewed literature (Arksey & O'Malley, 2005). The review method focuses on complex and broad topic areas that lack comprehensive reviews. The concept of Advanced Practice Nursing is an emerging area in SSA, hence, the choice of scoping review rather than other review methods (Arksey & O'Malley, 2005). The framework comprises six stages: identifying the research question; identifying the relevant studies; study selection; charting data; collating,

summarizing, and reporting results; and consultation (optional).

Forty-three experts (33 nurses, six public health practitioners and four medical practitioners) of the 49 multidisciplinary experts purposively selected from East, Central, West and Southern Africa reviewed the findings of the scoping review for context representation in the consultation phase of the scoping review methodology.

#### 2.2.1. The review questions

The review questions explored in this study were:

- 'Is CHNP programme relevant in SSA?
- What are the opportunities and threats to the implementation of the Advanced Practice Nursing programmes in SSA?

#### 2.2.2. Search and Inclusion

Seventy-six (76) studies were included from the 307 identified from EBSCO Host, ProQuest, PubMed, Science Direct and Google Scholar and hand search from ICN, WACN and ECSACON websites. A combination of three keywords (*Advanced Practice Nursing, child health and Africa*) were used. Studies were included if they were published in English; between January 2007 to December 2017; and were either published on SSA or part of the data collected in SSA if multicentre study (Fig. 1).

#### 2.2.3. Data charting

Data were charted on a data matrix (Table 1). The matrix was divided into two sections: Advanced Practice Nursing and child health-related

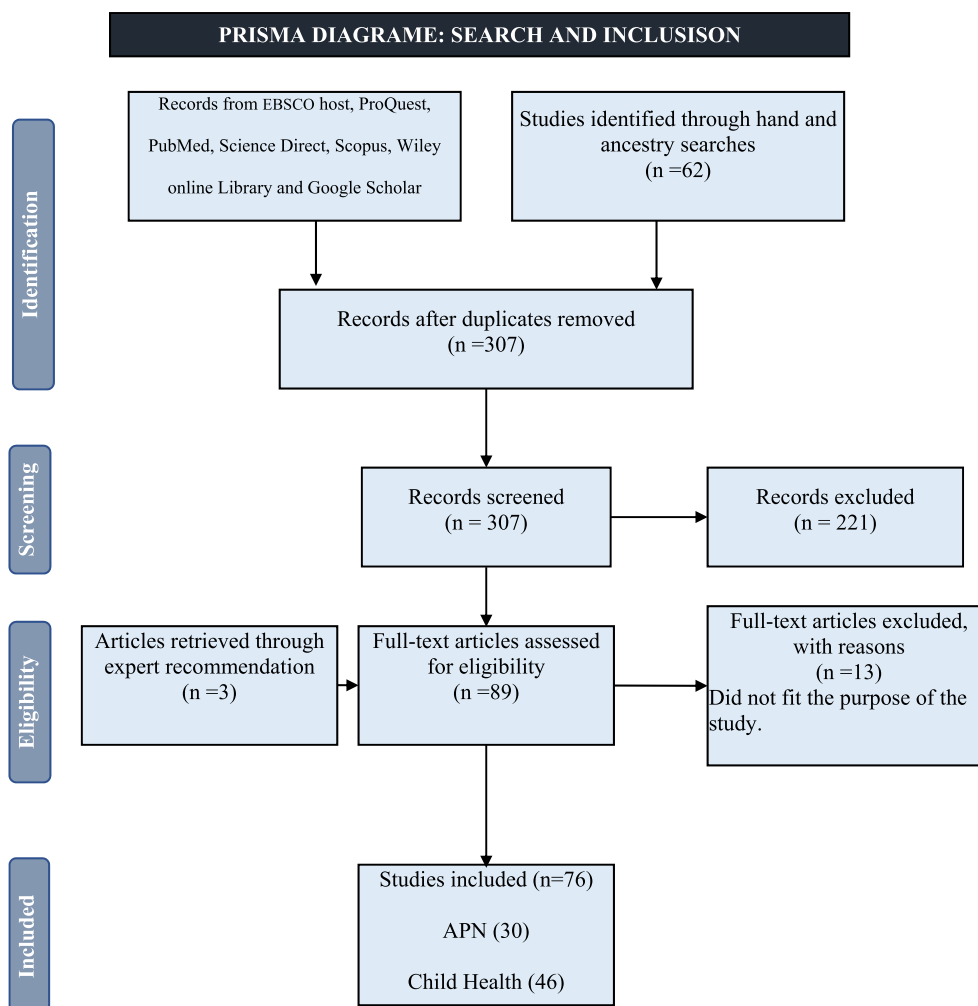


Fig. 1. Search and inclusion.

**Table 1**  
Data matrix.

Session 1: advanced practice nursing in SSA				
No	(Study, Year), Setting "Title"	Purpose	Research Design	Contribution to APN Curriculum
1.	(Academy of Nursing of South Africa, 2015), <b>South Africa</b> "Summary Report: Academy of Nursing of South Africa Colloquium (2015)"	To obtain an overview of status of specialist nursing, discuss issues around generic competency framework, education and training, and matters relating to specialist training on South Africa.	Discussion paper	The specialist nurse is expected to help in improving the indicators of life expectancy, maternal mortality, HIV/AIDs burden, Tuberculosis burden in order to strengthen the health system. Minister of Health created categories of specialist nurses and Nursing Council developed competencies for the specialist categories The nursing council have control over: conceptual clarification, scope of practice, competency framework, standard of practice, code of conduct, Continuing Professional Education. ICN's definition of Advanced Practice Nursing was adopted and adapted to the South African context, "An advanced Practice Nurse is a leader in clinical field, makes clinical judgement, develops or advices regarding policy development in clinical area, is an interdisciplinary consultant, initiates and places premium on research in the clinical area".
2.	(Adjapon-Yamoah, 2015), <b>Nigeria</b> "Possibilities for advanced practice nursing through the eyes of physicians: a descriptive qualitative study"	To discuss how physician's views about the introduction of Advanced Practice Nursing in Nigeria.	Qualitative descriptive study. Data were thematically analysed.	The Advanced Practice Nursing programme is in high demand due to the physician shortage in Nigeria. Currently there is no APN in Ghana but nurses are deployed through task shifting to practice without proper documentation. APN is necessary for the upscaling of primary healthcare in Nigeria. If nurses could prove themselves worthy of the expanded roles, there will be physician support.
3.	(Ahmed et al., 2011), <b>SSA</b> "Medical education: meeting the challenge of implementing primary health care in Sub-Saharan Africa"	Supporting PHC as a means of meeting SSA health needs	Position paper	Medical education must be focused on the needs of the people served. Primary healthcare is best suited for the special health needs of Africa. Population is largely rural, healthcare facilities allocated at city and towns, access to health care difficult due to bad transport system, fastest growing world region with 2.4% growth rate, population expected to double in 30 years (2040), more than 40% of population earn less than \$1 daily, half the population is less than 18yrs, rapid urbanization. Estimated 67% may city and town dwellers by 2050, Controlled HIV leading to high chronic disease burden, Maternal and neonatal mortality are on the rise despite worldwide decrease. Primary Health Care is very important in responding to the population health needs of Sub-Saharan Africa.
4.	(Currie, Chiarella and Currie, 2013), <b>International</b> "An investigation of the international literature on nurse practitioner private practice models"	To review literature on models used by APN in private practice	Literature review. Thematic content analysis was used to synthesize information from the studies identified in 2012	Only a few nurse practitioners are in private practice. The main location of private practice is clinic settings. There is difficulty with nurse practitioner private practice. Laws permitting NP private practice, acceptability by patients as care provider, and financial reimbursement.
5.	(Doodhnath, 2013), <b>South Africa</b> "Experiences of advanced psychiatric nurses on their practice in an Occupational Specific Dispensation hospital setting"	To describe how the experiences of psychiatric nurses practicing at an OSD clinic was used to develop guidelines to support nurses practicing in OSD wards	Qualitative, exploratory, descriptive and contextual design. In-depth interviews were conducted	The guidelines recommends the APN practice according to their scope of practice and enable the adoption of advanced practice nurse roles to allow the APN to practice advanced nursing skills.
6.	(Duma et al., 2012), <b>South Africa</b> "Specialist and advanced specialist nursing and midwifery practice"	To differentiate between the two levels of Advanced Practice Nursing in South Africa in line with ICN perspectives		There is much ambiguity in terms of roles and practice across the world. This ambiguity needs clarification in order to delineate scopes of practice. In South Africa, a "nurse/midwife specialist" is trained at the Advanced diploma level and is authorised to practice in a specialist field. Their roles including teaching, administration and research. The second specialist group (Advanced nurse/midwife specialist) is trained at the master's level with a broader autonomy in practice and can function in primary care. She or he needs enough knowledge attitudes and skills to assess, diagnose

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Table 1 (continued)

