IT TAKES A (CHILDREN'S NURSING) WORKFORCE

A dissertation submitted to the University of Manchester for the degree of MSc in Global Health in the Humanitarian and Conflict Response Institute.

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LIST OF ABBREVIATIONS

APPG	All Party Parliamentary Group
CNPDI	Child Nurse Practice Development Initiative
CPHC	Comprehensive Primary Healthcare
DOH	Department of Health
GCD	Global Centre for Development
GHWA/N	Global Health Workforce Alliance / Network
GSDNM	Global Strategic Directions for Nursing and Midwifery
GSHRH	Global Strategy on Human Resources for Health
HRH	Human Resources for Health
ICN	International Council of Nurses
MNCN	Masters of Nursing in Children's Nursing
NDP	National Development Plan
PGDip-CCCN	Post-Graduate Diploma in Critical Care Children's Nursing
PGDip-CN	Post-Graduate Diploma in Children's Nursing
PHC	Primary Healthcare
RXCH	Red Cross War Memorial Children's Hospital
SANC	South African Nursing Council
SPHC	Selective Primary Healthcare
UCT	University of Cape Town
UHC	Universal Health Coverage
WHA	World Health Assembly
WHO	World Health Organization

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ABSTRACT

Context: There is no health without a workforce. Rooted in the original concept of comprehensive primary healthcare, the World Health Organization sets Human Resources for Health (HRH) as one of six buildings blocks needed to direct health system strengthening towards universal health coverage (2007). Yet despite this ambition, a disconnect between theory and action exists - with forecasts predicting a global shortage of 14.53 million health workers in 2030 (WHO 2016a, p.18). Whilst this represents a marginal improvement on the current situation, Africa's shortfall is set to grow from 4.19 million in 2013 to 6.09 million (WHO 2016a, p.18). Nurses make up 50% of this (WHO 2016a, p.18). Yet their role is often overlooked and undervalued, with literature showing a growing international focus on broader HRH and low-level, generalist care putting the role, education and training of professional and specialist cadres (including children's nurses) at risk.

Methodology: Based at the Department of Paediatrics and Child Health at the University of Cape Town, South Africa, the Child Nurse Practice Development Initiative (CNPDI) is committed to building a children's nursing workforce "for Africa, in Africa", with this study using a mixed methodological approach to examine their direct contribution to the delivery of an educated children's nursing workforce. To deliver on this, the CNPDI shared anonymised raw programme data. This included information on all student enrolments over the last 11 years - their age, gender, nationality, year of registration, course, funding source and graduation date. Where available, it also recorded information against baseline/current circumstance, practice environment and role. This data was then triangulated with desk-based research from on-line public sources (including government websites, national data sets, institutional websites and academic placement finders) in order to contextualise programme throughput and gain new understanding as to the origin, organisation, movement and long-term retention of CNPDI enrolments and alumni. Results were 'member-checked' for improved accuracy (Birt et al. 2016).

Findings: Research shows the CNPDI welcoming 348 enrolments in 11 years, 75% of which are South African, 25% of which travelled from 10 other sub-Saharan countries. With a graduation rate of 94%, this has seen the CNPDI qualify 170 individual children's nurses, 131 critical care children's nurses and 11 advanced practitioners from nine African countries. Available data also shows the team making a sustained contribution to workforce development, with 99% of known alumni continuing to work in Africa. Of those where direct follow-up data is available, 91% are based at their original centre of employment. Almost all enrolments and alumni are linked to top-tier, public hospital facilities - although a small percentage have moved into education. In total, 9% of all known CNDPI alumni work in educational facilities, with 63% working in centres that offer (or will offer) children's nursing.

Conclusion: The CNPDI is an important contributor to the development of a children's nursing workforce in South Africa and across the continent. But in-country enrolments are slowing, with discussion showing the extent to which such programmes are connected to broader issues in health, education and labour market development. As such, five recommendations for future development are made: improved data capture; new research; landscape analysis; recruitment planning; marketing and advocacy. To support this process the researcher asks the South African government to renew its commitment to children's nursing, and for the international community to *recognise and reinforce* this need by advocating a mandate of comprehensive care and supporting national governments in their plans to deliver this

ACKNOWLEDGEMENTS

As the former UK Charity Manager for The Children's Hospital Trust, South Africa (registered charity 1121573) I would like to declare a historic and ongoing professional relationship with the Child Nurse Practice Development Initiative, and to pass on my thanks to the team for their support over this year. On a more personal note, I would also like to take this chance to thank my dad for sharing his infinite knowledge of English grammar, and my mum for being such a pillar of support. Finally, I would like to thank my wonderful new husband - for never once questioning the lost evenings and weekends, for helping me deal with the stress and for being my rock throughout this process. Congratulations Christopher, you survived my dissertation!

UNIVERSITY DECLARATION

No portion of the work referred to in the dissertation has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning.

DECLARATION

The Child Nurse Practice Development Initiative of the University of Cape Town is acknowledged as the originator of the data analysed in this study, which is held in the UCT Child Nursing Students and Alumni data registry (HREC Ref: 008/2019). This study, and the use of the data registry, has been approved by the Human Research Ethics Committee of the University of Cape Town (HREC Ref: 172/2019). The use of the data is subject to an agreement that that any publication resulting from the use of this data will acknowledge its source, and if relevant, the respective contributions to any paper according to ICEMJ guidelines.

INTELLECTUAL PROPERTY STATEMENT

CHAPTER 1: INTRODUCTION

In February 2018 the World Health Organization (WHO), International Council of Nurses (ICN) and Burdett Trust for Nursing launched a campaign to raise the profile of the world's nurses (Nursing Now, 2018a). The start of a global movement, "Nursing Now" is designed to recognise, celebrate and advocate the role of nurse professionals in achieving Health for All (Nursing Now, 2018a). It is this campaign that inspired the presented study, with my professional connection to the Child Nurse Practice Development Initiative (CNPDI) opening a door to the world of nursing and the inspiring individuals that work within it. Yet like so many others in the profession, theirs is a story seldom told. It is for this reason that I decided to focus on the work of the CNPDI and use this chance to generate learning for direct programmatic application - with study findings also creating new opportunity to feed in to global conversations on Human Resources for Health (HRH) and nursing.

1.1. BACKGROUND CONCEPTS

To make the most of this opportunity, it is first necessary to outline two base concepts that put case study development in context. The first is that of Primary Healthcare (PHC), with the second linked to the role of HRH within health system strengthening. Looking to the former, the concept of PHC was introduced through the Declaration of Alma Ata in 1978 (International Conference on Primary Healthcare 1978). Where hospitals used to represent the entry-point for the delivery of public health services, PHC embodies principles of universal access, equity and participation to bring promotive, preventive, curative and rehabilitative healthcare closer to where people live and work (International Conference on Primary Healthcare 1978, p2). Developed in a spirit of "social justice", Alma Ata put health equity on international agendas for the first time (Litsios 2015, p.1). As such, it represents a major milestone in the field of public health, with the World Health Assembly (WHA) adopting it as the founding principle of their ambition to achieve Health for All, or Universal Health Coverage (UHC) (Litsios 2015, p.1). The difficulty is that many critics saw the ideal of PHC as unrealistic and favoured the delivery of more manageable "selective" approaches (SPHC) (Litsios 2015, p.4; Schaay & Sanders, 2008). Most often focussed on vertical, disease-specific interventions, SPHC characterised much of the activity linked to the Millennium

Development Goals (Travis et al. 2004; Waage et al. 2010; Rao & Pilot, 2014). But history has shown it to be flawed, with WHO criticising the development of "patchwork components" that left national health systems on the point of collapse (WHO 2008, p.1; WHO 2007, p.9).

Far from the fragmented approach of SPHC, it is the holistic and integrated nature of PHC that is key. Indeed, the WHO advocate the original concept of *comprehensive* PHC (CPCH) as one that "offer(s) a way to organise the full range of healthcare, from households to hospitals, with prevention equally important as cure, and with resources invested rationally in the different levels of care" (WHO 2008, p.1). As such, CPHC is the foundational pin in their work on health system strengthening - a horizontal approach designed to strengthen the systems needed to improve health service coverage (WHO 2007). Made up of six building blocks (service delivery, health workforce, information systems, access to medicines and technology, financing, leadership and governance) HRH is the second of these, with the term "health workforce" used to recognise "all people engaged in actions whose primary intent is to protect and improve health" (WHO 2007, p.17). Key to achieving UHC, the correlation between workforce coverage and health outcomes is well-known (Joint Learning Initiative 2004; WHO 2006; GHWA 2008a). Yet an alarming shortfall exists – with global shortage set to reach 14.5 million health workers by 2030 (WHO 2016a, p.18).

1.2 WHY IS THE WORLD TALKING ABOUT NURSES?

By far the largest workforce, nurses account for 50% of this shortage (WHO 2016a, p.18). With Africa the worst affected region, the All-Party Parliamentary Group (APPG) believe that ambition for UHC depends on the number and ability of nurse practitioners to use their skills to the full (2016, p.3). Yet their role, contribution and potential is often unrecognised and undervalued (APPG 2016 p.18). As such, not only is there an urgent need to invest in the development of generalist and specialist nurses, the ICN and WHO (2016b) and APPG (2016) called for a new movement to raise the profile of nursing professionals worldwide. Nursing Now is the response. With groups active in 80 countries across the world, the campaign has created an important opportunity to maximise potential for workforce growth development (Nursing Now 2018b).

1.3 INTRODUCING THE CNPDI

Based at one of South Africa's top universities (BRICS 2019), the CNPDI is a nurse-led academic unit in the Department of Paediatrics and Child Health at the University of Cape Town (UCT)

(CNPDI 2018). Launched in 2008, their brief was to re-establish children's nursing training. Run in partnership with the Red Cross War Memorial Children's Hospital (RXCH) – the first standalone, specialist children's hospital in the country – they offer three post-graduate courses:

- A one-year Post-Graduate Diploma in Child Nursing (PGDip-CN)
- A one-year Post Graduate Diploma in Critical Care Child Nursing (PGDip-CCCN)
- A two-year Clinical Masters in Child Nursing (MNCN).

Committed to building a children's nursing workforce "for Africa, in Africa" the past 11 years have seen the CNPDI become a leading institution for the development of paediatric nursing across the region (CNPDI 2018). In this time they have trained more than 300 nurses from South Africa and across the continent – as well as supporting the development of affiliated training programmes in Kenya, Malawi and Zambia (CNPDI 2018). Publishing more than 19 articles to date, the team are an important voice for children's nursing. Yet operational and academic commitments have left little room for formal programme evaluation, with their database holding 11 years of throughput data yet to be explored in detail.

1.4 STUDY RATIONALE AND STRUCTURE

In light of the above, this study will assess the CNDPI's contribution to the delivery of an educated children's nursing workforce in sub-Saharan Africa. To do this, I will analyse raw data shared by the team – triangulating this information with desk-based research in order to contextualise programme throughput and gain new understanding as to the origin, organisation, movement and retention of enrolments/alumni. Building on the concepts of CPHC and health system strengthening presented here, Chapter 2 explores the flow of discourse around HRH and nurse workforce development in more detail. This creates a foundation for the Background Research & Methodology presented in Chapter 3, with Chapter 4 presenting an overview of study results. Chapter 5 will then consolidate key study findings before going on to deliver the final recommendations and conclusion.

CHAPTER 2: LITERATURE REVIEW

Building on the core concepts of CPHC and health system strengthening outlined in Chapter 1, this chapter examines the flow of discourse around HRH and nurse workforce development in more detail. Recognising HRH as a building block for UHC, it will start by giving an overview of core documentation in policy development before focussing on the new *'Global Strategy on Human Resources for Health'* (GSHRH) (WHO 2016b) and its accompanying implementation framework (High-Level Commission for Health and Economic Growth 2017; Working for Health Group 2018). This process is key to understanding the evolution of HRH practice and the impact this has on nursing. From this, it will then go on to consider the role of nursing in relation to global agendas - identifying trends that shape the latest *'Global Strategic Directions for Strengthening Nursing and Midwifery'* (GSDNM) (WHO 2016c). Analysis then focusses on some of the key challenges linked to nurse workforce development, including retention, efficiency and leadership, before going on to consider new tensions between different interpretations of the term 'CPHC' . It ends with a discussion on nurse education and an analysis of existing evaluation frameworks and techniques.

2. 1 UNDERSTANDING THE HRH LANDSCAPE

To open a discussion on HRH is to enter a labyrinth of policies, agendas, frameworks, resolutions and reports. With no one review, navigating this landscape is a daunting task – with the following section giving an overview of key documentation and agendas in the HRH arena.

2.1.1 Policy background

As Chapter 1 indicates, much of the current discussion around HRH can be traced back to two reports: '*Overcoming the crisis'* (Joint Learning Initiative 2004) and '*Working Together for Health'* (WHO 2006). Recognising the limitations of SPHC, these documents are the first to quantify the scale of the crisis - setting a minimum threshold of 2.3 health workers per 100,000 people as a baseline for health service coverage. Calling for a renewed focus on CPHC, the WHO's *'Framework for Action'* reinforces this position by formalising the definition of a health system and setting HRH as a key building block for system strengthening (2007). This discussion is further mobilised by the

Global Health Workforce Alliance/Network (GHWA/N) (2008a; 2013; 2017), with the following decade seeing the issue of HRH gain traction. This movement is exemplified by an increasing number of WHA resolutions (2006; 2011; 2014; 2016; 2017) and international declarations - most notably those of Kampala, Dublin and Recife (GHWA 2008b; GHWA 2013; GHWN 2017). Whilst each can be seen as evidence of a growing commitment to HRH, the similarity of the reforms called for suggests a serious disconnect between theory and action, particularly in Africa. Indeed research shows just 11 African member states sitting above the 2.3 threshold in 2015 (WHO Africa 2017 p1), with a revised baseline of 4.35 bringing new urgency to the crisis (WHO 2016b). Therefore, where global shortages are predicted to fall from 17.40 million health workers in 2013 to 14.53 million in 2030, this same timeframe sees Africa's HRH shortfall grow from 4.19 to 6.09 million (WHO 2016a, p.18).

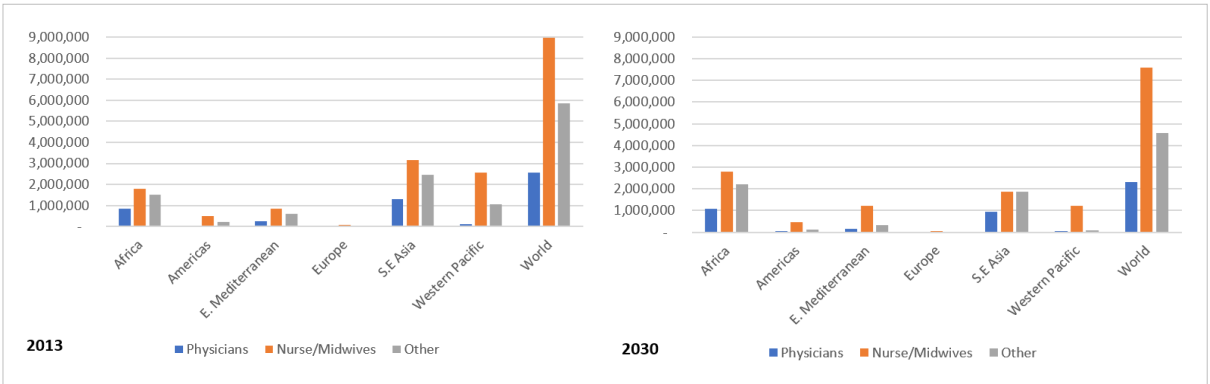


Figure 1: Needs-based shortages by cadre and WHO region in 2013 and 2030
(SOURCE DATA: WHO 2016a, p.18)

2.1.2 A new global strategy

Combating the above, the GSHRH calls for global collaboration towards "universal availability, accessibility, acceptability, coverage and quality of the health workforce" (WHO 2016b, p.8). Clearly rooted in the notion of horizontal, systems-based development, not only does it endorse the original mandate for CPHC, it also reinforces the need to consider HRH within a multi-sectoral landscape. Here, emphasis is placed on the capacity of the health sector to identify the nature/number of health workers required, the education sector to produce them, and the labour market to deploy and retain its new workforce (WHO 2016b, p.25).

