Determining the causes for the shortage of human resources for primary health care in Botswana and developing a pilot intervention to address the problem

Dr Oathokwa Nkomazana

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Doctor of Philosophy in the Faculty of Medicine and Health Sciences
at Stellenbosch University

Promoter: Professor Robert Mash

Division of Family Medicine and Primary Care, Stellenbosch University, Cape Town South Africa

Co-Promoter: Professor Nthabiseng Phaladze

School of Nursing, Faculty of Health Sciences, University of Botswana, Botswana

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Declaration

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This dissertation includes four original papers published in peer-reviewed journals. The development and writing of the papers (published and unpublished) were the principal responsibility of myself and, for each of the cases where this is not the case, a declaration is included in the dissertation indicating the nature and extent of the contributions of co-authors.

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Signature: O. Nkomazana   Date

Abstract

The global policy on universal health coverage is a commitment to ensuring that all people have access to comprehensive health services without suffering financial hardship. Furthermore, primary healthcare has been recognised as a vehicle to achieving equitable access to comprehensive and cost effective health services. Effective primary healthcare services in many low– and middle-income countries, however, have been hampered by severe shortages and inequitable distribution of the health workforce. Internal migration of health workers from rural to urban areas and from public to private or non-governmental organisations, coupled with regional and international migrations, have exacerbated the shortage and inequity in many of these countries.

Multiple strategies have been employed to address the shortage of healthcare workers with varying degrees of success. These include training, fiscal, regulatory and professional or personal support. Thse strategies concur with the World Health Organisation's policy recommedations for the retention of healthcare workers in rural and remote areas.

The causes of shortages in human resources for health are many and complex and effective mitigating strategies should therefore be comprehensive and context-specific and derived from an adequate understanding of the context. Although Botswana is reported to have a shortage of human resources for health, which is worse in rural areas and primary health care, there is a paucity of readily-accessible, integrated and comprehensive information on human resources for health. Moreover, there has not been any research to determine the cause(s) of the shortage which negates evidence based interventions.

A situational analysis of the human resources for primary health care in Botswana was conducted using an analysis of the existing databases as well as conducting focus group discussions with health care workers, the community and policy makers in three health districts. The findings of the situational analysis then informed the subsequent intervention: creating more supportive health management for primary healthcare workers using a cooperative inquiry group method. The cooperative inquiry group, based on what they learnt from the inquiry, developed a consensus on the prerequisites for effective supportive supervision.

This thesis has quantified the numbers of healthcare workers in the primary and hospital care as well as rural and urban areas. It has elucidated the perceived causes of the shortage of healthcare workers as well as potential solutions. It has also highlighted the need for Botswana to explore how to

implement the World Health Organisation's policy recommendations for retention of healthcare workers which were deemed to be inadequately addressed.

This is a thesis by publication.

The abstracts of the four articles are given below:

Article number 1: Human resources for health in Botswana: the results of in-country database and reports analysis

Background: Botswana is a large middle-income country in Southern Africa with a population of just over two million. Shortage of human resources for health is blamed for the inability to provide high quality accessible health services. There is however a lack of integrated, comprehensive and readily-accessible data on the health workforce.

Aim: The aim of this study was to analyse the existing databases on health workforce in Botswana in order to quantify the human resources for health.

Method: The Department of Policy, Planning, Monitoring and Evaluation at the Ministry of Health, Ministry of Education and Skills Development, the Botswana Health Professions Council, the Nursing and Midwifery Council of Botswana and the in-country World Health Organization office provided raw data on human resources for health in Botswana.

Results: The densities of doctors and nurses per 10 000 population were four and 42, respectively; three and 26 for rural districts; and nine and 77 for urban districts. The average vacancy rate in 2007/2008 was 5% and 13% in primary and hospital care, respectively, but this is projected to increase to 53% and 43%, respectively, in 2016. Only 21% of the doctors registered with the Botswana Health Professions Council were from Botswana, the rest being mainly from other African countries. Before 2009 doctors were trained at regional and international medical schools. Nonetheless Botswana trained 77% of its health workforce locally.

Conclusion: Although the density of health workers is relatively high compared to the region, they are concentrated in urban areas, insufficient to meet the projected requirements and reliant on migrant professionals.

Article number 2: Stakeholders' perceptions on shortage of healthcare workers in primary healthcare in Botswana: focus group discussions

Background: An adequate health workforce force is central to universal health coverage and positive public health outcomes. However many African countries, including Botswana, have critical shortages of healthcare workers, which are worse in primary healthcare. The aim of this study was to explore the perceptions of healthcare workers, policy makers and the community on the shortage of healthcare workers in Botswana.

Method: Fifteen focus group discussions were conducted with three groups of policy makers, six groups of healthcare workers and six groups of community members in rural, urban and remote

rural health districts of Botswana. All the participants were 18 years and older. Recruitment was purposive and the framework method was used to inductively analyse the data.