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No	(Study, Year), Setting "Title"	Purpose	Research Design	Contribution to APN Curriculum
7.	(East et al., 2014) <b>Kenya</b> "Exploring the potential for advanced nursing practice role development in Kenya: A qualitative study".	To determine whether Advanced Nursing Practice existed or the potential to implement APN in Kenya	Exploratory qualitative design	<p>manage therapeutic regimen in a specialised area and in private practice</p> <p>The practices of this entire category must be founded on the context in which they are licenced to practice.</p> <p>The programme entails 180 credits a year with much of it being in clinical multidisciplinary team roles.</p> <p>The roles of the advanced nurse specialist should include: autonomy in assessment, medical diagnosis, management of caseloads, education, consultancy, primary care, development of best-practice guidelines and research</p> <p>Topics to be studied include: ethics, professionalism, PHC, literature reviews, statistics, interprofessional skills, literature review, evidence-based practice</p> <p>The programme should have core courses taking 42% of the credits and the rest assigned to specialty courses and practice. It is proposed that for every 1-credit, three should be 4 clinical hours practice, making 480 clinical practice hours for a 120-credit year.</p> <p>About 50% of the advanced practice nursing training should be research based. But the research should be clinical/practice based. The programme should be less classroom-based and tailored towards the acquisition of clinical expertise and competencies. Final examination should be practical in nature.</p> <p>FUNDISA recommended that registrars' posts be created to enable the Advanced specialist nurses to focus on service delivery during their training.</p> <p>Lower cadre of nurses have more autonomy in practice than highly qualified ones. Higher categories of nurses are either in managerial position or in education practice. There is a pressing need for ANP in Kenya. The existence of lower cadre physician 'clinical officer' threatens the APN programme. Private hospital nurses are more autonomous than those in public facilities.</p> <p>Perceived ANP roles taken by the participants are: providing specialised care, EBP practice leadership, collecting data, leading units, Consultant roles, healthcare advocacy, autonomous case management, teaching nursing students, nursing research.</p> <p>The law does not permit nurses acting in these roles to prescribe so they take the action and wait for the physician to document. There however is an allowance for Private Practice Nurses (PPNs with minimum of 5 years' experience and license from the Department of Health) who had the least requirements for APN by ICN standards.</p>
8.	(Essa, 2011) <b>South Africa</b> "Reflecting on some of the challenges facing postgraduate nursing education in South Africa"	To examine reasons why postgraduate students did not complete their degrees	Qualitative interpretive	<p>All students are working: Part-time programme.</p> <p>Students are all adults: Students have family responsibilities. Students lack knowledge of teaching methods, examination policies, and programme structure. Many students realised they should have registered for a different programme.</p> <p>Some students do not have the necessary prerequisites to take on the programme. Students lack computer skills. Students lack resources: computer, transport, and internet. Students believe postgraduate programmes demand time management, hard work and sacrifices. Student felt lecturers are unapproachable and unavailable.</p> <p>Students were new to the telematic broadcasts and felt uncomfortable and distanced from lecturers. Network interruptions during online tests made students anxious. Students do not have enough information on the programme. Students receive study materials late</p>

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No	(Study, Year), Setting "Title"	Purpose	Research Design	Contribution to APN Curriculum
9.	(Heale et al., 2015), <b>International</b> "An international perspective of advanced practice nursing regulation"	To review Advanced Nursing Practice status globally	An online survey Data were analysed through descriptive statistics and thematic analysis	Responses from the 4 African countries involved- Angola, Botswana, Sierra Leone and Togo. The barriers detected are that of resistive legislation and unwelcoming organizational environment. 25 of the programmes reviewed are at the master's level. In many of the programmes, there are roles but here is no regulation. The roles existing are "Nurse Practitioner; Clinical Nurse Specialist; Advanced Practice Nurse; Nurse Specialist". An advanced practice nurse must be registered and acquire complex decision-making skills and be competent clinically in his or her specialty field and the context in which he/she practices. AAPN is a master's level programme. There is the need for the APN to be experienced in clinical practice, be a critical thinking leader, and clinically competent. Levels of nursing in Africa can be classified as: "Support worker, Enrolled nurse, Registered nurse, Specialist nurse and Advanced practice nurse". The lower cadre of recognised prescribers (clinical officers, medical assistants, physician assistants) stalls the expansion of roles for nurses for APN. In addition to ICT, there must be: ICT use, knowledge management, Research, innovation and change, Education and mentoring, Budget management and value for money, Human resource management, Biostatistics and other epidemiology, Report writing and presentation, working with international partners, Evidence based practice, Empowerment of staff and healthy communities, Patient and staff safety and infection control The domains of knowledge to be studied by the APN include: Leadership and management, research and knowledge management, education and monitoring, empowerment and healthy communities, professional and ethics practice The programme should focus on maternal and child health among others The roles of Advanced Practice nursing should be distinguished from other levels of nursing. APN include "certified nurse midwife, certified registered nurse anaesthetist, clinical nurse specialist, and nurse practitioner". APN is a minimum of a master's level programme. The Institute of Medicine (IOM) stated that nurses need to be equipped and allowed to practice to their full potential in order to provide quality and cost-effective services. Confusing scope of practice, role confusion, too many advanced practice nursing titles, inconsistent educational level of training, variable processes of training the APN are major challenges facing APN globally Global characteristics of APN is to diagnose, prescribe medications and treatments, referral of clients, admission of patients, legislation regarding APN and the legal use of the Advanced Practice Nurse title, Difficulties encountered by the APN is the lack of education programmes, inability to understand the APN roles and disrespect to the nursing profession. Because countries are different in their level of health and healthcare capacity, the IOM stated that country specific regulations put restriction on the APN roles. Medical practitioner by-laws put restriction on APN. Authoritative medical leadership also inhibits interprofessional collaboration To remove the barriers, it is important to communicate the APN roles, use of media campaigns, lobbying with stakeholders, publish
10.	(INEPEA, 2008), <b>East Africa</b> "Advanced Nursing Practice competence/capability in East Africa"	To describe Advanced Practice Nursing competency framework for east Africa	Synthesis competency framework	
11.	(Kleinpell et al., 2014), <b>International</b> "Addressing issues impacting Advanced Nursing Practice worldwide"	To describe the barriers to the APN roles worldwide	Discussion paper	

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Table 1 (continued)

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No	(Study, Year), Setting "Title"	Purpose	Research Design	Contribution to APN Curriculum
12.	(Kolars et al., 2012), <b>USA and SSA</b> "Partnering for medical education in sub-Saharan Africa: Seeking the evidence for effective collaborations"	To present the perspectives of collaborations between universities in the USA and Sub-Saharan Africa	Discussion paper	and proclaim the achievements of APN, demonstration of the roles for the public to have confidence in the programme. There is the need to ask patients receiving care from APN to advocate for the programme Good staff from SSA may be lured with inflated salaries. SSA cultures are influenced by colonial powers. SSA has 24% disease burden with 3% world health care personnel. Meagre financial support to produce health care workers in SSA. Most SSA schools suffer infrastructure, ICT, faculty and curricula issues. Curriculum is not developed to produce students with needed competencies in SSA. Curricula is not responsive to societal healthcare need. Some professions make it difficult for the roles of APN to be created. Some partnerships with USA undermine the needs of SSA healthcare system: another form of neo-colonialism.
13.	(Mccarthy, 2012), <b>South Africa</b> "Description of nursing regulation and nursing regulatory bodies in east, central, and southern Africa"	To survey the practices of nursing councils in East, Central and Southern Africa's regulations especially task shifting.	Nursing council registers and stakeholders were reviewed and Interviewed respectively	Task shifting existed in all the countries but the regulation and scope of practice have not been reviewed to confer the legal right on nurses to take on the roles they had already being performing. The nursing councils have major role to play in making nursing regulation to march up with the advancing roles of nurses. Only Tanzania had updated its regulation to cater for nurses managing HIV cases. There is need for nursing council to play their roles for the development of the nursing profession.
14.	(Madubuko, n.d.), <b>West Africa</b> "Nurse Practitioner/Advanced Nursing Practice development in West Africa: A proposal"	To propose that defines the roles, education and scope of practice of Advanced Practice Nurses in West Africa	Position paper	There is no advanced practice nurse in west African nursing registers. There is need for lobbying, advocacy for the practice to be recognised. All registered nurses in West Africa have one or more specialist training. There are about a 1000 registered nurse with a master's degree in West Africa. The nurse practitioner role already exists but not registered. The nurse practitioners work in PHC, assessment, medical diagnosis and Management of minor medical conditions, treatment of chronic illnesses. The programme for the APN should be at the Masters Level. The APN programmes should be developed in collaboration with universities, push the nursing councils to prepare registers for the category and motivate nurses to enrol in the programme. The broad learning objectives proposed by the West African Council of Nurses include: assessment, diagnosis, counselling, referral services, admission and discharge, evidence based practice. The shortage of medical profession creates a burden and a gap that the APN can easily fill and provide quality care for the neglected communities. The demand in PHC means there is the need to retrain nurses to take on the medical practice roles in PHC centres where the number of medical doctors cannot reach. The APN should be able to correctly request and interpret medical laboratory examination and results, give nutritional advice, promote health, involve in public screening services such as breast, cervical and prostate cancer screening.
15.	(Martel et al., 2014), <b>Ghana</b> "The development of sustainable emergency care in Ghana: Physician, nursing and prehospital care training initiatives"	To describe the process and initiative taken in the development of emergency care in Ghana	Discussion paper	Need assessment was conducted in 2010: nurses have interest in the emergency programme. 12 months emergency programme initiated: didactic, clinical and simulation based learning. South African emergency programme adapted for Ghana. South African experts were used to mentor