With the international community taking on a facilitative role, the GSHRH reinforces the need to develop integrated national plans that match workforce numbers, skills-mix and distribution to population need – with action delegated to the "will" and leadership of national governments

(WHO 2016b, p.26; WHO 2016b, p.13). With this, 2017 saw African member states adopt the principles of the GSHRH and pledge to reduce inequalities to health worker access by half (WHO Africa 2017, p.4). With progress towards the existing *'Strategic Roadmap for Human Resources for Health'* (WHO Africa 2013) already off track, the GSHRH (WHO 2016b) brings new urgency to this plan. In particular, the African adaptation is designed to address ongoing challenges of weak leadership, poor health worker retention, inefficient use of resources, inadequate training and limited health information – all of which are recognised barriers to workforce development (WHO Africa 2013). With these issues explored in Sections 2.3 and 2.4, the concern here is that history will repeat itself, and that the GSHRH (WHO 2016b) and associated regional commitments will become another in a long-line of policy documents that fail to catalyse significant change.

2.1.3 A framework for action

Mitigating this risk, WHA adopted a new five-year implementation framework to guide regional and country-level action (WHA 2017; High-Level Commission, 2017). Consolidated by the Working for Health Group, these documents present 10 recommended actions across five workstreams: advocacy, social and policy dialogue; data evidence and accountability; education skills and jobs; financing and labour mobility (2018 p.8). In doing so, not only do they advocate integrated national planning, they also promote affordable, community-based care (Working for Health Group 2018, p.4). Whilst Section 2.3.3 queries the selective nature of this rhetoric, the High-Level Commission and Working for Health Group strive to create a new business case for investment – one that turns HRH from a "consummative expense" into an affordable investment for national prosperity (High-Level Commission 2017, p.16). It is a smart move. Will be it enough to catalyse action?

2.2 NURSING - A NEW GLOBAL DISCOURSE?

With Figure 1 showing nurses to make up 50% of the global workforce crisis, it is important to understand how the above discussion links with the profession, both in the past and for the future (WHO 2016a, p.18). Indeed, given the profile afforded to HRH in recent years, it would follow that nursing too is a fairly new conversation. It is not. The following section provides an overview of past and current policy trends.

2.2.1 Policy background

Now 120 years old, the ICN has been partnered with the WHO since 1948 (WHA 1949; WHO 2017a). Indeed, not only do early resolutions recognise the role of nurses/midwives in achieving UHC (then Health for All) they also call to direct workforce development towards this goal (WHA 1950; WHO 1977; WHA 1983; WHA 1989; WHA 1992; WHA 1995). Through this discussion, both Uys & Klopper and the WHO note a tenable shift from the legacy of facility-led practice through to the more person-centred, promotive and preventive approach of CPHC (Uys & Klopper, 2013; WHO 2017a). This position is formalised by the publication of global strategies in 2002 and 2016 (WHO 2002; WHO 2016c). But this is only the start. As with broader discussion around HRH, nurse workforce development is characterised by an alarming number of resolutions, frameworks and policies making a similar call to action (WHO 2017a). This is not to undermine the progress that *has* been made (WHO 2016c, p.9) but to highlight the persistent nature of the challenges faced, and the difficulty in turning high-level theory into ground-level action.

2.2.2 A voice unheard

Looking at its history, as with HRH, nurses face challenges of weak leadership, poor health worker retention, inefficient use of resources, inadequate training and limited health information, particularly in low and middle-income countries (see Section 2.3 and 2.4). Within this, there are a number of issues specific to nursing that also need to be considered - with both the GSDNM (WHO 2016c) and APPG Triple Impact (2016) report calling for a new movement to raise the profile of nursing professionals worldwide. Delving into this, it is interesting to see a number of academics suggest that as a 90% female profession (Munjanja et al. 2005, p.14), nursing suffers from the weak position of women in society (Uys & Klopper 2013; APPG, 2016; WHO 2017a). Certainly, with Rispel & Schneider (1991) seeing nurses treated as handmaids and Evans (1997) reporting practise to favour male nurse leaders, the issue of gender hierarchy is important. This situation is compounded by the breadth of the nursing role, the combined treatment of nursing/midwifery, and a lack of information/data (APPG 2016; WHO 2016c). This can make it difficult to define, capture and recognise the role of nurses, with many of the publications in Section 2.1 paying only lip-service to their position. Indeed, given the shortfalls they face, it is concerning to see how little detail there is to be gained here. Even the GSHRH (WHO 2016b) - which was developed in collaboration with the ICN - fails to offer specific guidance on the subject, or even signpost its readers to the GSDNM (WHO 2016c).

2.2.3 Introducing the Global Strategy for Nursing and Midwifery

By way of contrast, the GSDNM (WHO 2016c) openly acknowledges and visibly echoes the tenets of the GSHRH (WHO 2016b), with activity mobilised through four key themes: education; leadership, management and governance; intra and interprofessional collaboration; and mobilising political will to invest in workforce development (WHO 2016c, p.13). Promoting a vision of "available, accessible, acceptable, quality and cost-effective nursing and midwifery care for all" (WHO 2016c, p.13) not only does the GSDNM endorse the original mandate for CPHC, it also advocates integrated national planning – a process that sees nurse workforce development designed in response to population need and sold through the benefit of long-term economic gain. By aligning itself in this way, it connects to broader ambition for HRH and can use this visibility to mobilise their own developmental needs. Is it coincidence that the APPG *'Triple Impact'* report (2016), Nursing Now (2018a), the '*State of the World's Nursing'* report (WHO 2019a) and *'Year of the Nurse/Midwife'* (WHO 2019b) all follow this point? Perhaps not. With each designed to raise the voice of the world's nurses, the profession looks set to gain the attention of a truly global audience. The challenge now is to maintain and grow this profile and use it to turn theory into action – all whilst staying true to their own priorities and ambition.

2.3 KEY CHALLENGES IN WORKFORCE DEVELOPMENT

As Sections 2.1 and 2.2 highlight, the practical delivery of an available, accessible, acceptable, quality and cost-effective workforce is a long-standing challenge. More than just a shortage of inputs, this review highlights issues of retention, efficiency, leadership and education as key contributors to the HRH and nurse workforce crisis, with the following section providing more detail on these areas.

2.3.1 Retention

Looking to the challenge of retention, international migration emerges as a high-profile issue - with headlines presenting dramatic scenarios that see countries like Malawi train 60 nurses a year only to lose 100, or Nigeria, where the loss of one doctor a week leaves national hospitals run by nurses, community health officers and inexperienced physicians (Masanjala 2018; Adepoju 2018). Understandably, long-standing issues of unemployment, low remuneration, high workload, poor resourcing, living conditions and security *all* push healthcare professionals to seek a better life

abroad (Munjanja at al. 2005; WHO 2006; Dovlo 2007; GHWA 2008a; Dussault & Franceschini, 2011). Education also plays an important role, with Munjanja et al. reporting high numbers of health professionals leaving in pursuit of education (2005, p.22) and the GHWA seeing 19% of high-level graduates migrate overseas (2008a, p.77).

Whilst this situation is severe, with the APPG linking just 10% of the nurse workforce crisis to international migration, discussion must be kept in perspective (2016, p.27). Equally important then, are issues of *internal* retention - with Lopez et al. putting the annual attrition rate for nurses in low-income countries at 14%, half of whom choose to leave and half of whom are forced to (through mandatory retirement, ill-health and death) (2017, p.4). Of those that remain, research shows unemployment, rural-urban, primary-tertiary and public-private drift as areas of concern (Dussault & Franceschini 2011). Be it the 10,000 unemployed nurses in Angola (ORDENFA 2019), the 70% of Sudanese personnel based in urban centres (Lemiere et al. 2013, p.149), the 50% of Malawian doctors/nurses working out of four country hospitals (Makwero 2018, p.3) or the constant drain of Zambian workers from the public to private sector (Ferrinho et al. 2011, p.10). Each situation offers a stark example of retention patterns that work against ambition for UHC.

2.3.2 Resource efficiency and leadership

One of the biggest issues with the above, is that it makes an investment in nurse workforce development inefficient. But it does not have to be. As the WHO highlight, such patterns may be appropriate, provided they are part of a validated plan and *not* a reaction to labour market failure (2006, p.9). When it comes to the issue of public-private sector drift, for example, whilst it is easy to condemn the private sector for "exacerbating shortages of qualified personnel" (Oxfam International 2009, p.14), important evidence of successful public/private partnerships exists (World Bank Group 2009). For the latter, Olivier et al. (2015) highlight the role of faith-based networks in fragile systems, with providers delivering up to 50% of national health services in Uganda and Tanzania, 45% in Zimbabwe and 40% in Ghana, Kenya, Lesotho and Nigeria. Whilst Oxfam highlights the flaws in such partnerships (2009), ultimately the message here has *got* to be one of leadership and planning. As the GSHRH highlights (WHO 2016b, p.16), government bodies need to be encouraged to develop national plans that drive solutions appropriate to their own context – collaborating with private for-profit, non-profit, voluntary and independent sectors as necessary. Whatever shape it takes, the priority is to support a process that will not only train the

right number of health workers, but will deploy them in a market with capacity to put them to the best possible use:

> **Planning should involve not just increasing the quantity of providers but investment in improving their quality and relevance. This also entails ensuring enabling work environments, including through provision of adequate equipment and resources; decent working conditions; and fair compensation to help enhance recruitment and retention' (WHO 2016b, p.16).**

2.3.3 A new interpretation of CPHC?

Building on this message, when it comes to supporting national ambition for UHC, McCoy et al. (2010) highlight an additional "tension" that risks undermining these plans: namely the issue of primary versus specialist care. As Section 2.1.3 indicates, the recommendations of the High-Level Commission (2017) and Working for Health Group (2018) make an interesting point for discussion. For whilst these documents are sold as a framework to support direct action, closer analysis reveals an underlying issue - one that puts heavy emphasis on the development of low-level care and community-based health workers. Making only fleeting reference to the role of auxiliary, registered and advanced nurse practitioners, together the High-Level Commission and Working for Health Group call to:

> **Reform service models concentrated on hospital care and focus instead on prevention and on the efficient provision of high-quality, affordable, integrated, community-based, people-centred primary and ambulatory care, paying special attention to underserved areas (2017, p.11; 2018, p.11).**

Admittedly, this focus is not new. Indeed, Ethiopia, Rwanda and Zambia, have made important gains towards UHC thanks to the large-scale deployment of community health workers (Teklehaimanot & Teklehaimanot, 2013; Farmer et al. 2013; Kip et al. 2017). Yet despite documented gains in population health, the GHWA (2008a) and the Global Centre for Development (GCD) (2015) raise concerns that see such a literal interpretation of PHC fuels an increase in upwards referrals whilst failing to provide the resources to treat them:

> **Even the best primary care cannot substitute for functional, efficient, and accessible secondary and tertiary care. As low and middle-income countries experience longer life expectancy and an increasing burden of noncommunicable disease, the number and proportion of critically ill individuals demanding and requiring more advanced inpatient care - surgeries, cancer treatment, and hospice care - will continue to increase (GCD 2015, p.1).**

Certainly, with local media quick to condemn the state of some African hospitals (Bogale 2017; DA 2018; Matthews 2019) and case studies putting hospital-based child mortalities as high as 7.4% (Lugangira et al. 2017), there are those who believe it is too late. Indeed, in their report '*Better Hospitals, Better Health Systems, Better Health',* the GCD argue that secondary/tertiary care has been left to 'stagnate' (2015, p.1). This point is furthered by Frenk et al. (2010, p.1948) who see the growing focus on community-based services negating the need to invest in registered nurses and other specialist cadres. Investigation into the availability of a specialist children's workforce supports this theory, with Harper et al. counting 0.8 paediatric physicians per 100,000 children in Africa compared to 89 in Europe (2019, p.1). Whilst there is no similar global count for nurses, these numbers reflect the findings of the CNPDI, who estimate 3,728 children's nurses across five sub-Saharan countries compared to 51,000 registered practitioners in the UK (North et al. 2019; Nursing and Midwifery Council 2019, p.19).

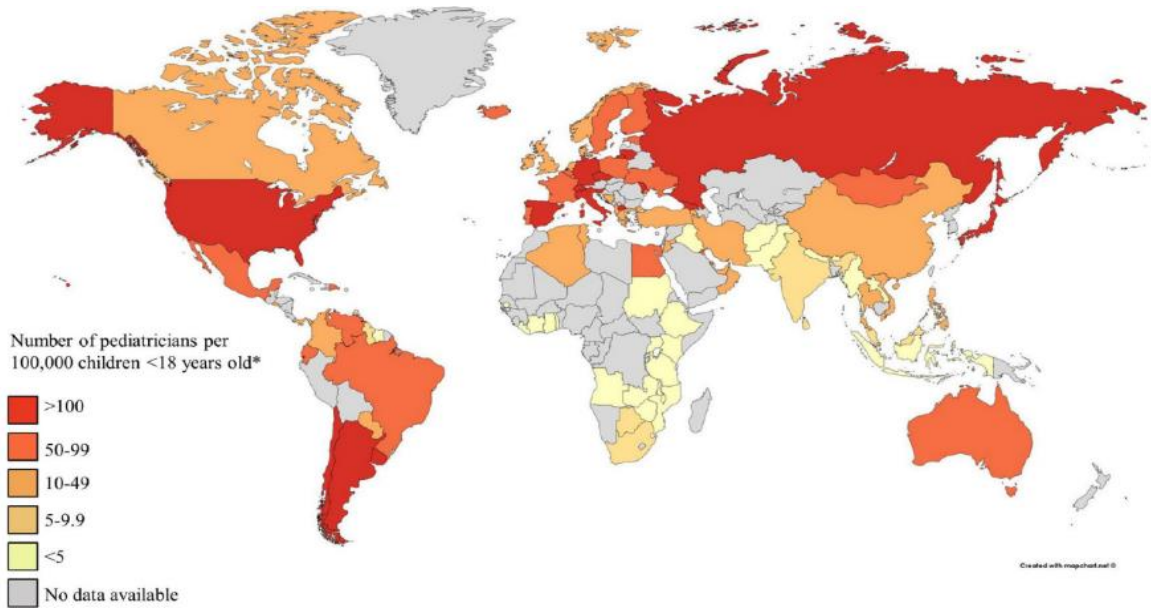


Figure 2: Paediatrician density per 100 000 children <18 years old* (Harper at al. 2019, p.4)

2.3.4 Remembering CPHC

Looking back to the original concept of CPHC outlined in Chapter 1, where the declaration of Alma Ata and the WHO see primary/tertiary-level care as inter-connected parts of one system, such a restricted focus on low-level services runs counter to this philosophy. With McCoy et al. (2010) advocating greater cost-benefit from the simultaneous investment in community and facility-based care, the question is whether or not the business case presented by the High-Level Commission and Working for Health Group is something of a false economy. Looking back to the GSDNM and GSHRH for guidance (WHO 2016c; WHO 2016b), once again the message has got to

be one of national leadership and planning. To quote Harper et al: “a thoughtful country-level approach is required to balance development of preventive and community interventions, alongside secondary and tertiary level services with appropriate referral structures” (2019, p.7). To suggest otherwise is to risk imposing a new selective interpretation of PHC that undermines national plans for nurse workforce and broader HRH development.