Results: There was a perceived shortage of healthcare workers in primary healthcare, which was believed to result from an increased need for health services, inequitable distribution of healthcare workers, migration and too few such workers being trained. Migration was mainly the result of unfavourable personal and family factors, weak and ineffective healthcare and human resources management, low salaries and inadequate incentives for rural and remote area service.

Conclusions: Botswana has a perceived shortage of healthcare workers, which is worse in primary healthcare and rural areas, as a result of multiple complex factors. To address the scarcity the country should train adequate numbers of healthcare workers and distribute them equitably to sufficiently resourced healthcare facilities.

Article number 3: Understanding the organisational culture of district health services: Mahalapye and Ngamiland Health Districts of Botswana

Background: Botswana has a shortage of healthcare workers, especially in primary health care. Retention and high performance of employees however is closely linked to job satisfaction and motivation which are both highest where employees' personal values and goals are realised.

Aim: The aim of the study was to evaluate the organisational culture of the district health services as experienced by the primary healthcare workers.

Setting: The study was conducted in the Ngamiland and Mahalapye health districts

Method: This was a cross-sectional survey. The participants were asked to select ten values that best described their personal, current organisational and desired organisational values from a predetermined list.

Results: 60 and 67 healthcare workers completed the survey in Mahalapye and Ngamiland districts, respectively. Eight of the top ten prevalent organisational values were common to both districts: teamwork, blame, patient satisfaction, blame, confusion, job insecurity, not sharing information and manipulation. When all the current values were assessed 32% (Mahalapye) and 36% (Ngamiland) selected by healthcare workers, were potentially limiting organisational effectiveness. The organisational values desired by healthcare workers in both districts were: transparency, professional growth, staff recognition, shared decision-making, accountability, productivity, leadership development and teamwork.

Conclusions: The experience of the primary healthcare workers in the two health districts were overwhelmingly negative which is likely to contribute to low levels of motivation, job satisfaction, productivity and high attrition rates. There is an urgent need for organisational transformation with a focus on staff experience and leadership development at all levels of the health system in Botswana.

Article number 4: How to create more supportive supervision for primary healthcare: lessons from Ngamiland district of Botswana: Co-operative inquiry group

Background: Supportive supervision is a way to foster performance, productivity, motivation and retention of health workforce. Nevertheless there is a dearth of evidence of the impact and acceptability of supportive supervision in low- and middle-income countries. This article describes a participatory process of transforming the supervisory practice of district health managers to create a supportive environment for primary healthcare workers.

Objective: The objective of the study was to explore how district health managers can change their practice to create a more supportive environment for primary healthcare providers.

Methods: A facilitated cooperative inquiry group was formed with Ngamiland health district managers. Cooperative inquiry group belongs to the participatory action research paradigm and is characterised by a cyclic process of observation, reflection, planning and action. The cooperative inquiry group went through three cycles between March 2013 and March 2014.

Results: 12 district health managers participated in the inquiry group. The major insights and learning that emerged from the inquiry process included inadequate supervisory practice, perceptions of healthcare workers' experiences; change in the managers' supervision paradigm, recognition of the supervisors' inadequate supervisory skills and barriers to supportive supervision. Finally, the group developed a 10-point consensus on what they had learnt regarding supportive supervision.

Conclusion: Ngamiland health district managers have come to appreciate the value of supportive supervision and changed their management style to be more supportive of their subordinates. They also developed a consensus on supportive supervision that could be adapted for use nationally. Supportive supervision should be prioritised at all levels of the health system and it should be adequately resourced.

Opsomming

Die wêreldwye beleid oor universele gesondheidsdekking is 'n verbintenis tot die versekering dat alle mense toegang tot omvattende gesondheidsdienste het sonder om finansieël daaronder te ly. Voorts word primêre gesondheidsorg beskou as 'n werktuig om gelyke toegang tot omvattende en kostedoeltreffende gesondheidsdienste te bewerkstellig. Tog word doeltreffende primêre gesondheidsdienste in vele lae- en middelinkomstelande deur ernstige tekorte in, en die ongelyke verspreiding van, die gesondheidswerksmag gekortwiek. Interne migrasie van gesondheidswerkers van landelike na stedelike gebiede en van openbare na privaat of nieregeringsorganisasies, tesame met streeks- en internasionale migrasies, vererger ook die bestaande tekorte en ongelykhede in baie van hierdie lande.

In die verlede is verskeie strategiee implementeer om die kwessie van tekorte van gesondheids werkers aan te spreek, met verskillende grade van sukses. Strategiee sluit in opleiding, fiskale, regulatoriese, professionele of persoonlike ondersteuning.Hierdie stratgiee is meestal geskoei op die Wereld Gesondheids Organisasie se beleids voorstelle vir die retensie van gesondheids werkers in landelike en afgelee areas.