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No	(Study, Year), Setting "Title"	Purpose	Research Design	Contribution to APN Curriculum
16.	(Mutea and Cullen, 2012) <b>Kenya</b> "Kenya and distance education: A model to advance graduate nursing"	Developing a distance education model for advanced continuing nursing education	Discussion paper	Ghanaian. More emphasis on multi-disciplinary education. Collaboration between four major stakeholders: health services, the community, the higher education institutions and the international partners Lessons: Distance education is economical, distance education increases access, advances in technology supports distance education; distance education has been successfully implemented in South Africa, Zimbabwe and china.
17.	(Mwangi, 2017), <b>Africa</b> "How International Council of Nurses can export Advanced Registered Nurse Practitioner Policies in Africa".	To discuss how the Advanced Practice Nursing Policies can be exported to Africa	Discussion paper	Disease burden and health worker mismatch is profound in Africa. While the 25% global disease burden is being treated by the meagre 3% of the global health workforce in with 3% of the healthcare resources in Africa, 30% of the world's healthcare workforce uses 25% of the resources to treat only 3% of the disease burden in North America. The healthcare worker per population ratio in Africa is 2.3/1000. The majority of this being nurses. Nurses have played major roles in reducing the malaria endemic in west Africa and can do same for the general healthcare system if APN programmes are implemented. With Non-communicable disease burden rising despite the overwhelming communicable disease burden, it is important to implement health promotion services to respond to the healthcare needs of the population. This could easily be done by the APN. While more than ¼ of the medical doctors in SSA are concentrated in the cities, majority of the population are rural dwellers. The ICN should implement projects in which nurses provide care for communities in order to use the successes of those projects to advocate for ANP programmes.
18.	(Mwangi, 2016), <b>Kenya</b> "Why we need independent certified nurse practitioners /ARNP in Africa"	A memorandum from Kenya Nurses to Kenyan parliament on the need for independent certified nurse practitioners /ARNP in Africa.	Position paper	ARNP shall be a 2 years master's level programme. Advance Registered Nurse Practitioner, Certified Nurse Midwife, registered Nurses Anaesthetic. The curriculum content shall consist of: "Interpreting Laboratory findings, Pharmacotherapeutics, Nutrition and dietetics, Emergency treatment, Assessment of community resources and referral systems, Role re-alignment, Legal issues in ARPN, Health Care Systems, Management of selected diseases, Differential diagnosis related to specialty problems, and 500 h clinical education". Nursing council shall regulate the practice of the ARPN. AARNP shall use a standard protocol in her practice. ARPN shall be supervised by a physician or dentist.
19.	(Ugochukwu et al., 2013) <b>Sub-Saharan African</b> "Roles of nurses in Sub-Saharan African region"	To describe what nurses do in Sub-Saharan Africa	A mixed method study involving document analysis, focus group interview and surveys	The role of nurses in sub-Saharan Africa consists of physical and psychological nursing care, community health education, advocacy, emergency care, enhancing healthcare through collaborations, provision of midwifery care, diagnosis and prescription, referral of clients, management of chronic illnesses in PHC, prevention and management of infectious diseases. The population is left suffering as governments and regulatory bodies admit that nurses are the major healthcare workers in sub-Saharan Africa but fail to make regulations to support nurses in their roles. There is the need for intensive advocacy by nurses to move the nursing profession forward in providing quality care for the population.
20.	(Pulcini et al., 2010), <b>International</b> "An international survey on advanced practice nursing education, practice, and regulation"	To provide an overview of the development of APN worldwide with respect to naming, education, where they practice, their scope of practice, the laws and political environment within which it is practiced.	A web-based survey of APN was conducted. 91 nurses from 31 countries responded.	There were 13 different names/titles given to APN discovered in this study. 71% of the 32 countries have APN education programmes. 50 % of these programmes are at the Masters level. 23 of these countries had the role of APN officially recognised.48 % of these

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Table 1 (continued)

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No	(Study, Year), Setting "Title"	Purpose	Research Design	Contribution to APN Curriculum
				recognition and maintenance of registration status comes through licensure examinations. The programme is supported by local nursing organizations, nurses and the government whereas the greatest opposition came from the medical doctors and their organizations The APN programmes are gaining grounds all over the world as it has the potential to provide quality healthcare to the world, especially, the underserved communities.
21.	(Regan et al., 2016) <b>Rwanda</b> <i>"Curriculum Development for Maternal, Newborn, Child Health: International Collaboration to Enhance Nursing Education in Rwanda"</i>	To describe the collaboration between Rwanda and Canada to develop maternal, new-born, and child health curriculum for Rwanda	The development of the first bachelors in nursing curriculum in Rwanda	There was an extensive collaboration between the stakeholders of nursing education and practice. Needs assessment was done to set the foundation for the curriculum development. Then there was the revision of the curricula, the development of the programme, training of the lecturers in the paediatrics programme, The developed curriculum was also reviewed by international experts. Burundi has learned from Rwanda to also develop a similar type of curriculum in nursing. The focus is primary healthcare but can practice at all healthcare levels. The PNS screens, assesses, diagnose, plan care, implement care, evaluate care provided and or refers client to the appropriate healthcare setting for specific care. A child is anyone less than 19 years The competencies are in five domains: Professional, ethical & legal practice; Clinical practice; Quality of practice; management and leadership; and research.
22.	(SANC & South African Nursing Council, 2005) <b>South Africa</b> <i>"Competencies for Paediatric Nurse Specialist"</i>	Competencies of the paediatric nurse specialist (PNS)	Nursing Regulation	There were six roles identified throughout the world. These include: "nurse practitioner, clinical nurse specialist, nurse midwife, nurse anaesthetist, consultant nurse and nurse case manager". The APN role is the most common in all the countries included in the review. There were controversies surrounding the introduction of the programme as the medical doctors are not willing to allow nurses to take on diagnosis and prescription roles. More and more countries are turning to APN as the right category of health workers to respond to the inequality in the healthcare system. The APN are expected to be competent in leadership, interprofessional collaboration, clinical judgement, Ethico-legal practice, teaching, EBP, health promotion, cultural sensitivity, healthcare advocacy and healthcare change management. There is much commonality in competencies in APN across the world. There is need for policy makers to develop tools to compare APN in different jurisdictions.
23.	(Sastre-Fullana et al., 2014), <b>International</b> <i>"Competency frameworks for advanced nursing practice: a literature review"</i>	To review literature of ANP worldwide	Literature review	The common nursing activities in SSA are: patient care, health education, care environment management, patient advocacy, involving in policy making, emergency care, stakeholder consultation and collaboration, midwifery services and child healthcare The stakeholders could not reach agreement on the diagnosis and prescription as roles of nurses. There need for the roles to be made explicit for the benefit of our societies we serve.
24.	(Seboni et al., 2013) <b>SSA</b> <i>"Shaping the role of sub-Saharan African Nurses and Midwives: stakeholder's perceptions of the Nurses' and Midwives' tasks and roles"</i>	To describe nurses function in the healthcare system of sub-Saharan Africa to help policy on future nursing education	Qualitative descriptive study. 253 participants from 8 countries were involved in focus group discussions	APN roles are evolving in Botswana and South Africa. In Swaziland, the Family Nurse practitioner programme has been discontinued. There is an indication of re-establishing the course in Swaziland at the postgraduate level. Botswana is moving towards PHC. In Botswana, the APN programme is confronted with lack of role model and reimbursement
25.	(Sheer and Wong, 2008), <b>International</b> <i>"The development of advanced nursing practice globally"</i>	Examining how Advanced Practice Nursing has developed worldwide	Literature review. Documents available to ICN on 14 countries and 3 regions were analysed.	