2.4 EDUCATION AND TRAINING

Moving to focus on education and training, it is heartening to see the High-Level Commission (2016), Working for Health Group (2017), GSHRH (WHO 2016b) and GSDNM (WHO 2016c) all share a commitment to the issue. As such, the following section examines key trends in workforce education as well as highlighting some of the challenges that restrict workforce development.

2.4.1 A move to professionalise the nurse workforce

Unfortunately, ambiguity around the type/definition of nurse training facilities makes the formal count of nurse education services difficult (Frenk et al. 2010). However, literature does show a general move to professionalise the nursing workforce, with a number of countries setting Bachelor degrees as the entry-level for registered nurses (Munjanja et al. 2005; Mtshali et al. 2007; Plager & Razaonandrianina 2009; Mukamana et al. 2015; Bell et al. 2015; Cominsky et al. 2015; APPG 2016; Bvumbwe & Mtshali, 2018a). Rotating around the delivery of competency-based training, this approach is designed to give nurse practitioners the skills to meet changing population health needs - with critics endorsing the shift as one that presents nurses as educated, professional women equal to the medical profession (Rispel & Schneider 1991, p111; Blaauw et al. 2014, p.15). But as we have come to expect, such ambition is not without tension, with Blaauw et al. going on to reference a number of critics who believe this baseline to be more about a preoccupation with international comparability rather than local health priorities (2014, p.21). In line with this, it interesting to see the debate around primary and secondary care translate directly to the education sector. For not only does this tension undermine the need to invest in registered and specialist nurses, there are those who believe that a parallel focus on primary-level schooling weakens the infrastructure to train them (World Bank Group 2011; Uys & Klopper 2013).

2.4.2 Challenges in delivery

Building on the above, research shows an education sector that is struggling to deliver. Forced to run on a "starvation diet" (Uys & Klopper 2013, p.16), not only does this manifest itself through a shortage of educational resources (Mtshali et al. 2007; Bell et al. 2015; Cominsky et al. 2015), it has also left many nurse education facilities delivering "Westernised" curricula ill-suited to the needs of its nurses (Munjanja et al. 2005, p.11). Whilst their argument is a little dated, with PEPFAR (2009), Frenk et al. (2010) Middleton et al. (2014) and Bvumbwe & Mtshali (2018b) highlighting a mis-match between curriculum development and population need, the point is valid. To quote Frenk et al: "Professional education has not kept pace with these challenges, largely because of fragmented, outdated, and static curricula that produce ill-equipped graduates" (2010, p.1923).

This situation is compounded by a shortage of nurse educators, with Bell et al. giving a sense of scale when they describe a new hire in Ghana that brought the staff/student ratio down to 1:76 (2015, p.250). It is a situation acknowledged across reviewed literature (Munjanja et al. 2005; WHO, 2006; Mtshali et al. 2007; Frenk et al. 2010; Uys & Klopper, 2013; Middleton et al. 2014; APPG 2016; Bvumbwe & Mtshali 2018a; Bvumbwe & Mtshali 2018b) and is one that severely impacts on the number and quality of nurses trained. Indeed, Feeg & Nickitas found that even in the United States, less than 1% of nurses graduate with a doctoral degree - with a limited pipeline of replacement nurse educators impeding the adequate preparation of new nurses (2011, p.109).

Working within such limitations, it is unsurprising to see the GHWA put average rates of student attrition at 30% (2008a, p.77). However, not only does this data mask variations, it also offers little by way of reason why. Although Roos et al. argue that student attrition is most likely due to a combination of factors including academic failure, lack of financial support, ill-health and "making the wrong career choice" (2016, p.3). This impacts on the sustainability of the profession - limiting the numbers of graduates produced, particularly those with capacity/aptitude to pursue careers in education, research, policy development and leadership (Cominsky et al. 2015, p.648).

2.4.3 A call to invest in the education of children's nurses

Whilst most of this literature relates to the provision of generalist training, it follows that these challenges also impact on specialist opportunities, including children's nursing. Where the

type/definition of nurse training facilities is difficult to quantify, North et al. (2019) recognise just 16 children's nurse training programmes at 10 institutions across Kenya, Malawi, Uganda, South Africa and Zambia, with 75% of children's nurses based in South Africa. Further to this, Swingler et al. (2012), Coetzee (2014) and Coetzee et al. (2014) highlight the need to increase educational provision in this area. Whilst these publications are specific to South Africa, their stance is reinforced by the work of Uys et al. (2012) who reveal the greatest development need for African nurses to fall within maternal and child health, and Ugochukwu at al. who reference "an important need for nurses to focus on child health care and the promotion of child health" (2013, p.123). Whether this is best delivered through generalist, specialist, or sub-specialist training is an issue that needs more debate. Whichever path is chosen, the reality is that without a significant investment in tertiary education, graduate production will suffer. This is a dangerous situation that sees Africa's nurses ill-equipped to meet population need and puts the health of the continent's children at unnecessary risk (Uys et al, 2012; Swingler et al. 2012; Ugochukwu et al. 2013; Coetzee 2014; Coetzee et al. 2014).

2.5 EVALUATING NURSING TRAINING INSTITUTIONS

As the above highlights, when it comes to health, societies need to be sure that educational facilities produce nurse professionals that are competent to practise (WHO 2013, p.24). For this reason, it is important to consider the process of quality assurance and to review and learn from current evaluation practice.

2.5.1 Setting standards

As Mtshali et al. argue, "quality assurance involves the setting of standards and the identification of criteria to measure each standard" (2007, p.7). To this end, it is apparent that many African countries have developed, or are developing, national standards for nurse education and accreditation (Mtshali 2007; Uys & Klopper 2013; APPG 2016). This process is furthered by the publication of regional/global guidelines (WHO AFRICA 2007; WHO 2009) and recommendations for upcoming guidelines for broader workforce education and training (WHO 2013). Whilst they vary in structure, ultimately each seeks to offer a holistic framework for evaluation that spans from admission rates and enrolment diversity, through to curriculum development, perceptions of graduate competency, faculty and infrastructural capacity , governance and leadership (WHO AFRICA 2007; WHO 2009; WHO 2013). Once embedded, institutions can evaluate their function

against these criteria and assess the extent to which programmes meet identified need (Watson & Herbener 1990). Not only does this process guide formative learning to improve education quality, the resultant data is essential for comparative benchmarking and evaluation. But with limited knowledge on those doing the training, it follows that the publications of such evaluations is also low. This makes it difficult to define and set the required standards and norms.

2.5.2 A review of existing evaluations

Looking to the above, this review reveals few studies of this nature specific to African health settings, with those by Mtshali et al. (2007), Stevens et al. (2014), Bell et al. (2015), Cominsky et al. (2015) and Bvumbwe & Mtshali (2018b) emerging as some of the more prominent. In terms of best practice, three (Mtshali et al. 2007; Bell et al. 2015; Cominsky et al. 2015) use WHO guidelines to build their assessment framework - with Mtshali et al. positioning themselves as a 'benchmark' for future research (2007, p.7). However, there are a number of limitations that should be noted. The first is that all but one (Stevens et al. 2014) fail to provide the reader with basic information on student throughput, demographics and diversity, let alone offer a deeper analysis of numerical data. Looking back at their guiding frameworks (WHO AFRICA 2007; WHO 2009), this is likely due to the descriptive nature of WHO standards, none of which ask for, or lend themselves to, the inclusion of such information. As discussed below, such criticism is not to question the role of qualitative evaluation, but to highlight its limitations. For without numerical data it is difficult to fully understand programme quality, outputs and outcomes.

The second limitation links to their focus on short term outputs, with the studies of Mtshali et al. (2007), Bell et al. (2015), Cominsky et al. (2015) and Bvumbwe & Mtshali (2018b) *all* serving as a case in point. Looking across all four studies, each puts priority focus on immediate outputs - a narrow scope which leaves learning around long-term outcomes unexplored. It is an important oversight, with Watson & Herbener recommending that:

> **Programme evaluation instruments should be sent to alumni within 3 to 6 months after graduation, to allow for a period of orientation to their new positions… Employers should also be asked to evaluate graduates' professional performance, but these evaluations should be reviewed over time so that general trends of strengths and weaknesses as well as unrealistic expectations of graduates can be identified (1990, p.320).**

Echoed by the WHO, the argument here is that in order to be effective, the evaluation of health education programmes should consider both the number of graduates certified to practise *and* their situation upon graduation (2013, p.40). More than just an indicator of a successful programme, as Section 2.3 highlights, high-levels of health worker attrition – within and beyond the sector - are *all* indicators of broader systemic challenges (Watson & Herbener 1990). This creates an important opportunity to support workforce monitoring and build a much-needed evidence base for policy development and planning:

> **The introduction of transformative changes in education is an opportunity to review the strengths and weaknesses of current information systems, and to build systems that will make it possible to monitor and assess the effects of changes on the quantity, quality and relevance of new health professionals (WHO 2013, p.28).**

2.5.3 Key learnings

Reassuringly, these issues are not restricted to an African context. Indeed, as the World Bank Group observes, evaluation of tertiary education is also scarce in developed countries (2013, p.40). Furthermore, where they do exist, debate over the use of qualitative/quantitative methodologies is rife. For example, where Stavropoulou & Kelesi (2012) see the landscape as one dominated by quantitative approaches, others like Attree see an evidence-base that is "largely derived from small-scale, single case studies", the majority of which use self-devised tools of "unproven reliability" (2006, p.643). Epitomised by the argument between Slavin (2004) and Olson (2004), the issue is not so much the dominance of one methodology over another, but rather a growing recognition that - when it comes to health education - the either/or mentality of a traditional purist's approach is flawed.

Extending this logic forward, an exemplar model would look to make use of mixed methodologies, whilst also expanding the evaluation scope to examine long-term outcomes. This approach would enable the researcher to present a 360° view of programme quality, outputs *and* outcomes. Not only would this learning support the formative development of nurse education initiatives, it would also help define and set the benchmarks needed for comparative evaluation – all whilst building new understanding to help guide national planning towards the delivery of an available, accessible, acceptable, quality and cost-effective workforce.

2.6 CHAPTER CONCLUSION

It is a lot to take in. But in highlighting the issues above, this chapter sets an important foundation for study development. In doing so it has highlighted a number of documents that mark the landscape of HRH and nurse workforce development - with the GSHRH (WHO 2016b) and GSDNM (WHO 2016c) at the forefront of discussion. In doing so it also reveals a serious disconnect between theory and action, with both HRH and the nursing narrative marked by long-standing challenges in workforce retention, efficiency, leadership, education and information. Yet where the nursing profession is one that has been overlooked and undervalued, this review shows increased profile and discussion around HRH to create new opportunity. Epitomised by the launch of Nursing Now (2018a), delivery against the GSDNM (WHO 2016c) looks set to benefit from the convergence of these two dialogues. The challenge is to maintain and grow this profile and to use it to accelerate action – all whilst staying true to the needs and priorities of the nursing profession.

Political will, leadership and national planning is key here, with this review showing how important it is to stay true to the original mandate of CPHC. Without it, the risk is one that sees more specialist services – physical, human *and* educational – overlooked. Indeed, with nurse education constricted by limited funding, educational resources, poor curriculum development and a chronic shortage of educators, concerns over the number and quality of practitioners produced are justified. This situation is further compounded by a lack of evidence demonstrating the quality, outputs *and long-term outcomes* of such programmes. Indeed, an important opportunity is missed here, and it is this gap that the following case study sets out to fill.

CHAPTER 3: CASE STUDY BACKGROUND & METHODOLOGY

Where Chapter 2 provides an in-depth discussion of key themes around HRH and nurse workforce development, this chapter explores these issues in relation to context surrounding the CNPDI. Whilst the programme receives referrals from across sub-Saharan Africa, as the host country, case study development focusses on South Africa. In doing so, this chapter will look to understand the background situation in-country – considering the policy landscape in relation to international dialogues. It will then examine the situation on the ground, discussing key challenges in relation to issues of workforce retention *and* the emerging tension between primary and secondary care. From this, discussion will consider the role of education in workforce development and the challenges/opportunities facing programmes like the CNPDI. Linking back to Section 2.5.3, this learning will then be used to inform the given methodology.

3.1 BACKGROUND

South Africa is home to 57.77 million people (World Bank Data, 2019). Freed from Apartheid in 1994, their National Development Plan (NDP) is designed to heal divisions of the past - eliminating poverty and reducing inequality by 2030 (National Planning Commission 2012). Health is a key part of this, with the NDP detailing nine related goals that come together to raise population life-expectancy from 57 to 70 years (National Planning Commission 2012). Mobilised through a series of healthcare reforms, this sees the South African system turn to focus on CPHC, according to the Department of Health (DOH) (2016a; 2016b). The following section discusses this ambition in the light of HRH and nurse workforce development in theory and in action.

3.1.1 The policy landscape in South Africa

As highlighted, the South African health system has moved to embrace a model of CPHC. In line with the original concept presented in Chapter 1, this sees a network of primary facilities (clinics, health centres and district hospitals) act as an entry point to the national health system - with referrals feeding into 136 regional, tertiary, central and specialist hospitals (DOH 2016a; DOH 2016b; DOH 2012a). Recognising HRH as a key building block in system strengthening (WHO 2007), workforce development is an important part of these reforms and features heavily across

national policy documentation. Within this, where Sections 2.1 and 2.2 show HRH and nursing as two separate dialogues, South African legislation is important in that it treats HRH and nursing as integral parts of the process at every level of care:

> **These [nursing] professionals carry the responsibility of bringing health services to all communities through the spectrum of healthcare delivery mechanisms from primary healthcare up to tertiary levels of healthcare. Any shortage experienced in this professional cadre negatively impacts on access and the quality of care that is enshrined in the country's constitution (DOH 2008 p.9).**

With nurses the "backbone" of the country's health system (DOH 2008, p.81), their role is formalised through the Nursing Act of 2005 and mobilised through the National Nursing Strategy and Strategic Plan for Nurse Education, Training and Practice (South African Nursing Council, 2005; DOH 2008; DOH 2012c). Not only do these documents call for more resources to mobilise systemic reform, as with the GSHRH (WHO 2016b) and GSDNM (WHO 2016c) they consider workforce development within a multi-sectoral landscape. As such they advocate the need for detailed HRH planning, improved education/training, new employment opportunity and better practice environments – all of which help ensure the availability, accessibility, acceptability, coverage and quality of the health workforce (DOH 2008; DOH 2012b; DOH 2012c; WHO 2016b; WHO 2016c).