Die oorsake van die tekort aan menslike hulpbronne op gesondheidsgebied is talryk en kompleks. Daarom sal temperingstrategieë slegs doeltreffend wees indien dit omvattend en konteksspesifiek en op 'n deeglike begrip van die konteks gegrond is. Hoewel Botswana luidens berigte gebuk gaan onder 'n tekort aan menslike hulpbronne op gesondheidsgebied, wat erger is in landelike gebiede en in primêre gesondheidsorg, is daar 'n skaarste aan geredelik toeganklike, geïntegreerde en omvattende inligting daaroor. Daarbenewens is geen navorsing nog gedoen om die oorsake van die tekort te bepaal nie.

'n Omstandigheidsontleding van die menslike hulpbronne in primêre gesondheidsorg in Botswana is derhalwe uitgevoer deur die bestaande databasisse te ondersoek, sowel as deur fokusgroepgesprekke met gesondheidsorgwerkers, die gemeenskap en beleidvormers in drie gesondheidsdistrikte te voer. Die bevindinge van die omstandigheidsontleding het die grondslag uitgemaak vir die daaropvolgende ontwikkeling en beoordeling van 'n intervensie om meer ondersteunende distriksbestuurstoesig oor primêre gesondheidsorgwerkers te skep, deur n kooperatiewe navorsings groep metode te volg.

Die kooperatiewe navorsings groep het konsensus bereik oor die voorvereistes vir effektiewe supervisie, gebaseer op die bevindinge van die navorsings proses.

Die tesis het die aantal gesondheids werkers in primere sorg en sekondere sorg, in beide landelike en stedelike gebiede gekwantifiseer. Dit spreek die kwessie aan van die moontlike redes vir die tekort van gesondheids werkers sowel as moontlike oplossings daarvan. Die navorsing le ook klem op die nodigheid vir Botswana om meer navorsing te doen wat in lyn is met die Wereld Gesondheids Organisasie se riglyne vir retensie van gesongheids werkers.Hierdie tesis is in publikasievorm en die opsommings van die vier artikels volg hieronder.

Artikel 1: Menslike hulpbronne op gesondheidsgebied in Botswana: die resultate van 'n ontleding van die interne nasionale databasisse en verslae

Agtergrond: Botswana is 'n groot middelinkomsteland in Suider-Afrika met 'n bevolking van net meer as twee miljoen. Die onvermoë om toeganklike gesondheidsdienste van gehalte te voorsien, word dikwels aan die tekort aan menslike hulpbronne op gesondheidsgebied toegeskryf. Tog is daar 'n gebrek aan geïntegreerde, omvattende en geredelik toeganklike data oor die gesondheidswerksmag.

Doel: Die doel van hierdie studie was om die bestaande databasisse oor die gesondheidswerksmag in Botswana te ontleed ten einde die menslike hulpbronne op gesondheidsgebied te kwantifiseer.

Metode: Die Departement van Beleid, Beplanning, Monitering en Evaluering in die Ministerie van Gesondheid, die Ministerie van Onderwys en Vaardigheidsontwikkeling, die Gesondheidsberoepsraad van Botswana, die Raad op Verpleeg- en Verloskunde van Botswana en die plaaslike kantoor van die Wêreldgesondheidsorganisasie het onverwerkte data oor menslike hulpbronne op gesondheidsgebied in Botswana voorsien.

Resultate: Die gemiddelde verspreiding van dokters en verpleegkundiges per 10 000 lede van die bevolking is vier en 42 onderskeidelik – drie en 26 vir landelike distrikte, en nege en 77 vir stedelike distrikte. Die gemiddelde persentasie vakatures in 2007/8 was 5% en 13% in primêre en hospitaalsorg onderskeidelik, maar sal na verwagting teen 2016 tot 53% en 43% onderskeidelik toeneem. Slegs 21% van die dokters wat by die Gesondheidsberoepsraad van Botswana geregistreer is, is van Botswana, terwyl die res hoofsaaklik van ander Afrikalande afkomstig is. Botswana lei 77% van sy gesondheidswerksmag plaaslik op.

Gevolgtrekking: Hoewel die verspreiding van gesondheidswerkers betreklik hoog is vergeleke met die res van die Suider-Afrika-streek, is dié werkers gekonsentreerd in stedelike gebiede, nie genoeg om in die verwagte vraag te voorsien nie, en afhanklik van beroepslui wat van elders migreer.

Artikel 2: Belanghebbendes se opvattings oor die tekort aan gesondheidsorgwerkers in primêre gesondheidsorg in Botswana: fokusgroepgesprekke

Agtergrond: 'n Toereikende gesondheidswerksmag is noodsaaklik vir universele gesondheidsdekking en positiewe uitkomste in openbare gesondheid. Tog gaan vele Afrikalande, waaronder Botswana, gebuk onder ernstige tekorte aan gesondheidsorgwerkers, wat veral primêre gesondheidsorg raak. Die doel van hierdie studie was om gesondheidsorgwerkers, beleidvormers en die gemeenskap se opvattings oor die tekort aan gesondheidsorgwerkers in Botswana te ondersoek.