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Table 1 (continued)

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No	(Study, Year), Setting "Title"	Purpose	Research Design	Contribution to APN Curriculum
26.	(Sietio, 2000), <b>Botswana</b> "The Family Nurse Practitioner in Botswana: Issues and Challenges"	To describes the issues and challenges faced by the Family Health Practitioner programme in Botswana	Discussion paper	<p>Nurses form about 70% of the healthcare workforce and therefore serve as the first contact to patients entering the health system. Achieving success in PHC, therefore, is highly dependent on nurses.</p> <p>The curriculum of the Family Health Nurse places emphasis on skills such as assessment, medical diagnosis, management of common illnesses, preventive health and health promotion. The skills are acquired through theoretical nursing training, courses in social and medical sciences, public health courses, and an intensive clinical practice. The one-year programme was extended to 18months to better train the family health nurses to respond to the needs of the Batswana. A master's level has been proposed for this programme. There is lack of faculty to deliver the programme. The courses taken include: "Family Nurse Practice 1/Health Assessment; Communication in Health Intervention; Family Nursing; Maternal and Child Health; Pharmacology; Public Health Sciences (Epidemiology, Research, Statistics); Clinical Nutrition; Mental Health Intervention; Dental Health Intervention; Laboratory Intervention; Maternal and Child health; Family Nurse Practice 11/Disease Diagnosis and management; Role Development; Practicum 11"</p> <p>The nurse practitioners mostly practice in the underserved community where they are the most qualified and therefore lead the PHC team. They also work in the OPD of higher-level hospitals, in industries, rehabilitation clinics and in private care. Private practice is difficult due to lack of reimbursement policies.</p> <p>The National Standing Drug Committee rated the family health practitioners high concerning their assessment, diagnosis and appropriateness of prescriptions in comparison to medical doctors in Botswana.</p> <p>The challenges faced by the family nurse practitioners include lack of clarity in their roles, no pathway for carrier progression, and ambiguity in legislation regarding their practice. The scope of practice is silent on prescription by the family health practitioners</p>
27.	(So et al., 2016), <b>International</b> "Enhancement of oncology nursing education in low- and middle-income countries: Challenges and strategies"	To discuss challenges and recommend strategies to enhance oncology nursing education in developing countries	Discussion paper	<p>Challenges: Lack of educational specialization in oncology, lack of legal framework for oncology specialization education, limited opportunities of continues education, difficulty in recruiting general nurses to oncology nursing.</p> <p>Strategies: Incorporate basic cancer care into preregistration programme, develop nursing faculty, establish programme sharing collaborations, involve international organizations, emphasises best practices, sustain oncology nursing programme by local involvement</p> <p>Task shifting has been successful in the management of many conditions where there are less prepared health professionals. It is the potential solution in meeting limited access emergency care in SSA.</p>
28.	(Terry et al., 2012), <b>SSA</b> "Task shifting: Meeting the human resources needs for acute and emergency care in Africa"	To describe the effect of task shifting on emergency nursing care.	Literature review	<p>Nurses are mostly functioning in general nursing services and less in maternal and child health care services. Those in French countries have lesser scopes of practice compared to English speaking countries. It is important for the regulatory bodies to develop roles beyond that of general nursing practice. There is also need for the nursing profession in French speaking countries to be assisted to develop.</p>
29.	(Klopper and Uys, 2013) <b>SSA</b> "Role analysis of the nurse/midwives in the health services in Sub-Saharan Africa"	To describe the roles that nurses play in the healthcare system of Sub-Saharan Africa.	A survey was conducted with 734 nurses from 9 SSA countries	<p>Nurses are mostly functioning in general nursing services and less in maternal and child health care services. Those in French countries have lesser scopes of practice compared to English speaking countries. It is important for the regulatory bodies to develop roles beyond that of general nursing practice. There is also need for the nursing profession in French speaking countries to be assisted to develop.</p>

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Table 1 (continued)

Session 1: advanced practice nursing in SSA				
No	(Study, Year), Setting "Title"	Purpose	Research Design	Contribution to APN Curriculum
30.	(Wolf et al., 2012), <b>Africa</b> "Developing a framework for emergency nursing practice in Africa"	To discuss how an emergency nursing practice framework was developed for Africa	Discussion paper	Challenges facing emergency nursing: Nursing and physician shortage leading to understaffing and heavy workloads and task shifting, nurses are practicing outside their scope of practice, high occupational hazards. critical thinking in insufficiently taught in training, poor pre-registration emergency nursing training, no scope of practice, inconsistency in terminology across Africa, nurses are disrespected by some members of the multi-disciplinary team, nurses are poorly remunerated, only one emergency nursing professional body in Africa. . The roles and responsibilities must be assigned according to the level of the nurse within the framework. Banner's framework was used to describe the emergency nursing various level of competency.
Session 2: child health in SSA				
No	Study	Aim	Research design	Finding/recommendation
31.	(Ansong et al., 2016), <b>Ghana</b> "Epidemiology of paediatric poisoning reporting to a tertiary hospital in Ghana"	To record the incidence and prevalence of home poisoning in a city in Ghana	Retrospective record review	Paediatric poisoning a threat to the children in Ghana due to lack of parental supervision and poor storage of harmful substances at home. Comprehensive education of the population will help prevent such poisonings Delivery at clinical facility, use of child healthcare services and child immunization status were affected by war and non-war migrants. War migrants being the most affected There is the need to make evidence-based policies to cater for war migrants in Sub-Saharan Africa.
32.	(Avogo, 2010), <b>Angola</b> "Forced migration and child health and mortality in Angola"	To study how forced migration affected the survival of children in Angola	Quantitative descriptive study. Data from a survey conducted 2 years after the civil war in Angola	Children experienced corporal punishment daily. This has negative emotional and behavioural effects on them. Information provided by the significant others differ from those of children, leading to gaps in evidence that humpers the development of policies that address the menace in resource poor countries.
33.	(Breen et al., 2015) <b>South Africa</b> "Children's experiences of corporal punishment: A qualitative study in an urban township of South Africa"	To discuss the corporal punishment experiences children in South Africa	Qualitative descriptive study, 24 qualitative interviews using children aged 8 to 12	The mortality rate differs from country to country significantly. Local authority interventions compared to the national interventions is only found in 8–15 % of the population. 23% of the children in SSA live in mortality prone areas. It will be difficult to reach the sustainable development goals if the mortality rate is not responded to. The local temperature, the burden of malaria and conflict within a country all affected child mortality rate. Policies should be put in place to respond to under-5 mortality in mortality prone zones in Africa.
34.	(Burke et al., 2016) <b>SSA</b> "Sources of variation in under-5 mortality across sub-Saharan Africa: a spatial analysis"	To describe -mortality rate in Africa from 1980 to 2010	82 demographic survey data from 28 countries involving 393685 deaths were used in the study.	Reducing Child death and illness is essential in SSA. One of the triage tools (Emergency Triage Assessment and treatment-South Africa or South African Triage Scale should be used at all level of care in prioritizing emergency cases. Approximately half of the total population of Southern Africa is made up of children and infant. Mortality is high across Africa. This is due to many factors not least the lack of expert healthcare specialists. South Africa helped Malawi to start specialist child health
35.	(Cheema et al., 2013) <b>South Africa</b> "Paediatric triage in South Africa"	To explain the key paediatric triage tools being used in South Africa.	Discussion paper	
36.	(Children's Hospital Trust, 2015) <b>South Africa</b> The importance of paediatric nursing in Africa	The importance of paediatric nurse training in Africa.	Web Publication	

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Table 1 (continued)

Session 2: child health in SSA				
No	Study	Aim	Research design	Finding/recommendation
37.	(Claassen et al., 2016) <b>South Africa</b> "Risks for communication delays and disorders in infants in an urban primary healthcare clinic"	To describe the related factors to the delay in communication among children 0–12 months in South Africa	Qualitative descriptive study using structured interview.	nursing training. The need for Paediatric nurses in Africa is a need we can no longer ignore Maternal flu infection during pregnancy, previous miscarriage, smoking antepartum, low literacy level and poor economic status are the major factors that affect the children's communication. There is need for early communication interventions in PHC
38.	(Cluver and Orkin, 2009), SSA "Cumulative risk and AIDS-orphanhood: Interactions of stigma, bullying and poverty on child mental health in South Africa"	To assess the effects of stigma, bullying, food insecurity on AIDs-related orphans	Survey. 1025 adolescents as sample.	Stigma and bullying were most associated factors to AIDs orphanhood. There is the need to provide psychosocial counselling services to these orphans.
39.	(Minette Coetzee, 2014) <b>South Africa</b> "Re-envisioning paediatric nurse training in a re-engineered health care system"	To evaluate paediatric nursing education in South Africa in order to improve postgraduate education.	Colloquium	Curricula must be linked with national needs. Nurses form the foundation of child health care at clinics and hospitals. 50% of dead children die before arrival to the hospital Nurses learn how to recognise disease acuity, detect and prevent diseases early, detect malnutrition, IMCI, take history, conduct thorough assessment and resuscitate and empower parents for child care. Explore ways of developing a responsive and more flexible curriculum. Make educators take on dual clinical-lecturer roles, ensure nursing research is linked to child health issues The stakeholders of child healthcare are in South Africa are the department of Health, Department of Higher Education, the Nursing Education Institutions and the South African Nursing Council Paediatric nursing training must focus on PHC but graduates should remain clinically competent. Both taught curricula and nursing practice must be evidence-based. Paediatric nursing curricula redesign is eminent to inculcate clinical specialist views. Community placement is essential for paediatric nurse training Paediatric nurse training need to be strengthened to reduce child mortality in Sub-Saharan Africa. Training must be aligned with SSA population health needs. Nursing education in SSA is benchmarked on Western materials and philosophy Curriculum is at the centre of sustainable paediatric nursing workforce. There is an acute paediatric nurse shortage in many African countries. The introduction of responsive nursing programmes must start with community engagement (Nursing Council, Ministry of Health). Blended programme was implemented between University of Cape Town and Kamuzu College of Nursing in Malawi. One of the modules studied in this programme deals with contextual child issues. Dialogue between university, ministry of health and ministry of education were necessary for the recognition and registration of the nursing graduates. There is the need to develop SSA specific nursing programme for child health that is aligned to the context, population characteristic and the healthcare systems.
40.	(Coetzee et al., 2016) <b>Africa</b> "Building paediatric nurse training capacity for Africa, in Africa"	Developing, evaluating and refining a sustainable and contextual paediatric nurse training programme in Malawi and A South Africa	Discussion paper	Paediatric nurse training need to be strengthened to reduce child mortality in Sub-Saharan Africa. Training must be aligned with SSA population health needs. Nursing education in SSA is benchmarked on Western materials and philosophy Curriculum is at the centre of sustainable paediatric nursing workforce. There is an acute paediatric nurse shortage in many African countries. The introduction of responsive nursing programmes must start with community engagement (Nursing Council, Ministry of Health). Blended programme was implemented between University of Cape Town and Kamuzu College of Nursing in Malawi. One of the modules studied in this programme deals with contextual child issues. Dialogue between university, ministry of health and ministry of education were necessary for the recognition and registration of the nursing graduates. There is the need to develop SSA specific nursing programme for child health that is aligned to the context, population characteristic and the healthcare systems.