3.1.2 Putting theory into action?

It sounds good on paper, but as Chapter 2 highlighted, turning theory into action is not easy. South Africa is an interesting case in point. Regulated by the South African Nursing Council (SANC), data shows 287,079 nurse/midwives registered to practise (2018a, p.1). Numbers might seem favourable, but the reality is one that falls short of population need (DOH 2012b). Indeed, looking at Figure 3, data shows the number of registered nurses to have plateaued in recent years. Not only does this reflect a shortage of new recruits, the issues of retention highlighted in Section 2.3.1 also have a negative impact on workforce development. To this end, data shows 6,844 South African nurses working abroad in 2006 (DOH 2012b, p.32). This is just the beginning, with issues of *internal*

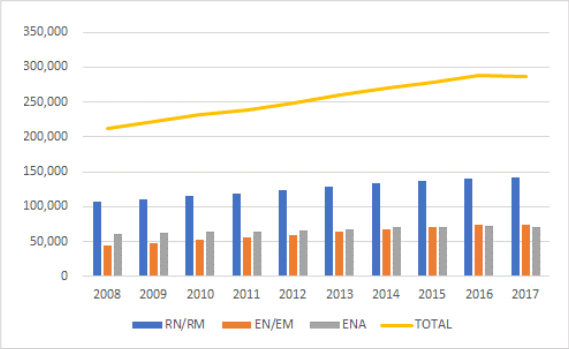


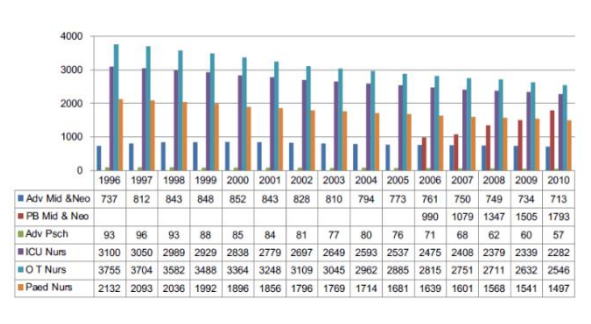
Figure 3: Growth in the nursing register (SOURCE DATA: SANC 2018a, p.1).

retention also in need of consideration. Headline data might be unavailable, but research suggests that workforce attrition is high - with an estimated 40% of new graduates failing to register (DOH 2012c, p.30) and another 6,800 nurses lost to retirement, invalidity and death every year (4,000 and 2,800 respectively) (DOH 2012b, p.141).

Of those that are registered to practise, reality sees them enter a labour market unable to absorb them. Indeed, the DOH reports 18% of registered nurses as "inactive" (2012b, p.30). Research also highlights distribution patterns not dissimilar to those discussed in Section 2.3.1 - with 81% of nurses based in urban areas and 41% employed at private facilities (DOH 2012b, p.30). Whilst it is true that such clusters *could* be read as a planned response to population need (see Section 2.3.2), in a country where almost half of the population lives rurally and ~38% live on less than $3.90 a day, top-level demographics suggest that this is not the case (World Bank Data 2019). Rather, such patterns are more likely to reflect divisions of the past - divisions which continue to see the majority of national resources (including HRH) focussed on a private sector serving 17% of the country's (affluent) population (National Planning Commission 2012, p.331). Far from its ambition for CPHC, the picture is one of a shrinking workforce struggling to operate in an environment starved of long-term investment. The backbone is breaking, with nursing no longer seen as a "worthwhile" career to pursue (DOH 2008, p.11).

3.1.3 Primary vs specialist care?

Linking back to the debate in Section 2.3.3, not only is the public health system under considerable strain, research also reveals a growing gap in the provision of specialist care – with media outlets quick to condemn some of South Africa's hospitals as 'death-traps' (DA 2018; Nt'sekhe 2018; Singh 2019). Not only does this gap manifest itself in terms of physical resources, it also impacts on the staff within them, with Figure 5 showing specialist nurse practitioners to be in decline. As GHWA (2008a) and GCD predict (2015), the situation brings little chance of a reprieve, with the DOH seeing shortages rise as healthcare reforms gain pace:



	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Adv Mid &Neo	737	812	843	848	852	843	828	810	794	773	761	750	749	734	713
PB Mid & Neo											990	1079	1347	1505	1793
Adv Psch	93	96	93	88	85	84	81	77	80	76	71	68	62	60	57
ICU Nurs	3100	3050	2989	2929	2838	2779	2697	2649	2593	2537	2475	2408	2379	2339	2282
O T Nurs	3755	3704	3582	3488	3364	3248	3109	3045	2962	2885	2815	2751	2711	2632	2546
Paed Nurs	2132	2093	2036	1992	1896	1856	1796	1769	1714	1681	1639	1601	1568	1541	1497

Figure 4: Nursing specialist qualifications 1996-2010 (Department of Health 2012b, p.44).

> **Of particular concern is the decrease in the production of nurse with specialist qualifications, particularly clinical specialisations. The new policies, in particular the re-engineered primary healthcare system, will drastically increase the need for nurses with specialist qualifications' [for example advanced midwives, child-care nurses and family practice nurses (clinical assessment diagnosis, treatment and care skills) (DOH 2012c, p.19, emphasis added).**

Echoing the observations of Swingler et al. (2012), Uys et al. (2012), Ugochukwu at al. (2013), Coetzee (2014) and Coetzee et al. (2014), child health is a priority here. This point is reinforced by the Committee on Morbidity and Mortality in Children Under 5 (CoMMiC) (2014), who reference audited gaps in the delivery of facility-based child health services and recommend expanded training opportunities for professionals working in the field of child health.

3.1.4 Education and training

Moving on to education, in line with the observation in Section 2.4, it is heartening to see the issue given similar priority in South Africa's own policy documentation. Blaauw et al. (2014) provide a neat summary of recent reforms, which focus around the rationalisation of nurse training institutions, changing scopes of practice and an enabling qualifications framework. Led by SANAC in collaboration with the Department of Education, the result is one designed to professionalise South Africa's nurses, a Bachelor's degree set as the entry-level requirement for registered professional nurses, as shown below:

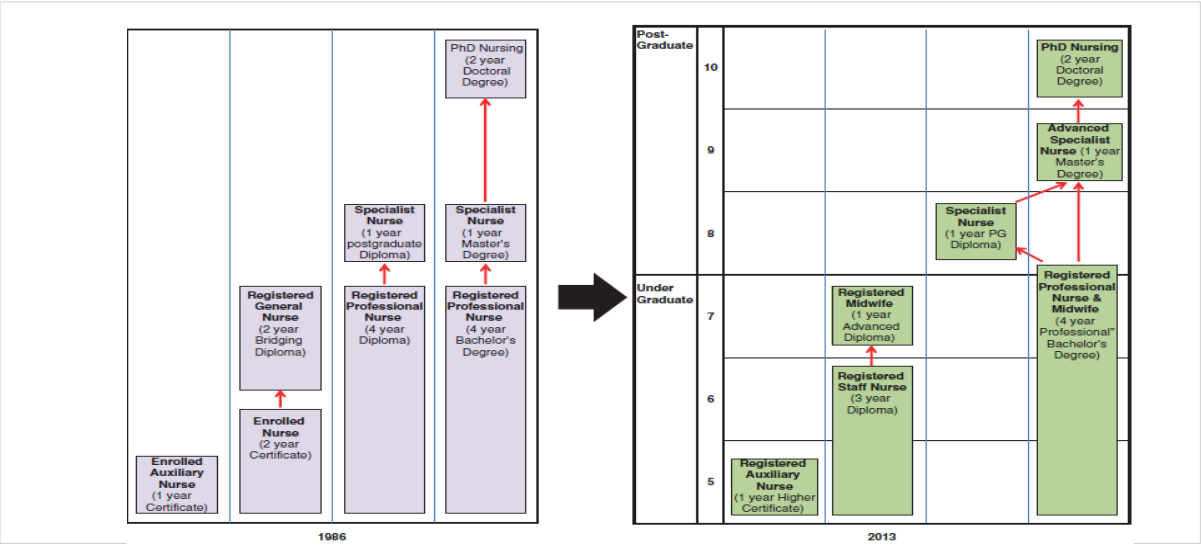


Figure 5: Reforms in South African nursing education (Blaauw et al., 2014, p.19)

Once again, research reveals a significant gap between theory and action, with reforms criticised for taking some 10 years to complete (Armstrong & Rispel 2015; Blaauw et al. 2014). Furthermore,

linking back to the argument presented in Section 2.4.1, there are those who believe that such drive puts international image above in-country priorities - with policy requiring all South African nursing colleges to register as Higher Education Institutions (Blaauw et al. 2014). This is a long and complex process which poses a serious risk to the number of institutions accredited to deliver nurse education and training (Blaauw et al. 2014).

This situation is further compounded by insufficient investment in post-secondary education (Uys & Klopper 2013), with nurse education institutions in South Africa facing similar challenges to those discussed in Section 2.4. Whilst academic publications are limited, an audit of Public Nursing Colleges and Schools tells a familiar story – with higher-education institutions facing challenges that range from limitations in physical teaching environments, *severe* shortages in educational resources, to an inadequate number of aging nurse educators (DOH 2012c p.22). Enrolment rates are falling, with attrition rates for some universities measured at 59% (SANC 2008a, p.3; Roos et al. 2016, p.1). The theory might be solid, but once again a more in-depth analysis shows how wide the gap between theory and action can be.

3.2 METHODOLOGY

In light of this discussion, the presented case study is important because it provides a practical example of a local initiative delivering ground-level action by providing specialist training for children's nurses in South Africa and beyond. Building on the lessons learned in Section 2.5, in doing so, it sets out to explore a style of nurse education evaluation that looks beyond the qualitative analysis and direct, short-term outputs. As such, this study employs mixed methodologies to answer the question: *'What is the direct contribution of South Africa's CNPDI to the delivery of an educated children's nursing workforce in sub-Saharan Africa?'.* In doing so, a pragmatic approach is taken, with this section giving an overview of study design, indicator selection, analytic and presentation processes.

3.2.1 Study design

In order to answer the above question, the CNPDI team shared anonymised raw programme data from their database registry. This included information on all student enrolments over the last 11 years - their age, gender, nationality, year of registration, course selection, funding source and graduation date. Where available, it also recorded information against baseline/current

circumstance, practice environment and role. This data was then triangulated with desk-based research from on-line public sources (including government websites, national data sets, institutional websites and academic placement finders) in order to contextualise programme throughput and gain new understanding as to the origin, organisation, movement *and long-term retention* of CNPDI enrolments and alumni.

To guide study development, this process was then broken down into three sub-questions:

1) **What is the training input of the CNPDI?**
   AIM: To quantify/contextualise programme input and understand the size, demographic, location and practice environment of incoming enrolments.
2) **What is the training output of the CNPDI?**
   AIM: To quantify/contextualise programme outputs (graduation rates) and understand CNPDI's immediate contribution the delivery of an educated children's nursing workforce.
3) **Where are they now?**
   AIM: To quantify/contextualise *and compare* the current location and practice environment of CNPDI alumni in order to assess the team's long-term contribution to the delivery of an educated children's nursing workforce in South Africa and across the continent.

3.2.2 Indicator selection

To action this research, it was first necessary to refine the indicators against which data would be analysed. Building on the information known to be available through the CNPDI's own database, these were inspired by the learnings in Section 2.5 and informed by the data requirements of the WHO's National Workforce Accounts (WHO 2017b). This process saw the addition of the following five fields to the required data set:

- Age (enrolment and graduation)
- Base, return and current facility location (country and sub-national)
- Base, return and current facility type (hospital / educational institution / other)
- Facility sector (public / private – for-profit / NGO / faith-based)
- System level (primary / secondary / tertiary)

Indicators were then refined by the introduction of a threshold completion rate (>80%) to ensure that analysed data would present an accurate picture of programme throughput. This saw a number of indicators excluded from the study, including: age, year of nurse registration, years of experience in paediatrics, short-term outputs (graduate return, institutional information and role), as well as more in-depth information around current alumni roles and whether or not CNPDI graduates continue work within the field of child health.

3.2.3 Analysis and presentation

Given the broad range of indicators included in this study, it is tempting to follow lines of study down a number of divergent paths. However, in order to answer the given research question, scope is limited to an overview presentation of key findings/trends against cited indicators. Analysis will be conducted using an Excel database with sourced locations plotted via Google Maps. All results will be "Member Checked" (Birt et al. 2016) by the CNPDI to improve accuracy. These are presented in Chapter 4, with key findings and recommendations consolidated in Chapter 5 as part of the project's discussion and conclusion.

A full table of original and final indicators and key desk-based resources are provided in Appendix 1 and 2, with study limitations discussed in Section 5.3

CHAPTER 4: CASE STUDY RESULTS

In line with the Methodology outlined in Chapter 3, this chapter analyses the data provided by the CNDPI. Working through 11 years of historic information, results will be structured in accordance with the questions presented in Section 3.2.1: What is the training input of the CNPDI? What is the training output of the CNPDI? Where are they now? This will allow the researcher to process and understand data trends in preparation for the concluding chapter. All tables and figures in this chapter have been individually developed from core Excel data.

4.1 WHAT IS THE TRAINING INPUT OF THE CNPDI?

This first section presents the analysis of incoming enrolments - assessing student demographic, funding source, location, type, sector and level of base practice environments. In doing so, the term 'enrolments' is used to describe the total number of programme entries and includes alumni returning to complete their MNCN. It does not include re-enrolments where courses are two years in length or students have extended their study.

4.1.1 Academic enrolments

As Figure 6 demonstrates, the CNPDI processed 348 academic enrolments between January 2008 and December 2018. This includes nine returning alumni, which means 339 individual students were welcomed by the team. Enrolments are spread across three levels: Post Graduate Diploma (n330), Masters (n16) and PhD (n2). Within this, the majority (53% n184) enrolled on the PGDip-CN, followed by 42% (n146) on the PGDip-CCCN, 4% (n16) on the MNCN and 1% (n2) on PhD-level courses. Averaging 32 enrolments a year (range n18-n40), numbers peak between 2014-16 and fall in 2017-18.

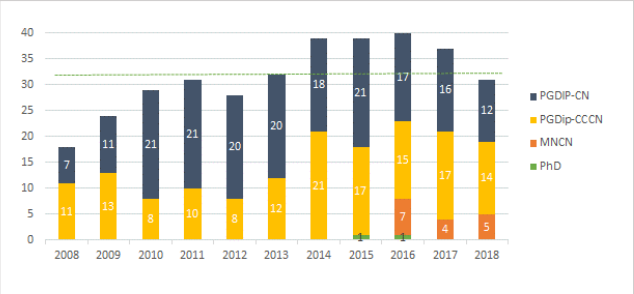


Figure 6: CNPDI Enrolments by year and by course

4.1.2 Student demographic

Of the 344 enrolments for which there is data, 92% (n318) are female, 8% (n26) are male. Looking to geographic spread, Figure 8 shows international students enrolling with the CNDPI since it began, with ratios increasing with academic level (Table 1). Accounting for 25% (n87) of enrolments in total, students travel from 10 other African countries – all but two of which are located in Southern/Eastern Africa. Malawi (n33), Ghana (n13) and Namibia (n13) account for 68% of international enrolments, with the remaining 32% (n28) spread across Botswana, Eritrea, Kenya, Mauritius, Tanzania, Uganda and Zambia (Figure 7).