Metode: Vyftien fokusgroepgesprekke is met drie groepe beleidvormers, ses groepe gesondheidsorgwerkers en ses groepe gemeenskapslede in landelike, stedelike en afgeleë landelike gesondheidsdistrikte van Botswana gevoer. Alle deelnemers was 18 jaar en ouer. Doelbewuste seleksie is toegepas en die raamwerkmetode is gebruik om die data induktief te ontleed.

Resultate: Daar bestaan 'n waargenome tekort aan gesondheidsorgwerkers in primêre gesondheidsorg, wat toegeskryf word aan 'n groter vraag na gesondheidsdienste, ongelyke verspreiding van gesondheidsorgwerkers, migrasie en te min werkers wat op hierdie gebied opgelei word. Migrasie vind hoofsaaklik plaas as gevolg van ongunstige persoonlike en familiefaktore, swak en ondoeltreffende gesondheidsorg- en menslikehulpbronbestuur, swak salarisse en onvoldoende aansporings vir dienslewering in landelike en afgeleë gebiede.

Gevolgtrekking: Botswana gaan gebuk onder 'n waargenome tekort aan gesondheidsorgwerkers, wat veral primêre gesondheidsorg en landelike gebiede raak en aan etlike komplekse faktore te wyte is. Om dié skaarste die hoof te bied, behoort die land genoeg gesondheidsorgwerkers op te lei en hulle in gelyke mate tussen gesondheidsorgfasiliteite met voldoende hulpbronne te verdeel.

Artikel 3: 'n Begrip van die organisatoriese kultuur van twee gesondheidsdistrikte in Botswana: implikasies vir die behoud van primêre gesondheidsorgwerkers

Agtergrond: Botswana gaan gebuk onder 'n tekort aan gesondheidsorgwerkers, veral in primêre gesondheidsorg. Die behoud en prestasie van werknemers hou egter sterk verband met werkstevredenheid en motivering, wat albei die hoogste is waar werknemers se persoonlike waardes en doelwitte verwesenlik word.

Doel: Die doel van die studie was om die organisatoriese kultuur van die distriksgesondheidsdienste deur die oë van primêre gesondheidsorgwerkers te beoordeel.

Omgewing: Die studie is in die gesondheidsdistrikte Ngamiland en Mahalapye uitgevoer.

Metode: Die studie is in die vorm van 'n deursnee-opname uitgevoer. Deelnemers is gevra om uit 'n voorafbepaalde lys tien waardes te kies wat hulle persoonlike, huidige organisatoriese en gewenste organisatoriese waardes die beste beskryf.

Resultate: Altesaam 60 en 67 gesondheidsorgwerkers het die opname in die Mahalapye- en Ngamiland-distrik onderskeidelik voltooi. Die tien organisatoriese waardes wat die algemeenste in albei distrikte voorkom, is spanwerk, pasiënttevredenheid, skuld, verwarring, werksonsekerheid, versuim om inligting te deel, en manipulasie. 'n Beoordeling van alle huidige waardes dui daarop dat 32% (Mahalapye) en 36% (Ngamiland) van die waardes wat gesondheidsorgwerkers geïdentifiseer het, moontlik organisatoriese doeltreffendheid beperk. Die gewenste organisatoriese waardes van gesondheidswerkers in albei distrikte is deursigtigheid, professionele groei, personeelerkenning, gesamentlike besluitneming, verantwoordbaarheid, produktiwiteit, leierskapsontwikkeling en spanwerk.

Gevolgtrekking: Die ervaring van die primêre gesondheidsorgwerkers in die twee gesondheidsdistrikte is oorweldigend negatief, wat heel waarskynlik tot swak motivering, werkstevredenheid en produktiwiteit sowel as hoë uitvloeisyfers bydra. Daar is 'n dringende behoefte aan organisatoriese transformasie met die klem op personeelervaring en leierskapsontwikkeling op alle vlakke van die gesondheidstelsel in Botswana.

Artikel 4: Hoe om meer ondersteunende distriksbestuur vir primêre gesondheidsorg in die Ngamiland-distrik van Botswana te skep: samewerkende navorsingsgroep

Agtergrond: Ondersteunende toesig word wêreldwyd aangemoedig as 'n manier om prestasie, produktiwiteit, motivering, die behoud van die gesondheidswerksmag en sorg van gehalte teweeg te bring. Nietemin is daar 'n gebrek aan bewyse van die impak en aanvaarbaarheid van ondersteunende toesig in lae- en middelinkomstelande, met die meeste bestaande bewyse wat uit hoëinkomstelande kom. Ondersteunende toesig sal slegs as relevant en geloofwaardig beskou word indien dit op grond van plaaslike bewyse bestudeer en ingestel word. Hierdie artikel beskryf 'n deelnemende proses vir die transformasie van toesigpraktyke onder distriksgesondheidsbestuurders om 'n ondersteunende omgewing vir primêre gesondheidsorgwerkers te skep.