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Table 1 (continued)

Session 2: child health in SSA				
No	Study	Aim	Research design	Finding/recommendation
41.	(Davis et al., 2014) <b>South Africa</b> "Journal club: Integrating research awareness into postgraduate nurse training"	To describe the importance of curriculum evaluation and refinement	Action research. "assess-plan-act-observe" design	Postgraduate paediatric nursing programme included foundations of child health and was built around the six major systems affected in childhood critical illness in Africa. The curriculum is refined regularly to meet the needs of Sub-Saharan Africa. The journal club helped in teaching evidence-based practice
42.	(Ebuehi, 2010) Nigeria "Using community-based interventions to improve disease prevention practices of caregivers of under-5s in Ile-Ife, south-western Nigeria"	To compare the knowledge and practices of caregiver practicing IMCI at community level	Cross-sectional design. Setting.	Implementation of IMCI produces positive child health outcomes than not introducing it. There is a gap to be filled in the caregiver's skills and knowledge in caring for the under-5 children
43.	(Fairall et al., 2012) <b>South Africa</b> "Task shifting of antiretroviral treatment from doctors to primary-care nurses in South Africa (STRETCH): A pragmatic, parallel, cluster-randomised trial"	To determine whether non-physician can effectively and safely identify patients eligible for ART, prescribe and dispense ART to the edified clients at PHC level.	Pragmatic, parallel, cluster-randomised trial	Task shifting of ART from Doctors to Nurses is essential for ART expansion in Africa due to the acute shortage of medical doctors.
44.	(Feucht et al., 2012) <b>South Africa</b> "Incorrectly diagnosing children as HIV-infected: Experiences from a large paediatric antiretroviral therapy site in South Africa"	To evaluate the degree to which children are falsely diagnosed with HIV	A retrospective record reviews.	About 1 526 patient files were reviewed with the proportion of 1.01: 1 male to female ration. About 51 children were wrongly diagnosed as HIV positive. This created psychological problems for children and limits their life goals and expectations. Children in Africa are exposed to various violent behaviours due to war and poverty. Major healthcare problems children are exposed to include: PTSA, depression and aggression. Support from family and school helps in curbing the effects of the exposure in children. More research is needed in the area of effects of war on children in Africa.
45.	(Foster and Brooks-Gunn, 2015) <b>South Africa, Sierra Leone, Gambia and Rwanda</b> "Children's exposure to community and war violence and mental health in four African countries"	To review the results of exposure to war on children's mental health	Literature review. Review of 24 qualitative studies from African countries	Child and family health nurses play an important role in individual and family care. Child and family nursing is complex and requires prior-knowledge to cope with it. Clinical placement has the greatest impact on students. Moderate level of quality studies were included from 10 countries. The main areas of preventive services rendered by the community health nurses were: prevention of malaria, health education, promotion of breastfeeding, new-born care and counselling. The community health workforce was effective in mother-related strategies of prevention of under-five mortality such as exclusive breastfeeding and skin to skin kangaroo care.
46.	(Fowler et al., 2015) <b>International</b> "Ready for practice: What child and family health nurses say about education"	Assessing the readiness of Child and family Health Practitioners after education	Qualitative survey	Malnutrition resulted in about 16.6% child mortality rate. "Paediatric Risk of mortality, paediatric Logistic Organ Dysfunction and Paediatric Index of Mortality 3 all under predicted the mortality rate in children".
47.	(Gilmore and McAuliffe, 2013), <b>Middle-Income Countries</b> "Effectiveness of community health workers delivering preventive interventions for maternal and child health in low- and middle-income countries: a systematic review"	To analyse the effectiveness of the community health workers maternal and child health care in resource poor countries	Literature review. 17studies, out of the 10281 studies identifies, were included	Africa is huge with diverse sociocultural activities. Girl children are counted secondary children in many patriarchal societies in Africa. Many of the children are abuses through avoidance of education, female genital mutilation, arranged marriages, neglect, child prostitution, and child labour. The study found that the children whose parents have HIV-related illnesses carry a higher burden of chronic diseases. These children who have little parental care due to parent's disease status are exposed to many dangerous situations.
48.	(Hendricks et al., 2016) <b>Sub-Saharan Africa</b> "Factors present on admission associated with increased mortality in children admitted to a paediatric intensive care unit (PICU)"	Determining the sociodemographic factors and paediatric assessment tool to use in maximizing benefits to children on admission	Retrospective review	Africa is huge with diverse sociocultural activities. Girl children are counted secondary children in many patriarchal societies in Africa. Many of the children are abuses through avoidance of education, female genital mutilation, arranged marriages, neglect, child prostitution, and child labour. The study found that the children whose parents have HIV-related illnesses carry a higher burden of chronic diseases. These children who have little parental care due to parent's disease status are exposed to many dangerous situations.
49.	(Khalil, 2006), <b>SSA</b> "Abuses of the girl child in some African societies: implications for nurse practitioners"	To define, explore and describe girl child abuse in sub-Saharan Africa	Discussion paper	Africa is huge with diverse sociocultural activities. Girl children are counted secondary children in many patriarchal societies in Africa. Many of the children are abuses through avoidance of education, female genital mutilation, arranged marriages, neglect, child prostitution, and child labour. The study found that the children whose parents have HIV-related illnesses carry a higher burden of chronic diseases. These children who have little parental care due to parent's disease status are exposed to many dangerous situations.
50.	(Kidman et al., 2010), <b>Malawi</b> "AIDS in the family and community: The impact on child health in Malawi"	To determine which HIV related phenomenon exposes children to high risk of poor health	Survey data were analysed using logistic multi-level modelling	Africa is huge with diverse sociocultural activities. Girl children are counted secondary children in many patriarchal societies in Africa. Many of the children are abuses through avoidance of education, female genital mutilation, arranged marriages, neglect, child prostitution, and child labour. The study found that the children whose parents have HIV-related illnesses carry a higher burden of chronic diseases. These children who have little parental care due to parent's disease status are exposed to many dangerous situations.

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Table 1 (continued)

Session 2: child health in SSA				
No	Study	Aim	Research design	Finding/recommendation
				Children living with diseased parents are at high risk of cross infection. There is need for community based programmes to identify and manage children living with mother who are suffering from HIV-related illnesses.
51.	(Kruger et al., 2016) <b>South Africa</b> "Outcome of children admitted to a general high-care unit in a regional hospital in the Western Cape, South Africa"	To determine the prognosis of children admitted to a general healthcare unit in Cape Town South Africa	Retrospective descriptive	African countries must give enough attention to protection of children against HIV/AIDs and its related sicknesses. Main causes of death are Lower respiratory tract infections, acute gastroenteritis, asphyxia, and prematurity. 70% of the children admitted were treated and discharged.
52.	(Lake, 2014), <b>South Africa</b> "Children's rights education: An imperative for health professionals"	To describe the lessons learned from a short course on children's right and child law for health in cape town, South Africa.	Discussion paper	The course creates the opportunity for healthcare workers to reflect on their child care practices. The course advocates for the inclusion of children's right to health in education curricula. The course serves as a framework developing child rights into curricula regarding the competencies that the healthcare professionals must acquire for effective child healthcare.
53.	(Liu et al., 2016), <b>International</b> "Global, regional, and national causes of under-5 mortality in 2000 – 15: an updated systematic analysis with implications for the Sustainable Development Goals"	To update the estimates of child mortality from 200 to 2015 with regards to the MDG targets	Retrospective study	About 2.7million neonates die compared to the 5.9million under-5 deaths. The major causes of death include preterm birth, pneumonia, intrapartum causes. In SSA, the most cause of under-5 mortality is pneumonia. The reduction of malaria, measles, diarrhoea, pneumonia, intrapartum related cases of death lead to about 35% reduction in under-5 mortality rate. Child survival interventions must be based on the causes of death in each MDG country. There is the need for continuous quality improvement in such strategies to meet the MDG targets.
54.	(Martyn et al., 2013), <b>International</b> "The paediatric nurse practitioner workforce: Meeting the health care needs of children"	To discuss the importance of paediatric nurse practitioners on children's health	Discussion paper	Paediatric nurse practitioners can help meet the needs of underserved children. Children healthcare needs vary according to their growth and development. Access to quality paediatric health care is essential for the children. There is the need to increase paediatric nurse practitioners substantially. Paediatric nurse education must address: access to the training, appropriate clinical experiences and efficiencies in length of time spent on degree.
55.	(Masuku and Owaga, 2016) <b>Swaziland</b> "Child malnutrition and mortality in Swaziland: situation analysis of the immediate, underlying and basic causes"	To reinforce the need for collaboration among stakeholder for the sustainability of child nutrition strategies.	In-depth Analysis	Inadequate feeding, diarrhoeal diseases, HIV/AIDs, poverty, inadequate production of food, poor care of children and women, poor access to healthcare services, unhealthy living environments, inadequate maternal education, insufficient child healthcare workforce, poor distribution of resources and ineffective policy making are major causes of child malnutrition in Swaziland.
56.	(Minoiu and Shemyakina, 2014), <b>Ivory Coast</b> "Armed conflict, household victimization, and child health in Cote d'Ivoire"	To assess the effect of civil war on child health in Ivory Coast	Survey	Children from areas much affected by the conflict had various healthcare deficits compared to those in areas with no conflict. The economic loses made by the households during the conflict had the most impact on the health of children.
57.	(Mokomane et al., 2017) <b>South Africa</b> , "Availability and accessibility of public health services for adolescents and young people in South Africa"	To explore the accessibility of public health facilities to children and youth in South Africa.	Mixed method study	There are structure and systemic issues that hamper accessibility of the healthcare services to the adolescents and children. The cost of transportation to the clinics is a major barrier. The poverty level of the young in society is high but there is no social protection