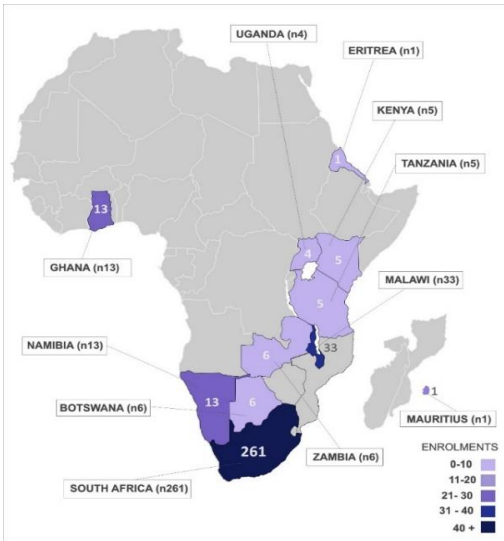


Figure 7: Geographic spread of enrolments

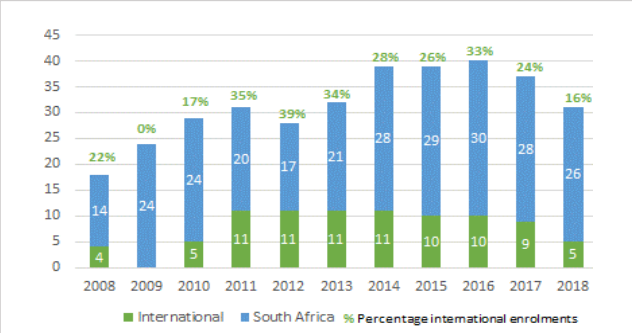


Figure 8: International enrolments per year

Programme	Enrolments	Ratio
PGDip-CN	**184**	**100%**
South African	131	71%
International	53	29%
PGDip-CCCN	**146**	**100%**
South African	121	83%
International	25	17%
MNCN	**16**	**100%**
South African	9	56%
International	7	44%
PHD	**2**	**100%**
South African	0	0%
International	2	100%
Total	**348**	

Table 1: Ratio of CNPDI's international enrolments

4.1.3 Funding

Available data (n337 of n348) presented in Table 2 shows 68% (n229) of enrolments to be employer-funded, 27% (n90) to receive bursaries sourced by the CNPDI, 3% (n10) as self-funded and 2% (n8) supported by mixed sources. As Figure 9 highlights, the majority (82% n213) of South African enrolments are funded by their employer, whereas most (72% n63) international students receive bursary support. This trend does not transfer across

	MNCN	PGDip-CN	PGDip-CCCN	PhD	TOTAL
South African	**9**	**131**	**121**		**261**
Bursary	7	10	10		**27**
Employer	1	109	103		**213**
Mix	1	3	2		**6**
Self-Funded		6	3		**9**
Unknown		3	3		**6**
African	**7**	**53**	**25**	**2**	**87**
Bursary	5	41	17		**63**
Employer		10	6		**16**
Mix	1		1		**2**
Self-Funded		1			**1**
Unknown	1	1	1	2	**5**
TOTAL	**16**	**184**	**146**	**2**	**348**

Table 2: Funding source (by course and region)

programme levels – with data showing 75% (n12) of MNCN students as bursary funded even though 56% (n9) of enrolments are South African. When shown as a percentage of overall enrolments, employer contributions are shown to decrease and bursary funding increase (Figure 10).

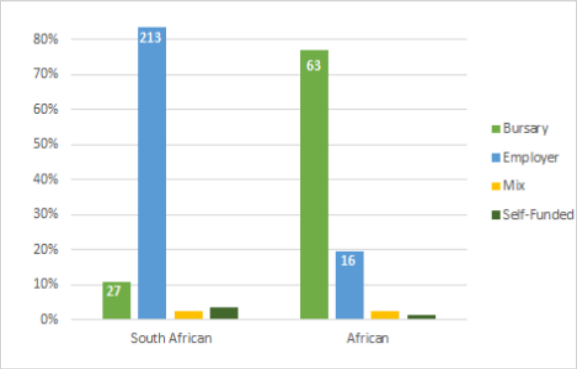


Figure 9: Funding source (by region)

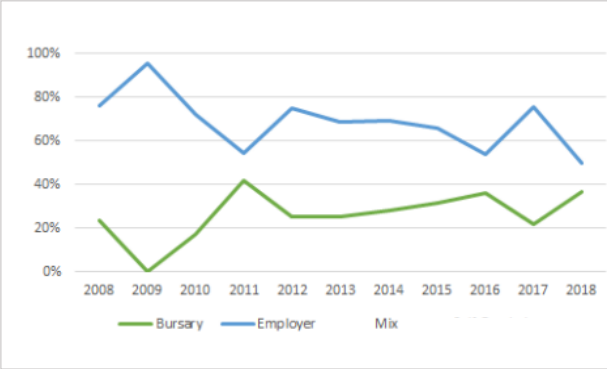


Figure 10: Employer vs bursary funding (by year)

4.1.4 Institution type

In assessing base practice environment, data gives a field completion rate of 89% (n311 of n348 enrolments). Of these, 94% (n293) are linked to 71 hospital sites, 4% (n13) from seven educational institutions, with 2% (n5) resigning their jobs to study (Table 3). Looking to South Africa, available data (n240 of n261) shows most enrolments (42% n101) linked to the RXCH. Numbers also reveal two other potential 'hub' sites (10% n24 and 7% n16 respectively) with the remaining 41% (n98) spread across 50 other facilities (mode: n1 per institution). One enrolment is linked to education. A similar trend can be observed in Malawi, where available data (n27 of n33) shows 41% (n11) of referrals linked to one hospital facility and 18% (n5) to a second 'hub' site. The remaining 26% (n7) are spread across four facilities, with 15% (n4) linked to educational sites. Except for Ghana (where available data shows 88% n7 of enrolments linked to one primary site) enrolment numbers/data availability makes the identification of further trends impractical.

CNPDI		Enrolments	Sites
Hospital		293	71
Educational Insitution		13	7
Resigned to study		5	N/A
South Africa		**Enrolments**	**Sites**
Hospital	RXCH	101	1
	Hub 1	24	1
	Hub 2	16	1
	Other	98	50
Educational Institution(s)	Site 1	1	1
Resigned to study	N/A	5	N/A
Malawi			
Hospital	Hub 1	11	1
	Hub 2	5	1
	Other	7	4
Educational Institution(s)	Sites 1-4	4	4
Ghana			
Hospital	Hub 1	7	1
	Other	1	1

Table 3: Enrolments by institution type/site.

4.1.5 Institution sector

Focussing on the 293 hospital-linked enrolments, Table 4 shows 90% (n264) coming from public facilities and 5% (n16) from private institutions (sub-categorised into faith-based (n5), non-profit (n6) and for-profit (n5) entities). Research also reveals a 12 enrolments linked to a small number of 'Other' institutions. One enrolment and facility remains unclassified. Looking longitudinally, Table 4 shows enrolments from private institutions to begin in 2011. Whilst overall numbers reveal no particular increase/decrease, regional analysis shows international enrolments representing a higher proportion of private institutions than their South African counterparts (20% n11; 2% n5) – where private enrolments are all but non-existent until 2018. However, where they do exist, private South-African enrolments come entirely from for-profit institutions, whereas international enrolments link to faith-based/non-profit institutions.

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	TOTAL
TOTAL	**12**	**23**	**27**	**17**	**19**	**30**	**37**	**34**	**31**	**36**	**27**	**293**
Public	12	22	24	16	16	26	32	32	29	33	22	264
Private				1		3	4	1	1	1	5	16
Faith-based				1		2	1		1			5
Non-Profit						1	3			1	1	6
For-Profit								1			4	5
Other		1	2		3	1	1	1	1	2		12
Unknown			1									1
South Africa	**12**	**23**	**24**	**12**	**17**	**21**	**28**	**26**	**25**	**28**	**23**	**239**
Public	12	22	21	12	14	20	27	24	24	26	19	221
Private								1			4	5
Faith-based												0
Non-Profit												0
For-Profit								1			4	5
Other		1	2		3	1	1	1	1	2		12
Unknown			1									1
International			**3**	**5**	**2**	**9**	**9**	**8**	**6**	**8**	**4**	**54**
Public			3	4	2	6	5	8	5	7	3	43
Private				1		3	4		1	1	1	11
Faith-based				1		2	1		1			5
Non-Profit						1	3			1	1	6
For-Profit												0
Other												0
Unknown												0

Table 4: Enrolments by sector, region and year.

4.1.6 Institution level

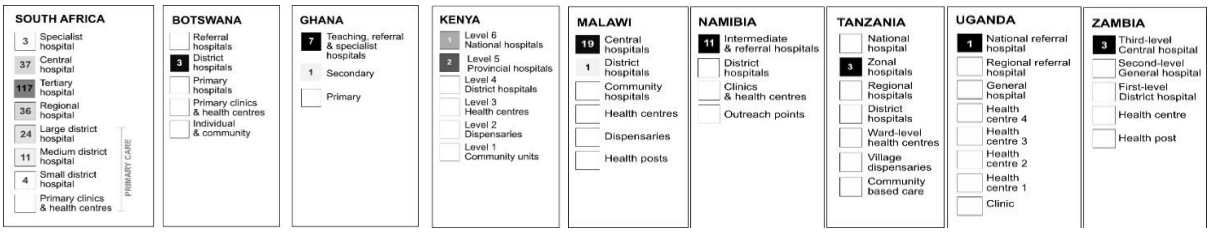


Figure 11: Enrolment distribution by facility level and country

The variation of national health systems makes the cross-analysis of institutional levels difficult – particularly when it comes to private institutions, which do not always fit national frameworks. For this reason, analysis focuses on the 284 enrolments where clear classification was possible. Within this, as Figure 11 illustrates, most are linked to top-tier health facilities. This trend is particularly clear for international enrolments, whilst South Africa's are more evenly spread - with 17% (n39) linked to district-level (primary) sites. Whilst the classification of the RXCH as a tier three hospital distorts this image slightly (one of two children's hospitals in South Africa, it could be classified as a 'specialist' site) it is clear that most enrolments are linked to secondary/tertiary

facilities rather than primary-level services. Where possible, Figure 12 maps this – showing the majority of enrolments in Western Cape, KwaZulu Natal, Free State and Gauteng rotating around secondary/tertiary level care (regional, tertiary, central and specialist hospitals). It also shows evidence of public sector dominance, focussed clustering in the Western Cape and a possible 'hub and spoke' trend.

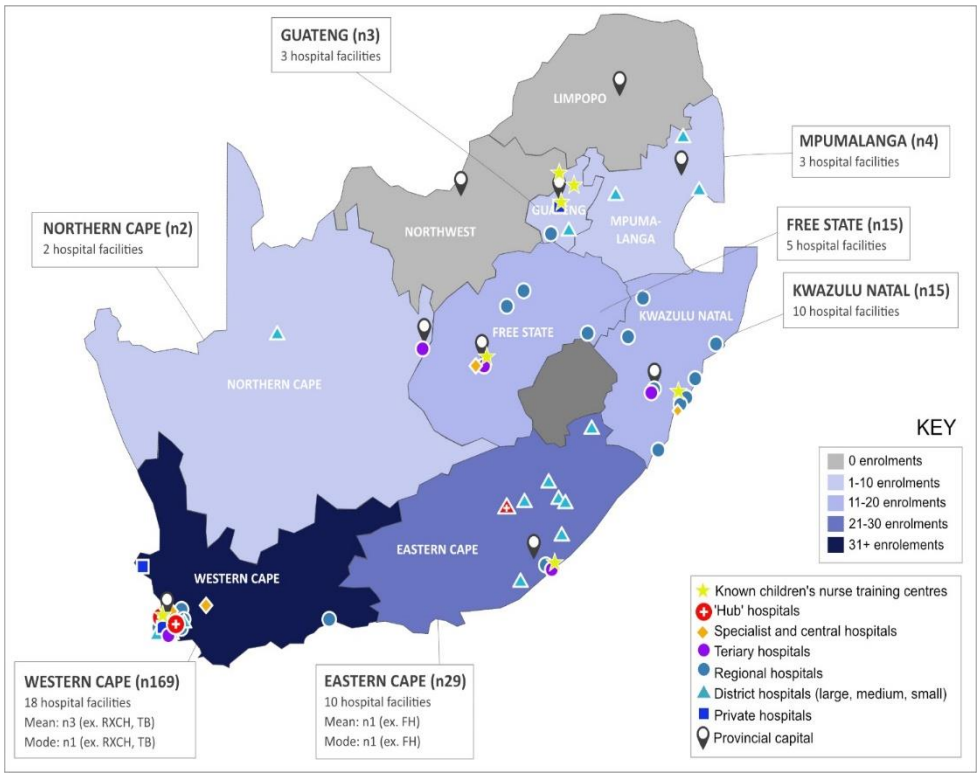


Figure 12: Map of CNPDI's South African enrolments

4.2 WHAT IS THE TRAINING OUTPUT OF THE CNPDI?

Building on Section 4.1, this section analyses the short-term outputs of the CNPDI – looking at graduate numbers, attrition and profile before going on to assess the number that return to their origin country/facility following graduation.

4.2.1 Graduate numbers

As Table 5 highlights, of CNPDI's 348 enrolments, seven are currently completing their studies. Accounting for the passing of one Malawian student, this leaves 340 potential graduations. Of these, 94% (n318) successfully exited the course, with 1% (n4) set to graduate in 2019 following an extension. This sets a graduation rate of 94% (n318 of n340). Counting each student only once

(at their highest academic level) adjustment for returning alumni puts the number of individual graduates at 312 - of which 170 qualified as children's nurses, 131 as critical care children's nurses and 11 as advanced practitioners.