Metodes: 'n Gefasiliteerde samewerkende navorsingsgroep is met 12 distriksgesondheidsbestuurders van die Ngamiland-gesondheidsdistrik – vyf lede van die distriksgesondheidsbestuurspan en sewe klusterhoofde van primêre gesondheidsorgklinieke – op die been gebring. 'n Samewerkende navorsingsgroep behels 'n sikliese proses van waarneming, besinning, beplanning en optrede. Die groep het opleiding ontvang oor hoe om oor waarnemings te besin, om terugvoering te bied en te ontvang, en aktief te luister. Die samewerkende navorsingsgroep het tussen Maart 2013 en Maart 2014 drie siklusse van twee tot ses maande elk voltooi.

Resultate: Twee van die oorspronklike lede van die groep het gedurende die 12 maande die distrik verlaat. Die temas wat uit die navorsingsproses na vore kom, is onder meer onvoldoende huidige toesigpraktyke, nuwe opvattings oor gesondheidsorgwerkers se ervarings, begrip daarvoor dat bestuurders hulle toesigparadigma moet verander, erkenning van toesighouers se onvoldoende toesigvaardighede, waardering vir die professionele groei wat uit die samewerkende navorsingsgroep gespruit het, en hindernisse vir ondersteunende toesig. Die groep het uiteindelik 'n tienpuntkonsensus ontwikkel oor wat hulle met betrekking tot ondersteunende toesig geleer het.

Gevolgtrekking: Bestuurders in die Ngamiland-gesondheidsdistrik het deur 'n deelnemende proses die waarde van ondersteunende toesig besef en hulle bestuurstyl verander om die personeel onder hulle toesig beter te ondersteun. Daarbenewens het hulle 'n konsensus oor ondersteunende toesig ontwikkel wat vir landwye gebruik aangepas kan word. Ondersteunende toesig behoort 'n voorrangsaak op alle vlakke van die gesondheidstelsel te wees en moet met genoeg hulpbronne toegerus word en met deelnemende opleiding van bestuurders gepaardgaan.

Dedication

This work sings the praises of the true heroes in my life; Fidelis Nkomazana, my husband, my rock who has freed me to fly; Bongani my son and relentless cheerleader and my free-spirited princess, Thandiwe, who keeps me honest and real. I also salute my visionary father, Etshabile Sebusang, who, when everyone hoped I would be born a boy, declared 'my girl is precious; Oathokwa' and has treated me as such all my days; conferring on me a sense of invincibility. Kamogelo Sebusang, my step-mother, worked hard to step into the shoes of my deceased mother and put up with my adolescent tantrums and rebellion without killing my spirit.

As the African saying goes, 'it takes a village to raise a child', I am indebted to a whole 'village' of mothers, friends, sisters, brothers, pastors, aunts, uncles, neighbours and many well-wishers.

Finally I raise this work as a salutation to Jehovah, my Rock, who daily loads me with benefits.

Acknowledgement

Through this degree I have come to realise that good supervisors are like experienced midwives who, having been on the same road many times, have the wisdom to know that no two encounters are the same. Professors Robert Mash and Nthabiseng Phaladze have demonstrated unyielding belief in my ability to not only complete the degree, but also do it well and in good time. I have also benefitted immensely from their technical expertise which they imparted collegially.

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Chapter 1: Introduction and overview of this thesis

1.1   INTRODUCTION AND SIGNIFICANCE OF THE PROBLEM

1.1.1   The case for primary healthcare

The Alma-Ata declaration established primary healthcare as the means to universal health coverage and social health protection, which would assure that all people everywhere attain the highest quality of health without suffering economic hardship.[1,2] Thirty years after its pronouncement, life expectancy has increased significantly and mortality has plummeted precipitously in many countries with some realising up to 80% reductions of the 1975 levels of paediatric and maternal mortalities.[3-5] These successes have been attributed in part to the health systems reforms for universal health access in response to the Alma Ata Declaration.[3-6] The gains are, however, not universal as, even by 2008, a large proportion of low-income and some middle-income countries, particularly in sub-Saharan Africa, still experienced paediatric and maternal mortality rates as high as two thirds of their 1975 levels or higher and not on course to accomplish the Millennium Development Goals.[3,6] Admittedly the determinants of effective primary healthcare are complex and multiple and include economic development, political stability and commitment, national health policy and the health system.[3-5,7] Primary healthcare services in many low- and middle-income countries, however, have been hampered by severe shortages and inequitable distribution of the health workforce.[8-10]