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Table 1 (continued)

Session 2: child health in SSA				
No	Study	Aim	Research design	Finding/recommendation
58.	(Mulaudzi, 2015) <b>South Africa</b> "Adherence to case management guidelines of Integrated Management of Childhood Illness (IMCI) by healthcare workers in Tshwane, South Africa"	To assess adherence to child health care guidelines at PHC settings in a city in South Africa	Retrospective data analysis	programme for such group except the disabled. This increases the financial burden on the adolescents and the young people to access health. The adolescent and the young people then remain vulnerable hence adopts dangerous behaviours which affect their health. IMCI guidelines were not followed before referring children to hospitals. Seriously ill patients were given wrong IMCI classifications. Prioritization of patients was poor due to wrong classification. Expected primary healthcare was not given before referral. Health care workers at PHC clinics should be retrained in IMCI.
59.	(Mulumba and Wilson, 2015), <b>Africa</b> "Sickle cell disease among children in Africa: An integrative literature review and global recommendations"	To review literature on Sickle Cell Disease in African children	Literature review	There is the need to implement early diagnosis and treatment of new-borns with sickle cell disease as such practices have proved to reduce the morbidity and mortality in the developed world. Collaboration with the high resourced countries can help improve sickle cell disease care and indices in Africa.
60.	(Nannan et al., 2012) <b>South Africa</b> "Under-5 mortality statistics in South Africa: Shedding some light on the trend and causes 1997-200"	Summary of child mortality in South African hospitals from 2005-2009	Retrospective study	Five conditions accounting for 77% of child deaths include: acute respiratory infections, diarrhoea, septicaemia (bacterial), tuberculosis and meningitis. 3% of children die on arrival to hospital. 35% of children who died were malnourished and 30 % underweight. 31% of deaths occur within 24hours. 26 of deaths were considered avoidable. Delay in seeking care and inability of care givers to identify the severity of the conditions are modifiable factors. Clinical personnel are responsible for 55% of modifiable factors contributing to death. Empower care givers to recognise danger signs. Ensure all health workers dealing with children are competent. Ensure curricula are relevant for the health needs of the country.
61.	(Nutor, 2012), <b>Ghana</b> "Household resources as determinants of child mortality in Ghana"	To investigate the contribution of household resources on under-5 mortality in Ghana	Maternal reports of child death were compared with household resources using survey-weighted logistic regression	Possession of refrigerator was highly associated with child mortality. Other associated factors are: lower level of education, older maternal age, rural dwelling, and multi-parity.
62.	(O'Malley et al., 2014), <b>Africa</b> "Africa's child demographics and the world's future"	To discuss the demography of Africa compared to the world.	Discussion paper	Africa's population doubled in 50 years and the population will double again by 2050. Based on the current population trends, there will be half of the population of the children in the world living in Africa by the end of this century. The increasing fertility rate and decreasing child mortality in Africa are the two main forces driving the population explosion. There is the need to invest in the health and wellbeing of children in Africa through PHC services and principles so as to respond to the expanding population. Paying attention to the demographics of Africa can inform policies and strategies to avoid losing another generation of children.
63.	(Petrocchi-Bartal and Khoza-Shangase, 2014) <b>South Africa</b> "Hearing screening procedures and protocols in use at immunisation clinics in South Africa"	To explore the adherence to PHC hearing assessment guidelines in South Africa	Qualitative descriptive study	There is lack of adherence to South African hearing screening guidelines at PHC clinics due to lack of equipment, budgetary constraints and lack of human resources.
64.	(Reddy et al., 2016) <b>South Africa</b> "Management of acute diarrhoeal disease"	To determine the adherence of medical doctors to standard treatment guidelines in treating acute diarrhoeal diseases	Retrospective clinical audit	Diarrhoea diseases are a significant cause of under-five mortality. More work to be done to prevent preventable deaths.

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Table 1 (continued)

Session 2: child health in SSA				
No	Study	Aim	Research design	Finding/recommendation
	<i>at Edendale hospital: Are standard treatment guidelines followed?"</i>			There is a significant non-adherence by doctors to standard treatment guidelines in managing children with diarrhoea diseases by doctors.
65.	(Reid et al., 2016) <b>South Africa</b> <i>"Where do children die and what are the causes? Under-5 deaths in the Metro West geographical service area of the Western Cape, South Africa, 201"</i>	To review the under-5 mortality rate in a province in South Africa	Retrospective study of under-5 deaths mortality using the hospital data capture platforms	There was under-5 mortality death rate of 18 per 1000 live births. The major causes of death include: pneumonia, gastroenteritis, prematurity and injuries. Alarming, was the 55% out of hospital deaths and the 65% deaths caused by pneumonia and gastroenteritis.
66.	(Solomons et al., 2008), <b>South Africa</b> <i>"An overview of hepatitis A at Tygerberg Children's Hospital"</i>	To discuss collaboration between University of Rwanda and Western University and other stakeholders in a project to enhance child health resources in Rwanda	Retrospective record review	There are gaps in Advanced Paediatric Nurse training regarding the need for the advanced practice nursing in paediatric nursing and the capacity of lecturers to teach in such programme. Nurse educators were trained by the Canadian collaborating institution on distance education basis. The lessons learned from Rwanda are being used to develop same programmes in Burundi.
67.	(Thandrayen and Saloojee, 2010) <b>South Africa</b> <i>"Quality of care offered to children attending primary health care clinics in Johannesburg"</i>	To assess the quality of child health care services, provide at the PHC in South African city.	Observational study	There was long waiting time at the PHC. Identification and attention to danger signs were poorly done. Unwarranted antibiotics were prescribed in almost 33% of cases. Growth monitoring and nutritional counselling was inadequate. Food supplements were not given to deserved children. A deliberate and pragmatic restructuring of the PHC for children is required to improve quality of care for the children.
68.	(Tong, 2015) <b>Kenya</b> <i>"Describing the health care needs of school-age children in sub-Saharan Africa in order to develop a model of a nurse-run school-based health clinic"</i>	To determine the lapses in health care for school going children in order to propose a model to address it.	A systematic review was triangulated with stakeholder interviews	Physical, human and financial resource limitations affected the healthcare of children in Kenya. A nurse run-school based clinic is proposed to address the healthcare delivery deficit in for school children.
69.	(Vaaltein and Schiller, 2017), <b>South Africa</b> <i>"Addressing multi-dimensional child poverty: The experiences of caregivers in the Eastern Cape, South Africa"</i>	This paper explores the experiences of caregivers in the Eastern Cape Province regarding the alleviation of child poverty, and presents a case for the expansion of monetary support to effectively address the multi-dimensional focus of child poverty in South Africa.	Phenomenological research design was followed by conducting semi-structured interviews and a focus group discussion with 20 participants who were purposively drawn from four urban and rural areas in the Eastern Cape	The employment level is such that most of the caregivers depend on the child support grant given to the children. The findings concur with the view that the Child Support Grant (CSG)3 monetary support should be increased to better accommodate the multi-dimensional child poverty needs of the CSG recipients. The findings illustrate that most of these children were not experiencing any chronic illnesses but challenges to accessing quality health care services against the backdrop of using the CSG to alleviate child poverty. When children experience common illnesses, caregivers indicated a preference to access health care services from private facilities rather than from public facilities. This is due to challenges with distance and mobility, as well as the caregiver's perceived poor-quality services received when in public health centres. They did indicate, however, that they have to find other means to pay for the medical costs as the CSG cannot be stretched that far. Participants reported experiencing challenges with lack of support from the children's fathers who are either unable to support children because they have passed away or they neglect their responsibilities for their children. This then leaves the participants to care for the children on their own

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Table 1 (continued)