	South Africa	International	Botswana	Eritrea	Ghana	Kenya	Malawi	Mauritius	Namibia	Tanzania	Uganda	Zambia	TOTAL
Original enrolments	261	87	6	1	13	5	33	1	13	5	4	6	**348**
Still studying (MNCN)	2	3			1	1						1	**5**
Still studying (PhD)		2			1		1						**2**
Passed away		1					1						**1**
Potential graduations	259	81	6	1	11	4	31	1	13	5	4	5	**340**
Attritrition	11	7	1	1	2			1		1	1		**18**
PGDip-CN	5	3	1	1						1			**8**
PGDip-CCCN	6	4			2			1			1		**10**
Still studying (extension)	3	1							1				**4**
TOTAL GRADUATIONS	245	74	5	0	10	4	31	0	12	4	3	5	**319**
Adjustment for returning stu	4	2					1		1				**6**
GRADUATES		0											
PGDip-CN	123	47	3				29		5	4	2	4	**170**
PGDip-CCCN	111	20	2		9	2			5		1	1	**131**
MNCN	7	4				2	1		1				**11**
TOTAL GRADUATES	**241**	**71**	**5**	**0**	**9**	**4**	**30**	**0**	**11**	**4**	**3**	**5**	**312**

Table 5: CNDPI throughput in numbers

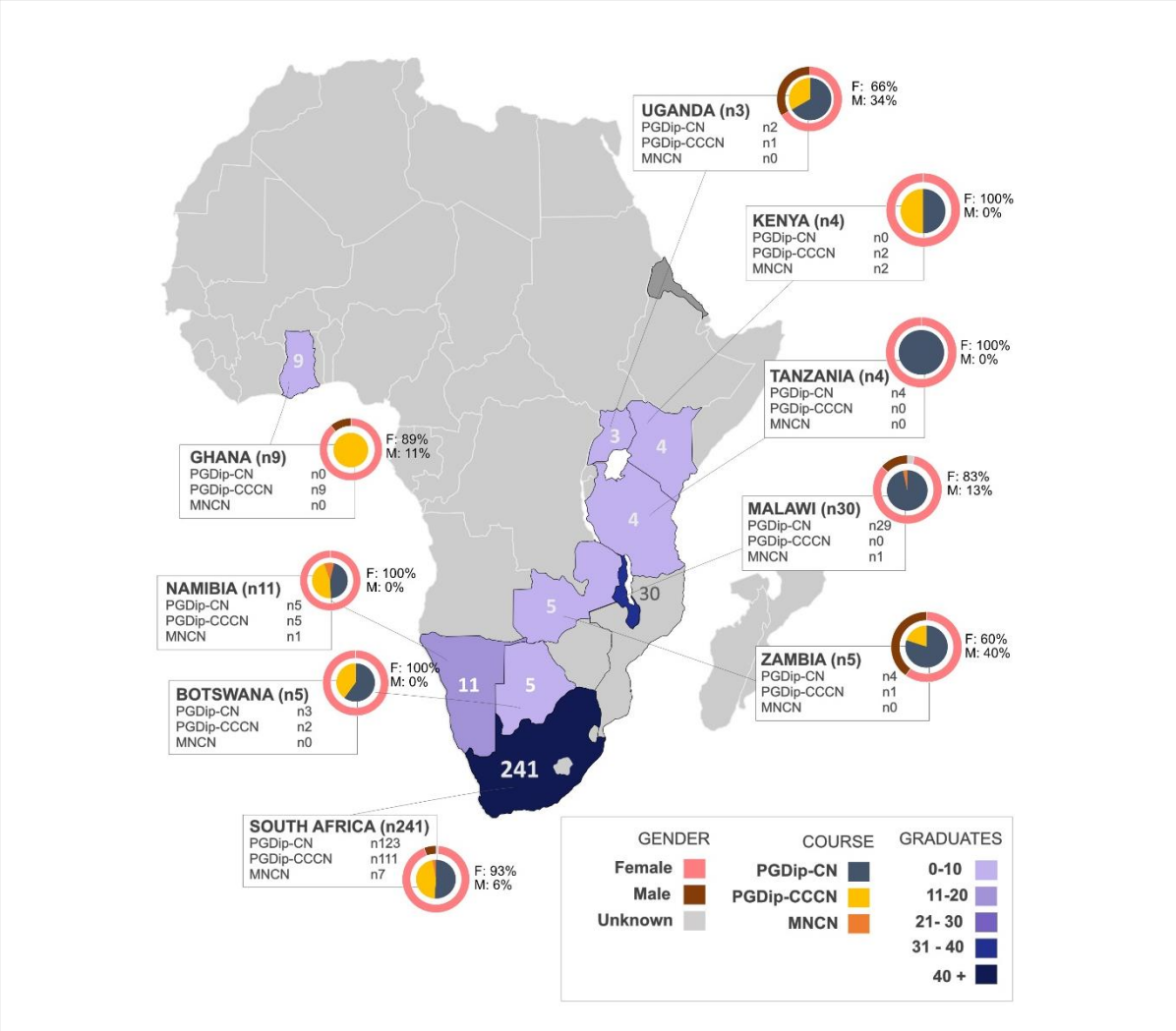


Figure 13: Map to show the distribution, demographic and course mix of CNPDI graduates

4.2.2 Attrition

As Table 5 highlights, over the past 11 years 5% (n18) of potential graduations did not complete. Of these, 61% (n11) were South African, 39% (n7) were international students. All students from Kenya, Namibia, Malawi and Zambia completed their course, with no students from Eritrea or Mauritius becoming CNPDI alumni. Attrition rates across programmes of study are even, with eight enrolments withdrawing from the PGDip-CN and 10 from the PGDip-CCCN. All MNCN students graduated on time.

4.2.3 Graduate profile

Given the low attrition rate, the profile CNPDI's graduates is largely consistent with that presented in Section 4.1. For example, of the 308 individual graduates where there is data, 93% (n286) are female and 7% (n22 are male). Of CNPDI's total graduates, 77% (n241) are South African and 23% (n71) are international - although attrition rates see graduates linked to eight other countries, not 10. Again, most come from Malawi (42% n30), Namibia (15% n11) and Ghana (13% n9) - with the remaining 30% (n21) spread across Botswana, Kenya, Uganda, Tanzania and Zambia. Where data is available (n280 of n312), the number of graduates linked to hospital/education facilities is consistent with Section 4.1.4 – with 95% (n266) of graduates linked with 65 hospital sites, 4% (n11) to eight educational institutions with 1% (n3) resigning their jobs to study. For this reason, as available data also shows facility level spread to remain consistent (see Figure 14).

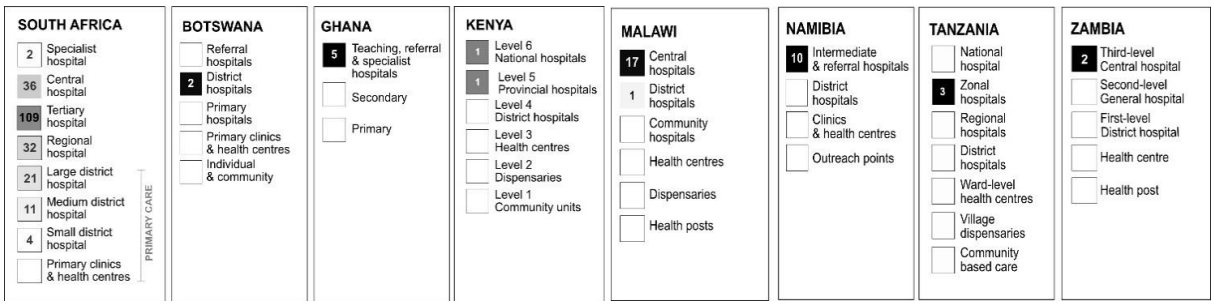


Figure 14: Graduate distribution by facility level and country

4.2.4 Returning alumni

Unfortunately, data does not show the exact number of alumni returning to their original posting on graduation. However, this can be inferred - provisionally - by analysing their funding source. For example, of the CNPDI's 312 graduates, we know that 68% (n213) were employer funded. The

assumption here is that this involves a contractual bond requiring alumni to return for at least one year. However, this only gives an indication of circumstance and cannot be relied upon to give a true and complete picture.

4.3 FINAL OUTPUT: WHERE ARE THEY NOW?

The CNDPI database was updated in January 2019 to reflect the situation of individual alumni as at December 2018. Data is 87% complete (n272 of n312) and includes follow-up information on 248 alumni, as well as new data for 24 graduates where their original practice environment was unknown. The picture might be incomplete, but it is important that this data is analysed – as identified trends could indicate broader patterns and so inform recommendations/learning.

4.3.1 Alumni movement

	South Africa	International	Ghana	Kenya	Malawi	Namibia	Uganda	Zambia	Total
STARTING POINT: EDUCATIONAL INSTITUTION									
Public Hospital		1			1				**1**
Educational institution		1						1	**1**
STARTING POINT: PUBLIC HOSPITAL (inc. Military)									
Public Hospital		1			1				**1**
Private Hospital (for-profit)	1	1				1			**2**
Private Hospital (non-profit)		1			1				**1**
Educational institution	2	5			5				**7**
Further study (CNPDI)	1	1						1	**2**
Overseas study (USA)		1	1						**1**
STARTING POINT: PRIVATE HOSPITAL									
[Faith-based] to Private Hospital (Faith-based)		1			1				**1**
[Non-profit] to Educational instution		2		1			1		**2**
STARTING POINT: UNEMPLOYED									
Educational institution	1								**1**
Private Hospital (For-profit)	1								**1**
Private Company (USA, location unknown)	1								**1**
TOTAL	**7**	**15**	**1**	**1**	**9**	**1**	**1**	**2**	**22**

Table 6: Known graduate movement

Looking at the 248 records where follow-up information is available, analysis shows that 91% (n226) of CNPDI graduates continue to work, not just in Africa, but at their original centre of employment (n217 in hospitals, n9 in educational facilities). This means that circumstances have changed in 9% (n22) of cases. As Table 6 shows, whilst most movement is individualist, there is a possible trend emerging – with 45% (n10) of transitional alumni moving into education. 50% of this shift happened in Malawi (n5) with the rest spread across South Africa (n3), Kenya (n1) and Uganda (n1).

Data also shows five alumni moving into the private sector – three of which moved from public hospitals into for-profit (n2) and non-profit (n1) sectors, two of which were unemployed and

gained employment at a for-profit hospital and with a US company. Beyond this, data shows three alumni from public hospitals to enrol in further study (two with CNPDI, one in the USA), one moving from an educational institution to a public hospital, and three moving with their original sectors. It should also be noted that three alumni - currently based at their original institution – will return to the CNPDI to start their MNCN in 2019.

4.3.2 Current location

Expanding analysis outwards to look at the full set of available data, all but two (99% n270) alumni are based in Africa. As Figure 15 illustrates, South Africa accounts for the majority of alumni (76% n206), with the next highest concentration in Malawi (11% n29). The remaining 13% (n35) are spread across Namibia, Ghana, Botswana, Tanzania, Kenya, Zambia and Uganda. Within this, three alumni are living in South Africa to complete their MNCN with the CNPDI and PhD with UCT. Of the two that have potentially moved overseas, one is studying in the USA - with the location of the one alumni employed by a US company unknown.

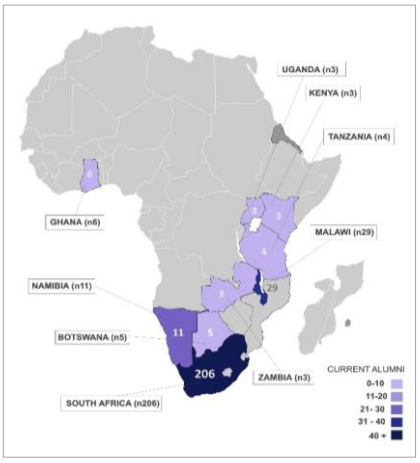


Figure 15: Known location of CNPDI alumni in Africa

4.3.3 Institution type

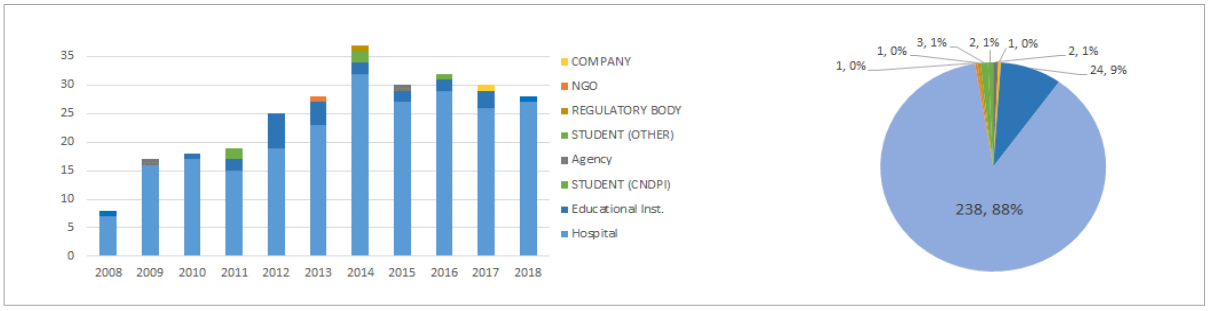


Figure 16: Known institutional distribution of CNPDI graduates by year and as a whole

Figure 16 shows the range of linked institutions to be more diverse for alumni than enrolments. Despite this, the majority (88% n238) practice at 68 different hospital facilities. 9% (n24) can be found working across 17 different educational institutions – of which 63% (n15) are working at centres known, or set to offer, a specialist course in children's nursing. In addition to the 2% (n5)

alumni enrolled on further study in South Africa or the USA, 1% (n3) have gone on to work for private companies/agencies the final two working for NGOs, including regulatory bodies.

Focussing on those known to be in South Africa, whilst field completion rates show a potentially false drop in alumni based at the RXCH, Table 7 still shows most graduates (50% n104) working here or at one of two 'hub' facilities. 45% (n92) are spread across 49 other hospitals, with a mode of n1 per institution (range n1-n7). In contrast to Section 4.1.4 and 4.1.5, four graduates are now linked to educational facilities and two to private agencies (for-profit). As observed in Section 4.3.2 it should also be noted that three graduates based in South Africa are international students.

South Africa	Graduates	
Hospital	196	95%
RXCH	65	32%
Hub Site 2	25	12%
Hub Site 3	14	7%
Other (X50 sites)	92	45%
Educational Inst.	4	2%
UCT	3	1%
CNPDI	1	1%
Student	4	2%
CNPDI	3	1%
UCT	1	1%
Agency	2	1%
TOTAL	**206**	

Table 7: Institution type of known graduates based in South Africa

Finally, to look again at Malawi - where follow-up data completes the set - the hub-and-spoke trend observed is now less pronounced. Here, 48% (n14) of in-country graduates work across *three* hospitals (n6, n4, n4). The remaining 14% (n4) are spread across four other facilities, with 31% (n9) of graduates now linked to educational entities, three of which are based at facilities known to offer children's nurse training. Two other alumni are linked with NGOs, including a regulatory body. As mentioned above, one graduate is now studying in South Africa.

Malawi	Graduates	
Hospital	18	60%
Hub Site 1	6	20%
Hub Site 2	4	13%
Hub Site 3	4	13%
Other (X4 sites)	4	13%
Educational Inst.	9	30%
Site 1	3	10%
Other (X5 sites)	6	20%
NGO	1	3%
Regulatory body	1	3%
Student (SA)	1	3%
TOTAL	**30**	

Table 8: Institution type of Malawi alumni

4.3.4 Institution sector

Looking at the 238 graduates known to be working in hospital facilities, the split between public/private is consistent to Section 4.1.5 - with Table 9 showing 89% (n212) of CNPDI alumni working in public hospitals, 7% (n16) in private facilities (for-profit: 4% n9, non-profit: 2% n4, faith-based: 1% n3) and 4% (n10) other/unknown. Although marginal, the increased number of South African alumni known to work at private institutions should be noted.

Sector	S. Africa	International	TOTAL
Public	178	34	212
Private	8	8	16
Faith-based	0	3	3
Non-Profit	0	4	4
For-Profit	8	1	9
Other	9	0	9
Unknown	1	0	1
TOTAL	**196**	**42**	**238**

Table 9: Institutional sector of known alumni

4.3.5 Institutional level

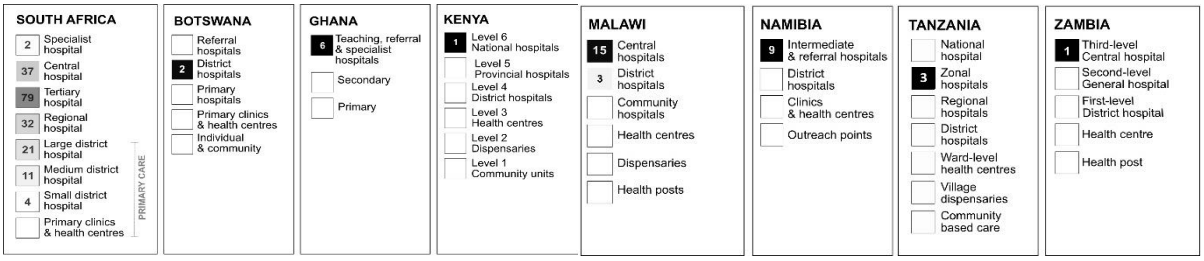


Figure 17: Known institution level of hospital-based CNPDI graduates in Africa

Echoing previous trends, available data (n227 of n238) linked to institutional levels is consistent with the patterns observed in Sections 4.1.6 and 4.2.3 – with Figure 17 showing most known CNPDI alumni based in top-tier facilities. Once again, division between South African and international students is apparent, with 19% (n36) of South African alumni working at district-level (primary) facilities, whereas all known international alumni are based at top-tier sites. Where possible, Figure 18 maps the spread of known graduates and their linked facilities. With Section 4.3.1 showing just 9% (n22) of graduates to have changed circumstance, the picture presented here is little different - with the majority of graduates clustered in the Western Cape and employed at the RXCH and two other hub facilities. Once again, national spread is thinner, and with the exception of Eastern Cape and Mpumalanga Provinces, rotates around secondary/tertiary care. Within this we can also see a marginal increase in alumni working in private facilities.