1.1.2   Global human resources for health crisis

The 2006 World Health Organization report unequivocally asserts that "health workers save lives" as increases in the number and quality of healthcare workers is positively associated with increased immunisation coverage, as well as infant, child and maternal survival.[8] A staggering 4 million women, newborns and children in Sub-Saharan Africa could be saved every year if well-established and affordable healthcare services could reach 90% of families.[11] This is, however, a significant challenge for the Africa region, which has 3% of the world's health workforce to tackle 24% of the global burden of disease, a burden that is particularly exacerbated by HIV.[8,12,13] Moreover, with only 11% of the world's population, the region accounts for half the world's maternal and child deaths and more than of 90% the world's deaths from malaria and HIV. [14]The United Nation's Millennium Development Goals (MDGs) called for reducing under-five mortality by two-thirds and maternal mortality by three-quarters by 2015 [15] which, despite significant improvements, Sub-Saharan Africa was not able to attain without the much needed increases in skilled health workforce.[11,12,16]

The causes of the health workforce shortages are many and complex and include underproduction, [17,18], inappropriate skills mix, inappropriate task allocation, uneven distribution, as well as rural to urban and international migration of healthcare workers[8,9,19-22]. The exodus of skilled professionals in the midst of so much unmet health need places Africa at the epicentre of the global health workforce crisis, as evidenced by 36 countries in sub-Saharan Africa having critical shortages of healthcare workers.[8,9,23]

The WHO Global Code of Practice on International Recruitment of Health Personnel has provided the ethical, legal and policy framework for the global response to the human resources for health crisis.[24,25] Additionally, international aid has supported training of new healthcare professionals in a number of source countries. [26,27] Furthermore, multiple country-level strategies have been tried to increase the number of healthcare workers, distribute them and retain them especially in rural and remote areas.[28,29] These innovations comprised educational, fiscal and regulatory approaches as well as diverse incentives and had varying degrees of success.[10,20,27-30] Promoting retention of healthcare workers and developing effective systems for primary healthcare delivery will facilitate improvements in community health, equity, and potentially reduce the total cost of health services.[3,31]

1.2   THE REASON FOR THIS RESEARCH

This study is part of the larger Human Resources for Primary Care in Africa (HURAPRIM) project that was carried out in four other African countries: South Africa (University of the Witwatersrand), Uganda (Mbarara University of Science and Technology), Mali (University of Bamako and Eidemet [an NGO working with traditional birth attendants]) and Sudan (Afahd University for Women). The African universities worked in partnership with three European universities: University of Ghent in Belgium, Oxford University in the United Kingdom and the Medical University of Vienna in Austria. It was funded by the European Union through the FP7 programme and coordinated by Ghent University. The project hoped to gain a perspective on the causes of the human resources for primary healthcare crisis in the participating African countries and to develop cost-effective strategies to address the problem. It had the following objectives: The objectives of the project are to:

- Asses the scope of the deficit in human resources for health care in Africa, with a focus on primary health care

- Identify and analyse the main causes of this deficit

- Develop, review and test possible interventions and strategies to address this shortage

- Formulate scientifically sound, acceptable and feasible policy directions for the future

The five African countries have very different socioeconomic situations as well as health systems and human resource challenges. Therefore, each country employed peculiar strategies to understand and address the shortages in human resources for primary healthcare.[32] Researchers from each of the institutions assessed the scope of the deficit of healthcare workers in its country and this led to individual and consortium-wide publications. Researchers from University of Botswana, Oxford University, Ghent University and Medical University of Vienna jointly developed an interview guide interview migrant healthcare workers in each of their countries. This has led to multiple individual and joint publications. This however was not included as part of the PhD as its focus was on the health systems of the migrants' home countries. For the interventions Mbarara University of Science and Technology and University of Bamako conducted confidential inquiries into the under-5 and maternal mortalities in their respective countries; University of the Witwatersrand evaluated the policy and human resources issues for the implementation of community oriented primary care in South Africa; Eidemet conducted implementation research to train traditional birth attendants; and Afhad University for Women evaluated the policy measures to improve training and recruitment of nurses in Sudan's rural areas.[33]

The project in Botswana, which is described in this thesis, has not been derived from the larger study but has been designed and developed by the principal researcher for the Botswana situation with some input from the Medical University of Vienna. The team from Vienna assisted in the training of research assistants as well as in the final consensus meeting on the supportive supervision. The HURAPRIM consortium members met four times during the lifetime of the project where the research teams presented their work and received inputs from peers. The principal researcher (ON) was responsible for all the research activities from deciding on the research methodology, research question, writing all the proposals, getting ethics approval and conducting the field research.