Session 2: child health in SSA				
No	Study	Aim	Research design	Finding/recommendation
70.	(van As, 2010) <b>South Africa</b> "The health of our children should be the measure of our progress"	Opinion titled "The health of our children should be the measure of our progress"	Expert Opinion	Approximately half of South African population are children. A child is anyone less than 19 years of age. University of Cape Town's department of surgery contribute to child health in liver transplantation, paediatric trauma care and child accident prevention. Unintentional injuries kill about 6500 children yearly in South Africa.
71.	(Westwood et al., 2012) <b>South Africa</b> "Paediatric admissions to hospitals in the Cape Town Metro district: A survey"	To determine the level of care requirement of children in Cape Town.	A point prevalence survey	10 % of children hospitalized do not need to be in hospital. 77% of children hospitalised are under five years of age. Respiratory and gastro-intestinal conditions dominated at level one and 2 units. Only 28% of level 1 patients were in level one hospital as more than whereas 200% of clients requiring level one care are in level 2 hospitals than in level 1. Services too sophisticated for patient needs. Level 1 cases are predominantly infectious and nutritional problems. There is shortage of level 1 beds.
72.	(Whitworth et al., 2010), <b>Africa</b> <i>Improving Implementation: Building Research Capacity in Maternal, Neonatal, and Child Health in Africa</i>	To discuss the failure to implement evidence-based maternal and child health services in Sub-Saharan Africa.	Discussion paper on maternal and child health	There is the need for African governments to support and fund research in child health. The high numbers of child mortality in Africa needs urgent solutions. There is the need for the government to support institutions and researchers to investigate the cause and formulate interventions to deal with the issues relating child mortality in Africa. The evaluation of West African child survival programme shows that there was no improvement in child survival in the region. Most of the well-meaning interventions are developed in Washington, Geneva, or London with little or no consultation with the Sub-Saharan Africa grassroots. International organizations are important but they must come and listen to the people on the grounds in SSA.
73.	(Witterberg, 2010) <b>South Africa</b> "Early intervention in child health in South Africa"	Early intervention in Child Health in Africa	Expert opinion	Early detection and intervention is the right of every individual in community according to the batho pele principle. Early detection and prevention of childhood hearing loss is of primary focus.
74.	(Witterberg, 2013) <b>South Africa</b> "Qou Vadis Child health in South Africa"	Child health in South Africa	Expert opinion	Many of the interventions that have positive impact on child healthcare in Africa is PHC. These interventions are cost-effective
75.	(World Health Organization, 2016) <b>International</b> "Sustainable Development Goals (SDGs) SDG 3: Ensure Healthy Lives and Promote Wellbeing for All at All Ages"	To present the Sustainable development goals to health	Working document on healthcare	Under-5 mortality rate must be at 25 per 1000 live births and neonatal mortality to 12 per 1000 live births by 2030. All preventable child deaths must be ended by 2030. In the same period, AIDS, tuberculosis, malaria and neglected tropical diseases epidemics must be ended and also fight against hepatitis, water-borne diseases and other communicable diseases.
76.	(World Bank Group, 2015), <b>Africa</b> <i>Africa's Demographic Transition; Dividend or Disaster?</i>	To discuss whether the population growth of Africa will help improve or hamper healthcare delivery	Discussion paper	Countries in Sub-Saharan Africa have both higher fertility and higher under-five mortality than elsewhere in the world. The importance of lower child mortality in fertility decline suggests that African countries with high child mortality rates should focus first on improving child health and then on reducing fertility. The responsiveness of fertility to a decline in mortality also means that health interventions that save children's lives cause an increase in population; however, this period of population growth is temporary and counterbalanced by falling fertility in the long run.

studies. Information charted from the studies included: author and date, setting, title, purpose, research design and the findings of the study regarding APN and child health in SSA.

#### 2.2.4. Data analysis

The data synthesis employed in this study consisted of five stages namely data reduction, data display, data comparison, drawing conclusions and verification (Miles et al., 1994; Whittemore and Knafelz, 2005). The major findings and recommendations from the studies regarding Advanced Practice Nursing and child health charted in the data matrix were colour coded. This made it easy for comparing studies with each other based on the giving characteristics-relevance, opportunities and threats to CHNP programme in SSA. The codes were categorised into sub-themes and sub-themes into three main themes as described in the results section.

### 2.3. Results and discussion

This study outlined the significance of child healthcare and the need for CHNP in the SSA context. The opportunities and threats that SSA countries face in the development and implementation of APN programmes were also outlined. Three themes were presented from a combination of related sub-themes that were deduced thematically from key findings in the included studies. The expert committee reached consensus on all the themes below.

#### 2.3.1. Theme 1: essence of the CHNP programme in SSA

Population dynamics, socioeconomic factors, poor access to healthcare and the need to reduce the cost of healthcare were the indicators for the introduction of CHNP programme in SSA.

**2.3.1.1. Population dynamics.** The population of Africa increased about five times in the past seven decades (Liu et al., 2016). By the middle of this century, the population of Africa will double from its current 1.2 billion people to about 2.4 billion people. Africa accounts for 41% of all births in the world resulting in about half of the SSA population being less than 18 years (Ahmed et al., 2011). By 2050, there will be nearly a billion children in Africa (O'Malley et al., 2014), constituting 37% of the population of children in the world (UNICEF, 2014). The majority of the population of SSA being children requires making children a priority in healthcare and other sectoral policies (Liu et al., 2016; World Bank Group, 2015).

The United Nations reported that 1 in every 12 children in SSA will die before the age of 12 years. Children in SSA are 14 times more likely to die before the age of 5, compared to their counterparts in developed countries (SOS Children's Villages, 2016). About 95% of malaria deaths in children under the age of 5 years occur in SSA. With the dominance of preventable communicable disease in SSA, the population distribution (more rural) and poor access to quality healthcare services, the Advanced Practice Nursing programmes will be most appropriate to the healthcare needs of the region. Since children are the majority of the population and are the population at the highest risk of disease and death, the CHNP is essential to the region.

**2.3.1.2. Socioeconomic factors.** Poverty is extreme in SSA. About 70% of SSA population live on less than \$2.00 per day whereas about 48% of those living in SSA live on \$1.25 per day (ECOSOC, 2017; Liu et al., 2016). African children are fraught with conflicts, wars and other forms of abuse (Avogo, 2010; Minoiu and Shemyakina, 2014; Moko-mané et al., 2017). Many children are AIDS orphans and at many times are burdened with acute and chronic diseases (Kidman et al., 2010; Vaaltein and Schiller, 2017). Vogenberg and Cutts (2009) posited that poor economic status affects the healthcare access and choices of people as basic needs such as food and shelter tend to compete with healthcare among poor populations.

About 70–90% of the population of SSA countries live in rural and hard to reach areas, the highest rural population in the world. The rural population suffers the consequences of poverty, such as poor housing and lack of access to vital social amenities, for example, electricity, hygienic water, good schools, roads and health services (Msuya et al., 2017; Shumbusho et al., 2009). Contrary to SSA, only 19.3% of the population of the United States of America live in rural settings (US Census Bureau, 2016) and are most likely to own their own houses and have a lower rate of poverty (18.9%). North America has only 3% of the world's disease burden but 25% of the healthcare workforce. By contrast, Africa has about 24% of the world's disease burden but only 3% of the world's healthcare workforce (Kolars et al., 2012; Mwangi, 2017). The training and recruitment of a cadre of a health workforce that can provide quality cost-effective care to children is critical in SSA.

**2.3.1.3. Poor access to healthcare in SSA.** The majority of the healthcare facilities and practitioners are located in the cities and towns, thus denying the larger proportion of the population who live in rural communities quality healthcare (Ahmed et al., 2011; Tong, 2015). Nannan et al. (2012) reported that about a quarter of the deaths are avoidable also, 31% of the children die within 24 hours of admission into the hospital. Nannan et al. (2012) also reported that about 64% of the children died of preventable diseases (acute respiratory and gastrointestinal infections) and many died before reaching the hospital. Coetzee (2014) also found that 50% of the child mortality cases occur before children reach the hospital. Mulaudzi (2015) also added that the poor management of Integrated Management of Childhood Illness (IMCI) at the PHC before referral led to 55% child deaths. Most importantly, healthcare professionals are responsible for about 55% of the cause of child deaths in South Africa (Nannan et al., 2012). It is imperative that CHNPs are trained to respond to the needs of the children within SSA.

Children's condition deteriorates faster than adults (Cootes, 2010). The consequences of diseases suffered by children in early life have devastating effects on their adult life, therefore it is important to provide quality and timely healthcare for children (Delaney and Smith, 2012). Unfortunately, healthcare services for children in SSA are not responsive enough to child healthcare needs.

**2.3.1.4. Need to reduce the cost of healthcare in SSA.** If 70% of SSA population live on less than \$2.00 per day, then there is the need to put strategies in place to protect them against the cost of ill health. To access healthcare, the majority of the population who live in rural settings will have to spend extra money on transport to the urban centres, as well as the cost of accommodation and living expenses in the urban centres while receiving care. Primary Health Care service settings where the APNs function effectively is essential in UHC. A study conducted in South Africa demonstrated that 10% of the children admitted to hospitals were not expected to be on admissions whereas many district hospital patients were admitted into regional hospitals (Thandrayen and Saloojee, 2010; Westwood et al., 2012). This may be due to the poor services provided at the PHC level by incompetent staff. Having a competent CHNP at the PHC clinics will encourage service utilization, which will in turn protect the population against the high cost of healthcare.