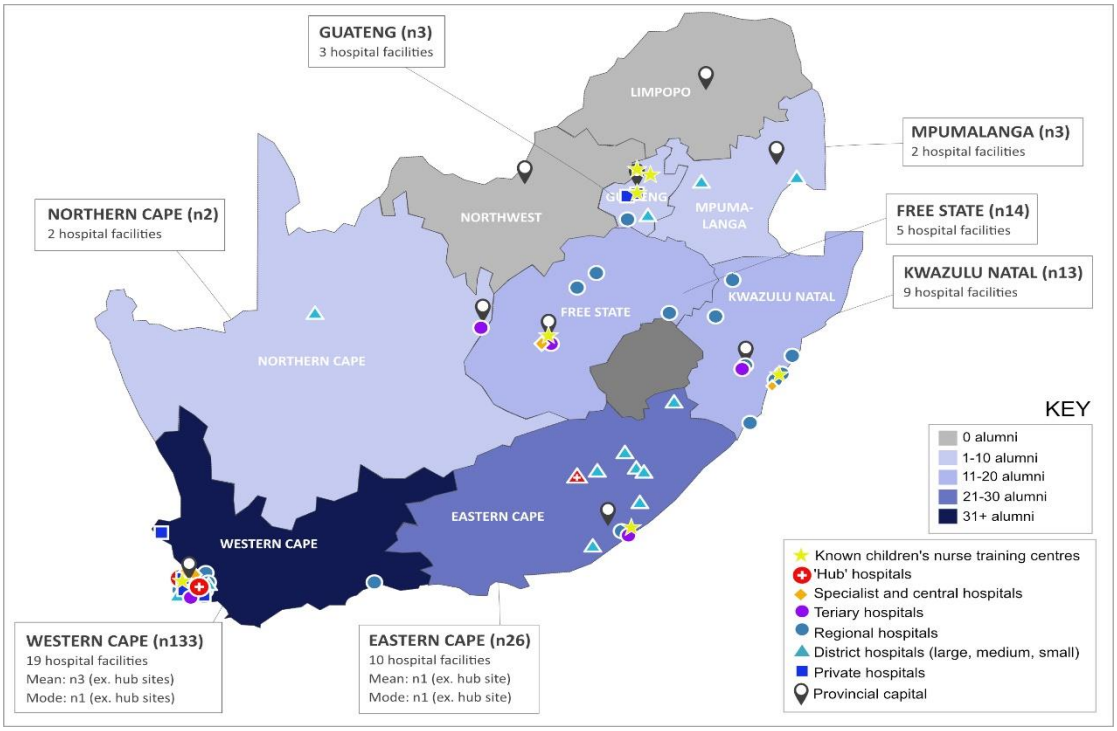


Figure 18: Where are they now? Map of known CNPDI alumni in South Africa

CHAPTER 5 – DISCUSSION & CONCLUSION

With Chapter 4 providing an analysis of research data, this chapter contextualises and consolidates key findings – discussing these in relation to the issues raised in Chapters 2 and 3. As such, discussion is grouped into three areas: programme development and policy landscape; delivering an educated children's nursing workforce; study development and evaluation practice. Not only does this creates opportunity to consider the conceptual relevance of study findings in preparation for the final recommendations and conclusion.

5.1 THEME 1: PROGRAMME DEVELOPMENT AND POLICY LANDSCAPE

This first section examines study findings in relation to national/international policy. As such, it considers *how and if* enrolment patterns reflect stakeholder priorities, using this discussion to make recommendations for programme-level developments.

5.1.1 Recruitment trends in relation to policy commitment

Looking at context, Sections 2.1.2 and 2.2.3 show the GSHRH (WHO 2016b) and GSDNM (WHO 2016c) delegate country-level action to the will and leadership of national governments. In line with this, South Africa offers a set of documentation to guide nurse workforce development towards UHC (see Section 3.1.1). Pivotally, where global discourse tends to overlook nursing and the role of specialist practitioners, South African legislation calls for more children's nurses. However, as seen in Sections 2.1, 2.2 and 3.1 there a disconnect between theory and action exists – one local to South Africa *and* characteristic of nurse (and HRH) development in general.

In terms of key findings, Section 4.1 shows the CNPDI welcoming 348 enrolments in 11 years, 75% of which are South African, 25% of which travelled from 10 other sub-Saharan countries. Averaging 32 enrolments a year, Figure 6 shows programme uptake growing steadily between 2008-2016. Interestingly, whilst the ratio of international students remains consistent (despite the launch of affiliated training programmes in Kenya, Malawi and Zambia) South African enrolments are decreasing. This is particularly true of PG-Diploma courses, which have seen numbers fall to pre-2014 levels.

Reflecting on the above, the CNPDI offers a solid example of a ground level action and is an important contributor to the education of children's nurses in South Africa *and* Africa (CNPDI 2019; North et al. 2019). Whilst this should be celebrated, the decrease in enrolment numbers needs to be discussed. For whilst downward trends can be explained by a drop in RXCH referrals (which has just finished releasing *all* its nurses for training), the resultant gap cannot. As North et al. highlight (2019), the CNPDI is one of seven South African centres training children's nurses and the only one offering a critical care specialism - with the policy landscape creating mandate and market to maintain, if not grow, student input. This is reinforced by the mapping exercise in Section 4.1.6, which shows scope to increase enrolments from *all* provinces outside the Western Cape, most notably within Northern Cape, Northwest and Limpopo provinces.

So why are enrolments falling? Data gives no conclusive answer. But it does point to a possible cause – with Figure 10 showing a gradual decline in employer funded sponsorships and increase in external bursaries. This is significant because Section 4.1.5 shows 90% (n264) of total enrolments and 92% (n221) of South African enrolments known to come from public hospital settings, which means the decline in employer sponsorship also represents a decline in government funding. This reflects the challenges described in Section 3.1 and could indicate growing difficulties in channelling political will and leadership towards action. In line with this, it is interesting to see the decline experienced by the CNPDI echo national trends (see Figures 3 and 4). With young South Africans no longer seeing nursing as a 'worthwhile' career (DOH 2008, p.11), it is possible that findings are symptomatic of broader challenges in nurse workforce development – particularly workforce recognition and a growing preference towards low-level care.

As such, the development of new recruitment, marketing and advocacy plan is recommended. Each impossible without the other, this would help regenerate inputs by setting a plan for recruitment activity that targets identified areas of need (see Section 5.1.2 for more detail). This would be supported by a marketing and advocacy framework to help raise the profile of children's nursing and persuade government bodies and the international community to mobilise the resources needed to turn theory into action.

5.1.2 Programme intake in the light of CPHC

As Section 3.1.1 indicates, South African policy is rooted in a model of CPCH. Therefore, whilst the above discussion raises questions over the will and leadership to deliver, on paper South African

policy promotes the simultaneous development of primary and tertiary services. As such, not only does this mandate call for more children's nurses, it also sees them spread across the continuum of care - supporting district level (primary) services *and* facility based care.

Drawing on Section 4.1.6, research shows most CNPDI enrolments linked to top-tier facilities. Where no international students are shown to link to primary level facilities, distribution in South Africa is more even. Here, most enrolments (59% n141) are concentrated around three 'hub' sites in the Western and Eastern Cape, with the remainder spread across 50 facilities in six of South Africa's nine provinces (see Figure 13). 17% (n39) are known to be linked to primary services.

It is interesting to see local distribution patterns differ to those in international settings. Indeed, the latter displays my own expectations, with the former challenging a personal assumption that specialist nurses *only* work in tertiary facilities. This realisation opens up a new avenue of discussion. Where I was prepared to accept such clusters as rote, the picture presented in Figures 11, 14 and 17 shows scope for improvement. Undoubtedly, UCT's links with the RXCH and the convenience of training close to home influences these patterns, but even so, programme inputs look unbalanced. Of course, as Section 2.3.2 highlights, these clusters *could* be a planned response to facility or local need – and certainly the identification of other potential 'hub' sites in South Africa, Malawi and Ghana supports this. It is also known that some clusters have been developed by the CNPDI team to meet stakeholder need. However, enrolment numbers and data availability are too low to confirm such patterns, with little extra existing by way of external verification.

To address this, I recommend greater exploration of facility, local and regional priorities, their vision and resources for children's nursing. This process would inform the proposed recruitment plan by providing important baseline information. For example, as Section 4.1.6 highlights, not only is there scope to extend recruitment beyond the Western Cape, there is also opportunity to *deepen* representation by increasing enrolments from primary facilities. This research would also increase growth potential by further aligning CNDPI's recruitment with local and policy level need.

5.2 THEME 2: DELIVERING AN EDUCATED CHILDREN'S NURSING WORKFORCE

Turning from inputs to outputs, Theme 2 discusses the data presented in Sections 4.2 and 4.3. Building on the learning gained from the review of education programmes in Section 2.5.3, to do

this, it will focus on immediate short-term outputs before going on to consider the long-term outcomes of CNPDI training.

5.2.1 Short-term outputs in relation to national/international trends

As Section 2.5.1 highlights, when it comes to health, societies need to be sure that educational facilities produce competent professionals (WHO 2013). Whilst this study was not designed to assess the CNPDI in this way, graduation/attrition rates link directly to perceptions of quality, which then impact programme outputs. Fallout can be high. Indeed, Section 3.1.4 shows attrition from some South African universities at 59% – a figure well above international norms of 30% (Roos et al. 2016, p.1; GWHA 2008a, p.77).

Looking at Section 4.2, research shows 5% (n18) of students withdrawing from the CNDPI in 11 years. This translates to a graduation rate of 94%, with the final 1% set to graduate in 2019. In total, this means that the CNPDI has produced 170 children's nurses, 131 critical care children's nurses and 11 advanced practitioners. Of these, 77% (n241) are South African, with 23% (n71) coming from eight other sub-Saharan countries.

It is exciting to see the CNPDI's graduation rate exceed national and international standards. This makes the CNPDI an important case study for the delivery of nurse education and is a finding worthy of celebration and further exploration. Unfortunately, data cannot offer any insight into the reasons behind this success – although with UCT ranked as a top South African university a certain level of quality can be assumed (BRICS 2019). Interestingly, data is also limited in that Section 4.2.4 cannot give a true count of the number of students returning home to practise immediately on graduation. This omission is important because it makes the evaluation of short-term outputs incomplete, and with 40% of South African graduates failing to register with SANC, and 18% of nurses inactive, the transition from graduate to practitioner cannot be assumed (see Section 3.1.2 and 3.1.4). The CNPDI needs to start formally counting these numbers. An assessment of programme quality similar to those in Section 2.5.2 would also help understand their success and generate important learning for similar initiatives.

5.2.2 Alumni retention in the light of workforce distribution patterns

Moving beyond short-term outputs, Sections 5.2.2 and 5.2.3 create scope to expand evaluation to include long-term outcomes. More than just an indicator of programme quality, information

on alumni circumstance is key to identifying broader challenges (Watson & Herbener, 1990). Certainly, with Lopez et al. (2017) setting regional workforce attrition at 14%, and Sections 2.3.1 and 3.1.2 showing international migration, rural-urban, primary-tertiary and public-private drift undermining UHC, such information is critical to programme evolution *and* national development.

Focussing on the 79% (n248) of alumni where follow-up data is available, Section 4.3 shows 91% (n226) of CNDPI graduates continuing to work, not just in Africa, but at their original centre of employment. Expanding outwards, available data shows 99% (n270) of all known alumni based in Africa. Of the two that have potentially moved overseas, one is studying in the USA - with the location of the second unknown. Three are living in South Africa to complete their MNCN and PhD with UCT.

Where challenges of workforce retention led me to expect high levels of movement, in this instance the opposite is true. Contrary to the concerns of GHWA (2008a), data shows no correlation between CNPDI training and international migration. In fact, as Munjana et al. (2005) argue, where such movement has occurred, it is done so in *pursuit* of education, not because of it. Similarly, when it comes to issues of workforce attrition, primary-tertiary and public-private drift, data shows surprisingly little change. Why? On one hand the explanation is simple: with the majority of alumni already linked to top tier facilities, upwards migration is not necessary. But this does not explain why CNPDI alumni do not leave the workforce, sell their skills overseas or move into the private sector. It is a fascinating situation that raises important questions around attitude and motivation - the answers to which could unlock new learning for workforce development. It is for this reason a more formalised process for collecting follow-up data is recommended. As part of this, the CNPDI also needs to consider how many graduates continue to work in roles specific to child health, and the impact this has on a given practice environment. This process addresses some of the limitations in Section 5.3.1 and would benefit from additional research into the attitudes and motivation of CNPDI alumni pre and post-training.

5.2.3 Considering CNPDI's contribution to broader workforce development

Looking now at issues of sustainability, Cominsky et al. note a direct link between educational output and workforce development, with few courses delivering graduates with the capacity/aptitude to become nurse educators (2015, p.648). With the shortage discussed in Sections 2.4.2 and 3.1.4 not only does this impact the quality and number of practitioners, it is a

self-limiting process that fails to provide the educators needed to sustain workforce growth. This makes the training of nurse educators a priority action identified through both South African and international policy.

Building on the context above, it should be noted that where 91% (n226) of alumni with follow-up data are known to work in their original environment, another 9% (n22) changed circumstance. Within this, the most prominent trend is the movement of 10 alumni from hospital to education environments - with South Africa and Malawi accounting for 80% (n8) of this. Taken as a whole, available data shows 9% (n24) of CNPDI alumni known to work in education. Of these, 63% (n15) work in centres that offer (or will offer) children's nursing.

Whilst this situation involves a comparatively small number of alumni, this movement is exciting because it shows the CNPDI addressing a direct challenge in workforce sustainability. Data is limited in that it offers little insight into the reasons behind such movement, although some cases are known to be an intentional part of CNPDI's work with affiliated programmes. This strategy is catalytic and has the potential to multiply the *indirect* contribution of the CNPDI exponentially. The challenge is that data does not confirm whether these alumni are educating *children's* nurses. Nor does it count the output of such initiatives, although the CNPDI (2019) estimate an additional output of ~200 children's nurses a year. As such, it is recommended that research is done to verify the number of alumni employed as child nurse educators, to count *and contextualise* affiliated programme throughput. Such information is key to unlocking the indirect contribution of the CNPDI. Without it, this study can only tell part of the story.

5.3 THEME 3: STUDY DEVELOPMENT AND EVALUATION PRACTICE

As Section 3.2 highlights, this study set out to fill a noted gap in education evaluation - one that sees practice limited by a focus on qualitative evaluation and short term outputs. Countering this, the Methodology presented in Chapter 3 was designed to pilot a new model of study based on, but extending beyond, the quantitative side of programme analysis. In doing so it has generated important learning and discussion. However, in order to present a true and fair picture of the CNPDI, it is necessary that these are read in the context of the limitations summarised below.