1.3   THE BOTSWANA HEALTH SYSTEM

Botswana is a large, landlocked country in Southern Africa with a population of just over 2 million people. Like many developing countries, it has a fairly young population with 33% being under 15 years and only 5% being over 65 years. Annual population growth between 2001 and 2011 has declined from the 2.4% to 1.9%.[34,35]
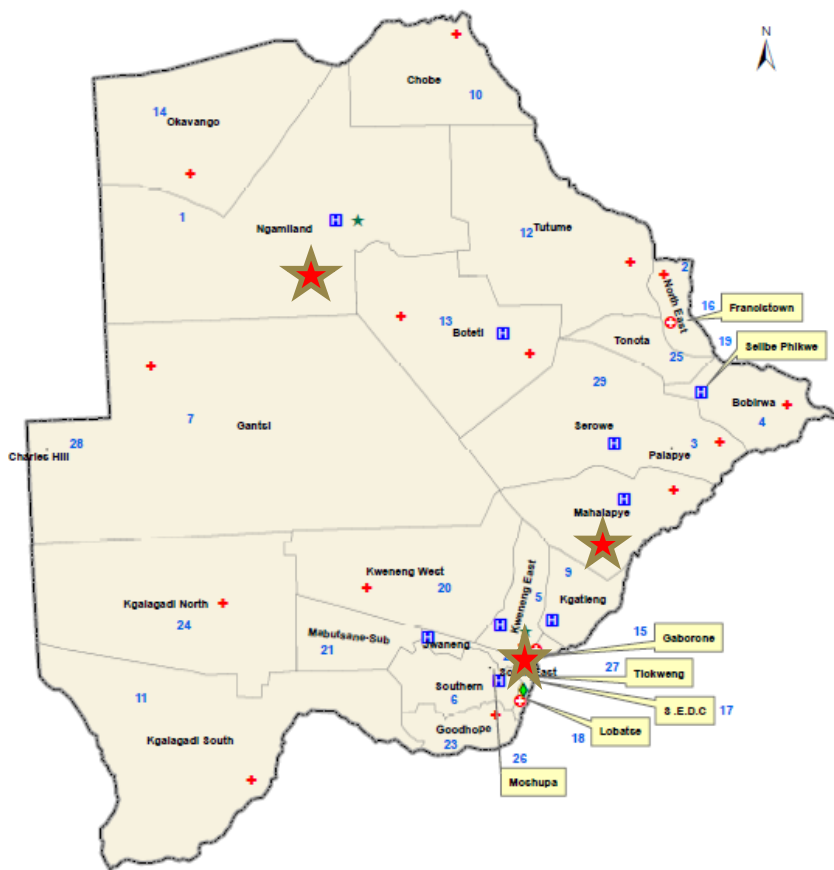
Figure 1.1: Map of Botswana showing health facilities and health districts. Source: Statistics Botswana 2010.[38]

The overall guiding principal for national development in Botswana is Vision 2016, a broad-based national strategic approach, adopted in 1996, and focusing the aspirations of the nation. In pursuit of Vision 2016, health-related goals were set mainly under the goal of creating "a compassionate, just and caring nation"[36] and health is considered a basic human right.

Health service delivery is pluralistic with public, private for-profit, private non-profit and traditional medicine practices. The ministry of health is responsible for the formulation of policies, regulation, norms, standards and guidelines for health services. In April 2010, the ministry of health became the major employer of healthcare workers as primary healthcare services were transferred to them from the ministry of local government. Botswana has achieved the Abuja target of contributing 15% of total government expenditure to health (representing around 75% of total health expenditure).[37]

Moreover the percentage of GDP spent on health has increased progressively from 6.4% in 2000, 9.3% in 2001 and 10.5% in 2009[12]. According to the National Health Policy of 2011, 80% of the population of Botswana use the public health system.[38]

Healthcare is based on a primary healthcare model and is provided through a network of 3 referral hospitals, 7 district hospitals, 14 primary hospitals, 265 primary care clinics (101 with maternity beds), 343 health posts and 861 mobile stops in 28 health districts. This has brought 95% and 84% of the total population within eight and five kilometres of a healthcare facility, respectively [39]. The first point of entry into the health system are the clinics, health posts and mobile stops, although since most do not open 24/7, hospitals also run outpatient clinics and emergency rooms that receive walk-in patients.

Life expectancy has changed dramatically over the last two decades, tumbling sharply from 66 years in 1990 to 54 years at the zenith of the HIV/AIDS pandemic in 2001, before steadily rising again to 68 years in 2013.[8,12,34] Moreover, other mortality indicators such as maternal, under five and infant mortality have followed the same trends to the current 160 per 100 000 births, 28 per 1 000 live births and 17 per 1 000 live births, respectively.[8,12,34] Morbidity and mortality continue to be dominated by infectious diseases with HIV/AIDS and other communicable diseases accounting for half of all deaths.[12] The HIV prevalence remains high at 16.8% of the population[40] and the prevalence of non-communicable diseases is also rising.[12, 41]

Most of the information on the Botswana health system, including human resources for health, was available either in WHO reports or policies and databases of ministries of education and health as well as registers of the different health professions councils. Botswana lacks well-integrated and readily accessible data on the human resources situation and on the determinants of shortage of healthcare workers. This information is critical for developing relevant interventions.[8]This will be discussed more fully in Chapter 2.