#### 2.3.2. Theme 2: opportunities

The quality and quantity of the nursing workforce, steady growth of APN Programmes across sub-Saharan Africa, resource sharing among institutions and the outcomes of APN programmes across the world indicated that APN is possible for SSA.

**2.3.2.1. Quality and quantity of the nursing workforce.** Nurses constitute about 70–80% of the human resource for health in SSA (Duma et al., 2012; Rispel et al., 2014; Sietio, 2000). This means that nurses form the foundation of the healthcare system and by extension, the foundation of the child healthcare in SSA (Davis et al., 2014). To be successful,

Universal Health Coverage must be largely driven by the nursing workforce (Sietio, 2000). Nurses, therefore, are at the fulcrum of UHC but will need adequate capacitation through appropriate nursing programmes, advocacy and commitment to steer UHC in sub-Saharan Africa.

#### 2.3.2.2. Steady growth of APN programmes across Sub-Saharan Africa. -

There is a progressive recognition of the APN roles in some African countries. For example, the Nurse Practitioner programme started in Ghana in the year 2001 received recognition from the Nursing and Midwifery Council of Ghana in the year 2014 (Nursing and Midwifery Council, 2014). The Family Nurse Practitioner programme, which was started as a one-year post registration programme, had been added to the Master of Nursing programme as a speciality in the University of Botswana. Botswana also introduced Clinical Nurse and Midwifery Specialist programmes at the master's level with recognition and licensing from the Nursing and Midwifery Council of Botswana. The Family Nurse Practitioner programme that was introduced in the year 1979 as a one-year certificate and suspended in the year 1995 due to lack of faculty was revived in the year 2009 by the help of Seed Global Health in the Kingdom of Eswatini (Anathan, 2018). The Nurse Anaesthetist programme, which was suspended in 1990 due to civil war, has also been reinstated but had to be paused during the Ebola outbreak in Liberia. The curriculum has been improved and the programme is currently being implemented. In Tanzania, Kilimanjaro Christian Medical University College collaborated with Duke University School of Nursing to start a three-year bachelor's degree Nurse Practitioner programme in 2018 (Mtuya and Blood-Siegfried, 2018). There is a continuous effort by international and local institutions and stakeholder groups to see the APN programme instituted in other countries in sub-Saharan Africa. The difficulty is the poor publicity given to these efforts in the region.

#### 2.3.2.3. Resources sharing and institutional collaborations.

Resources from South Africa were used in developing specialist programmes in Ghana, Malawi, Botswana, and Zambia (Bell et al., 2014; Coetzee, 2014; Martel et al., 2014). South African resources could be leveraged to develop faculty for other countries. An NGO (Improving Nursing Education and Practice in East Africa) and Universities such as Michigan University, University of Alberta, Nottingham University, Western University (Canada) have collaborated with universities in SSA to develop nursing programmes. There is a positive working relationship between the health facilities, communities of interest, educational institutions, and international partners in SSA (Mutea and Cullen, 2012). These can drive the development and implementation of APN programmes.

Many foreign funding agencies and universities have collaborated with local institutions in the development of the APN roles in Africa. These include United States Agency for International Development in Botswana; the University of British Columbia in Ghana; Denmark and Seed Global Health in the Kingdom of Eswatini, Global Health Service Partnership visiting faculty, Seed Global Health and Northeastern University Nurse Anesthesia programme in Liberia; Seed Global Health and Queen Elizabeth Central Hospital in Malawi; and Duke University School of Nursing in Tanzania (Anathan, 2018; GhanaWeb, 1999; Mtuya and Blood-Siegfried, 2018; Seed Global Health, 2017; Sietio, 2000). It is important to keep the inflow of funds and other forms of support from these foreign sources while ensuring that the programmes are locally owned.

#### 2.3.2.4. The track record of Advanced Practice Nurses globally.

About 23 countries have improved access to quality healthcare at an affordable cost through the APN programmes. Many studies have shown that the care provided by the APN are of equal or higher quality to that of the general practitioner (Hutt et al., 2013; Pirret et al., 2015; Swan et al., 2015). The nursing leadership within sub-Saharan Africa need to capitalize on these achievements to lobby for the programme within the region.

#### 2.3.3. Theme 3: threats

Limited resources, opposition from the medical profession, inefficient nursing regulation and regulatory bodies, and lack of context-specific APN benchmark programmes constitute the challenges faced by the CHNP programme.

#### 2.3.3.1. Limited resources.

There is lack of human resources especially the faculty to teach in the APN programmes due to lack of preparation (Kolars et al., 2012; Regan et al., 2016). Only a few Universities within SSA countries have the physical infrastructure and financial resources to implement APN programmes (Terry et al., 2012). For example, the initial nurse practitioner programme in the Kingdom of Eswatini had to be terminated in 1995 due to lack of human resources (Dlamini et al., 2018; Mathunjwa and Potgieter, 2004). Good HRH governance and advocacy are necessary to produce and manage appropriate workforce for the Nursing Education Institutions. There must also be a tailored succession plan such as the one in Botswana to produce local capacity for the University of Botswana to sustain the nurse practitioner and clinical nurse specialist programmes (Sietio, 2000).

#### 2.3.3.2. Opposition from the medical profession.

The existence of lower cadre physicians whose training is less rigorous and shorter than APN threatens the APN programme (East et al., 2014; INEPEA, 2008; Kleinpell et al., 2014; Sastre-Fullana et al., 2014). The medical profession protects the roles of their members, therefore, posing the greatest opposition to the introduction of APN programmes in SSA (Kolars et al., 2012; Pulcini et al., 2010).

#### 2.3.3.3. Inefficient nursing regulations and regulatory bodies.

Nursing councils lack the resources and autonomy to expand the scope of practice of APN to reflect their extended roles. This creates role confusion among nurses and other healthcare professionals, placing a restriction on the Advanced Practice Nurses (Duma et al., 2012; East et al., 2014; Kleinpell et al., 2014). For example, the nurse practitioner programme in Ghana started in the year 1999 but could not be regulated until 2014 partly due to the fact that the Nursing and Midwifery Council thought the medical council is best suited to regulate their practice while the medical council demanded to change the name of the programme for them to regulate (Nursing and Midwifery Council, 2014).

#### 2.3.3.4. Poor governance of nursing workforce.

The highly qualified nurses are posted to a higher level of care settings while the lower cadre of nurses are posted to community health settings, which require much autonomy, leading to inefficiency in PHC services. Society tends to be sceptical about extending the roles of nurses for diagnoses and prescription (East et al., 2014). Even though task shifting is necessary to meet HRH demands at certain periods, it should not have been a regular phenomenon. In many countries nurses are in task shifting extended roles without license (Duma et al., 2012; Heale et al., 2015; Kleinpell et al., 2014; Mccarthy, 2012; Sietio, 2000; Wolf et al., 2012). This creates delicate legal issues as any acts of omissions and commissions could be to the disadvantage of the nurse. The nursing governance structures should demand a permanent extension of the roles of nurses to cover their task shifting duties.

#### 2.3.3.5. Lack of context-specific APN benchmark programmes.

Nursing training in SSA has been benchmarked on Western material and philosophy (Coetzee et al., 2012; Kolars et al., 2012). It is reasonably certain that the nurses produced from the neo-colonial curricula are less responsive to the special healthcare needs of SSA because the healthcare needs and challenges of SSA are different from those of the Western world (Ahmed et al., 2011; Coetzee et al., 2016). Apart from South Africa, all the APN initiatives in Africa were through foreign donors or institutions. The initial faculty that teach in the programmes were also foreign-trained, creating the opportunity for benchmarking the

programmes on foreign programmes and materials that might not respond to the local context (Coetzee et al., 2016).

### 3. Conclusion

The threats to the introduction and implementation of the CHNP programme are generic and were faced by all the countries that had implemented APN programmes. This study demonstrated the crucial need for competent CHNPs in SSA countries. The CHNP programme offers an opportunity to provide quality, timely and cost-effective health-care to the deprived and vulnerable children in SSA. It is essential, therefore to find ways of implementing the programme despite the existing constraints. There are opportunities that the nursing profession can harness to surmount such threats. Responsibility, however, lies with the nursing councils to develop scopes of practice that enable the APNs to practice to their full capacity. The greatest support for the APN programmes comes from national nursing organizations, nurses and governments. These groupings are in a powerful position to influence change and have an obligation to fulfil their advocacy roles to lobby for, and assist in, the implementation of these programmes. A shared effort amongst SSA countries will enable a coalition to facilitate cost-effective and shared programmes. An initiative by the national nursing governance structures to gain the trust and support of government and other stakeholders for the APN programmes is necessary to initiate dialogue which should then lead to joint planning and implementation of APN programmes (Pulcini et al., 2010).

### Declarations

#### Author contribution statement

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