5.3.1 Study limitations

First and foremost, as a case study, it is important to recognise that research findings are not generalisable. I did not collect the analysed data and have worked with raw information provided by the CNPDI. As such, data is subject to a degree of external bias and accuracy cannot be 100% guaranteed. Furthermore, whilst a threshold of 80% field completion was used, data is still incomplete. This is particularly true of that presented in Section 4.2 onwards - where a full picture *could* dilute given findings. Finally, whilst the contextualisation of programme throughput provides new insight into the direct contribution of the CNDPI, this process is dependent on desk-based research and is subject to a degree of interpretation bias. I also note my position as one external to Africa, a factor which could limit understanding of varied in-country contexts.

Furthermore, data limitations also limited the exploration of certain areas. For example, background research in Section 3.1.2 shows age to be an important issue for nurse workforce development in South Africa. Unfortunately, field completion rates do not allow for the exploration of related data and so an opportunity for discussion is missed. In addition, data is unable to confirm whether or not alumni roles are specific to children's nursing, and/or count the number of nurses trained by affiliated programmes. This limits understanding around CNPDI's direct *and indirect* contributions to the delivery of an educated children's nursing workforce in sub-Saharan Africa.

5.3.2 A call for mixed methodologies

Finally, as highlighted in Section 2.5.3, throughout this process I have become increasingly aware of the difficulties in dividing research methodology between quantitative/qualitative processes. For where this study provides important insight into quantitative throughput, qualitative methodologies were needed into order to contextualise and analyse information, with a number of recommendations highlighting the need for additional research across both. Drawing on Symonds & Gorard's notion that such dichotomies deny the shared roots of evaluation methodologies (2009), it is recommended that researchers take a mixed methods approach to the evaluation of nurse education. It is only by employing a combination of techniques that researchers can hope to do their subject justice and deliver a 360° view of programme quality, short-term outputs *and* long-term outcomes.

5.5 CONCLUSION

So what is CNPDI's direct contribution to the delivery of an educated children's nursing workforce in sub-Saharan Africa? The answer is far from straight forward. On one level, this case study offers an impressive example of a nurse education programme that has turned a 94% graduation rate into 170 children's nurses, 131 critical care children's nurses and 11 advanced practitioners from nine African countries. Filling a notable gap in education evaluation, the study goes on to contextualise these findings. From this, available data shows the CNPDI enabling the *sustained* delivery of an educated children's nursing workforce - one focussed mostly (but not exclusively) around top tier, public hospitals. Overall, 99% of known alumni are based in Africa. Furthermore, where specific follow-up data is available, research shows 91% of CPDI graduates based at their original practice environment, with a small but tangible number going on to work in education.

In doing so, this study shows how complex issues of nurse workforce development and HRH are, and the extent to which the impact of programmes like the CNPDI are connected to issues across the health-education-labour market triad. As such, discussion highlights a number of recommendations to guide future developments. These are summarised below:

1) **Improved data capture:** to solidify enrolment, graduate and alumni information, with a focus on age, graduate return, original and current practice environments.
2) **New research:** to build knowledge around student throughput and long term outcomes, with proposed areas including:
   - Programme quality: understanding success in relation to WHO education frameworks.
   - Attitudes and motivations: understanding the driving forces and aspirations of CNDPI enrolments and alumni.
   - Employment pathways: how do the careers of CNPDI graduates develop and how many continue to work in the field of children's nursing one, five and 10 years post-graduation.
   - Health outputs: exploring the impact of CNPDI graduates on given hospital facilities.
   - Indirect impact: evaluating the contribution of affiliated training programmes.
3) **Landscape analysis:** to better understand facility, local and regional priorities, their vision and resource for children's nursing.
4) **Recruitment planning:** to regenerate programme intake by extending recruitment activity beyond the Western Cape and into lower levels of the health system – ensuring alignment with local need, vision and resource.

5) **Marketing and advocacy:** to raise the profile of children's nursing and persuade government bodies and the international community to mobilise the resources needed for ground level action.

It sounds good on paper, but history shows how hard it is to turn theory into action – with this study highlighting key bottlenecks in workforce recognition, education and retention, and the role of political will and leadership in driving long term change. It is for this reason that I ask the South African government to renew its commitment to children's nursing, and for the international community to *recognise and reinforce* this need by advocating a mandate of comprehensive care.

But the stage is a crowded one, with the voice of children's nurses at risk of being lost to a growing focus on broader HRH and low-level, generalist care. Yet as Nursing Now (2018a) gains momentum and the Year of the Nurse/Midwife is set (WHO 2019b), never has there been a better time to raise the volume. The task now is to use the knowledge and learning gained from this study, prioritise and act on given recommendations and show local, national and international communities exactly *how and why* they need to train more children's nurses, now.

APPENDIX 1: INDICATOR SELECTION

As referenced in Section 3.2, this first table provides a list of the indicators planned for use in the presented study. Those in grey mark the fields with a completion rate below 85%. These were excluded from the final research process.

Research area	Indicator	Source	Field completion
Inputs	Enrolment numbers	CNDPI data	100%
	Age	CNDPI data	Insufficient data
	Gender	CNDPI data	99%
	Referral country	CNDPI data	100%
	Programme of study	CNDPI data	100%
	CNDPI data	CNDPI data	97%
	Base institution	CNDPI data	89%
	Location	Desk-based research	Based on above
	Country	Desk-based research	Based on above
	Sub-national	Desk-based research	Based on above
	Facility type (Hospital / Education / Other)	Desk-based research	Based on above
	Institution sector (Public / Private – for-profit / NGO / Faith-based)	Desk-based research	Based on above
	Health system level	Desk-based research	Based on above
	Years of experience	CNDPI data	Insufficient data
	Year registered	CNDPI data	Insufficient data
Short-term outputs	Year completed	CNDPI data	100%
	Graduation rate	CNDPI data	Based on above
	Graduate skill-mix	CNDPI data	Based on above
	Attrition rate	CNDPI data	Based on above
	Returned home	CNPDI data	Insufficient data
	Returning institution	CNPDI data	Insufficient data
	Location	Desk-based research	Based on above
	Institution type	Desk-based research	Based on above
	Institution sector	Desk-based research	Based on above
	Health system level	Desk-based research	Based on above
	Returning role	CNPDI data	Insufficient data
	Working in paediatrics?	CNPDI data	Insufficient data
Long-term outcomes	Current institution	CNDPI data	87%
	Location	Desk-based research	Based on above
	Country	Desk-based research	Based on above
	Sub-national	Desk-based research	Based on above
	Facility type (Hospital / Education / Other)	Desk-based research	Based on above
	Institution sector (Public / Private – for-profit / NGO / Faith-based)	Desk-based research	Based on above
	Health system level	Desk-based research	Based on above
	Current role	CNDPI data	Insufficient data
	Working in paediatrics?	CNPDI data	Insufficient data

This second table provides an overview of the indicators required by the WHO's National Health Workforce Accounts (WHO 2017c) with relevance to the given study area. Those highlighted as 'in-scope' were used to inform the final list of indicators presented.

REF	INDICATOR	In scope
1.00	**Active health worker stock**	✓
1.01	Health worker density	✓
1.02	Health worker density at sub-national level	✓
1.03	Health worker density by age group	✓
1.04	Female health workforce	✓
1.05	Health worker distribution by facility ownership	✓
1.06	Health worker distribution by facility type	✓
1.07	Share of foreign born health workers	✓
1.08	Share of foreign trained health workers	✓
1.09	Share of workers across health and social sectors	
2.00	**Education and training**	
2.02	Master list of accredited health workforce education and training institutions	
2.03	Duration of education and training	
2.04	Applications for education and training	
2.05	Ratio of admissions to available places	
2.06	Ratio of students to qualified educators for education and training	
2.07	Exit / Drop-out rate from education and training programmes	✓
2.08	Graduation rate from education and training programmes	✓
3.00	**Education and training regulation and accreditation**	
4.00	**Education finances**	
5.00	**Health labour market flows**	
5.01	Graduates starting practice within one year	✓
5.02	Replenishment rate for domestic efforts	
5.03	Entry rate of foreign health workers	
5.04	Voluntary exit rate from health labour market	✓
5.05	Involuntary exit rate from health labour market	✓
5.06	Unemployment rate	✓
5.07	Vacancy rate	
6.00	**Employment characteristics and working conditions**	
7.00	**Health workforce spending and remuneration**	
8.00	**Skills-mix composition for models of care**	
8.01	Percentage of health workers working in hospitals	✓
8.02	Percentage of health workers working in residential long-term facilities	
8.03	Percentage of health workers working in ambulatory healthcare	
8.04	Specialist surgical workforce	
8.05	Family medicine practitioners	
8.06	Existence of advanced nursing roles	✓
8.07	Availability of human resources to implement International Health Regulations	
8.08	Applied epidemiology training	
9.00	**Governance and health workforce policies**	
10.00	**Health workforce information systems**	

APPENDIX 2: KEY RESOURCES

In addition to individual facility websites, the below lists the key desk-based resources used to contextualise programme throughput.

Policy documents

Department of Health. (2012) HRH Strategy for the Health Sector: 2012/13 – 2016/17, Department of Health, Republic of South Africa.

Department of Health. (2012). The National Strategic Plan for Nurse Education, Training and Practice 2012/13-2016/17, Department of Health, Republic of South Africa.

Department of Health. (2016) Strategic Plan 2015-2020: A long and healthy life for all South Africans, Department of Health, Republic of South Africa.

Department of Health. (2016) HEALTH CHAPTER OF THE MEDIUM TERM STRATEGIC FRAMEWORK (MTSF) 2014-2019, Department of Health, Republic of South Africa.

Ministry of Health. (2010) Integrated health service plan: a strategy for changing the health sector for a healthy Botswana 2010-2020, Ministry of Health, Republic of Botswana.

Ministry of Health. (2012) Kenya health sector strategic and investment plan (KHSSPI) July 2013-June 2017, Ministry of Health, Republic of Kenya.

Ministry of Health. (2012) NATIONAL HEALTH POLICY: A Nation of health and productive people, Ministry of Health, Republic of Zambia.

Ministry of Health. (2014) The Health Sector Medium Term Development Plan: 2014-2017, Ministry of Health, Republic of Ghana.

Ministry of Health (2015). Health Sector Development Plan 2015/16-2019/20, Ministry of Health, Republic of Uganda.

Ministry of Health. (2017) Health Sector Strategic Plan II (2017-2022), Ministry of Health, Government of the Republic of Malawi.

Ministry of Health and Social Services. (2010) National Health Policy Framework, 2010-2020, Ministry of Health and Social Services, Government of Namibia.

Ministry of Health and Social Welfare. (2015) Health Sector Strategic Plan July 2015 – June 2020, Ministry of Health and Social Welfare, United Republic of Tanzania.

Health system audits

Department of Health. (2012) Regulations relating to categories of hospitals, Government Gazette, No.35101: 3-28.

Websites

CHAM: http://www.cham.org.mw/

Department of Health, Eastern Cape: http://www.echealth.gov.za

Department of Health, Free State: http://www.fshealth.gov.za

Department of Health, KwaZulu Natal: http://www.kznhealth.gov.za

Department of Health, Mpumalanga: http://www.mpuhealth.gov.za

Department of Health, South Africa: http://www.health.gov.za

Department of Health, Western Cape: https://www.westerncape.gov.za

East London Directory of Business: http://www.eastlondon-directory.co.za/

Eduhealth: Health Science Placement Directory: https://eduhealth.co.za/

General nursing council of Zambia: http://www.gnc.org.zm/

Life Healthcare: https://www.lifehealthcare.co.za/

Medpages: https://www.medpages.co.za/

Ministry of Health, Zambia: https://www.moh.gov.zm/

Ministry of Health, Botswana: https://www.moh.gov.bw

Ministry of Health, Ghana: http://www.moh.gov.gh/

Ministry of Health, Kenya: http://www.health.go.ke/

Ministry of Health, Malawi: http://www.health.gov.mw/

Ministry of Health, Uganda: https://health.go.ug/

Ministry of Health and Social Services, Namibia: http://www.mhss.gov.na

Ministry of Health and Social Welfare, Tanzania: https://www.moh.go.tz/

Netcare Hospitals: http://www.netcarehospitals.co.za/

Paediatrics and Child Health Association: https://www.pacha.org.mw/

South African Doctors: http://www.sadoctors.co.za

South African Military Health Service: http://www.mhs.mil.za/

The Electives Network: https://www.electives.net

Academic Articles

North, N., Shung-King, M., Coetzee, M., (2019). The children's nursing workforce in Kenya, Malawi, Uganda, South Africa and Zambia: generating an initial indication of the extent of the workforce and training activity, *Human Resources for Health,* 17 (30): 1-9.

Tette, E., Nyarko, M., Nartey, E., Neizer, M., Egbeforme, A., Akosa, F., Biritwum, R., (2016). Under-five mortality pattern and associated risk factors: a case-control study at the Princess Marie Louise Children's Hospital in Accra, Ghana. *BMC Paediatrics,* 16 (148): 1-10.

APPENDIX 3: ETHICS DECLARATION

SCHOOL OF ARTS, LANGUAGES AND CULTURES Ethical Approval Declaration form

All academic staff, postdoctoral researchers and postgraduate students in the School must complete this form at the start of each new phase of research or funded research project (staff). For PG students this must be done as part of the documentation submitted for their Dissertation Research Outline (PGT), or as part of the documentation submitted for the mid-year review in the first year of research (PGR). Before completing the form, you should consult the School's Research Ethics web pages, together with your research supervisor (where relevant) and any research ethics guidelines from your discipline area.

If your project involves research on human subjects you will need to complete one of the following:

- the SALC Research Ethics Assessment;
- the SALC Ethics Template form;
- the University Research Ethics Committee (UREC) Research Ethics Application form.

Please download and read the information contained within the SALC Research Ethics Assessment to establish which forms you will need to fill in.

Whether or not your research project involves human subjects you will need to complete a Risk Assessment, either low or high risk depending upon location and activities, if your research project includes fieldwork conducted off-campus. Templates can be found in the Quick Links section of the SALC Research Ethics pages.

There is detailed guidance on research ethics available on the SALC Research Ethics intranet site hosted on the Graduate School website. If your research raises ethical issues, you may not begin that part of your project until you have received approval.

Name: J. PARSONS **Student ID Number (MA/PhD student only):** 9863264

Academic Unit or Programme: MSC GLOBAL HEALTH

Programme Director (MA students only): DARREN WALTER

Supervisor (PhD students only): .....

Title of Research Project/Topic/ Thesis/ Dissertation:

PAEDIATRIC NURSING AFRICA.

Declaration: I confirm that I have consulted the School and University guidance on Ethics in Research and I understand that Ethical review through SALC or UREC documentation is required for **any** research involving human subjects.

- [x] I confirm that the proposed research project raises **no** ethical issues.
- [ ] There are ethical issues involved in the proposed research project. I will apply for ethical approval via the appropriate SALC or UREC Application form.
- [ ] I confirm that the proposed research project does not include fieldwork and **no** risk assessment is required.
- [x] I confirm that the proposed research project includes fieldwork and I will complete the relevant risk assessment documentation, whether or not my research involves human subjects.

Staff/Student name: J. PARSONS **Date:** 19/11/18.

Supervisor/tutor name (MA/PhD students only): ..... **Date:** .....

11/2/2019

Please note that an emailed version of this form is acceptable if a scanned (not typed) signature is inserted.

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