1.4 AIM OF THE RESEARCH

The aim of the research was to assess the human resources for primary healthcare in Botswana and based on the findings to develop and pilot an intervention to address the identified gaps.

1.4.1 Specific objectives

The research was in two phases with phase 1 then informing the objectives of phase 2. Phase 1: The specific objectives of the research were:

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- to analyse the existing databases and reports on the health workforce in Botswana in order to quantify and describe the situation with regard to the human resources for health.
- to explore the perspectives of policy makers, healthcare workers and community members on the causes of shortages in human resources for primary health care.
- to explore the perspectives of policy makers, healthcare workers and community members on potential solutions to the shortages in human resources for primary healthcare at both national and regional level.

Phase 2: Based on the findings of the first phase of the research the following specific objectives were developed:

- To evaluate the organisational culture of the primary healthcare organisation as experienced by primary healthcare workers in the Ngamiland and Mahalapye health districts.
- To explore how to strengthen the supportive supervisory practice of the district health management team (DHMT) and mid-level health managers in one district as a pilot intervention that may impact on recruitment and retention of healthcare workers.

1.5   OVERVIEW OF THE THESIS

Figure 1.2 is a step-wise representation of the structure of the thesis and the research process. The knowledge gap was the lack of readily-accessible, integrated and comprehensive information on human resources for health in Botswana (point 1 of Figure 1.2) to guide interventions and is discussed fully in Chapter 2.

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Figure 1.2: Overview of the thesis

Chapter 1 of the thesis argues for the social value of the work and describes the challenges of human resources for health globally, the impact on primary healthcare specifically, and the Botswana health system as the context of the research (Point 1 of Figure 1.2). The Chapter also outlines the scientific value of the work, as well as the aims and objectives of the research project (Point 2 of Figure 1.2).

Chapter 2 describes what is already known about the human resources for health shortages and strategies to address the problem, argues for the knowledge gap to be addressed in the thesis and develops a conceptual framework for the research (Point 3 of Figure 1.2).

Chapter 3 presents the four articles that make up the body of the thesis as a requirement for the PhD. As part of the situational analysis of the human resources situation in the country, in-country databases and reports were reviewed and a quantitative analysis of the human resources situation conducted and Article 1 reports on this analysis (Point 4 of Figure 1.2). A qualitative exploration of the perceptions of the different stakeholders on the human resources situation in Botswana was also carried out and this is reported in Article 2 (Point 5 of Figure 1.2). A survey of the organisational culture of the primary healthcare services within the Ngamiland and Mahalapye health districts, as

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experienced by the primary healthcare workers, was carried out. The results of the survey were used as input into the intervention and are reported in Article 3 (Point 6 of Figure 1.2).

The situational analysis of the human resources for health in Botswana identified a shortage of healthcare workers, especially in primary care as a challenge with one of the contributors being migration. The causes of migration were many, but lack of supportive supervision was one of the main ones. The intervention that was developed and piloted was a co-operative inquiry group to work with the district health managers to strengthen their supervisory capacity. The process and result of the intervention is reported in Article 4 (Point 7 of Figure 1.2)

Chapter 4 discusses recommendations and conclusions (Point 8 of Figure 1.2). The research analysed the available data on human resources for health to calculate the healthcare workers to population ratios across the different types of districts in the country. Furthermore, focus group discussions with stakeholders unearthed the perceived causes of shortages of healthcare workers especially in primary care and rural areas. The research also included the survey of prevailing and desired organisational culture in district health services. The co-operative inquiry group on the other hand developed a consensus on the important contributors to successful supportive supervision. Outputs form these different aspects of the research are an important contribution to addressing the knowledge gap and informing strategies to improve the retention of healthcare workers for primary healthcare (Point 9 of Figure 1.2).

1.6   ETHICAL CONSIDERATIONS

Approval to conduct the study was given by the University of Botswana Institutional Review Board, the Ngamiland District Ethics Committee, the Stellenbosch University Health Research Ethics Committee (Protocol Number: S13/03/051) and the Botswana Ministry of Health—Health Research Development Committee (Reference No: PPME 13/18/1 V11 (368)). Written consent was obtained from each study participant.

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Chapter 2: Recruitment and retention of healthcare workers and the conceptual framework of this thesis

2.1   INTRODUCTION

This chapter presents the conceptual framework of the thesis (Figure 2.2), which is point 3 of the overview of the thesis (Figure 1.4) and discusses the framework in light of what is currently known about the challenges and opportunities of creating adequate human resources for health.

2.2   THE CONCEPTUAL FRAMEWORK OF THIS THESIS

The conceptual framework of this thesis pictorially portrays what is currently known about the factors that contribute to the shortage of healthcare workers and strategies that have been used to address them (Figure 2.1).
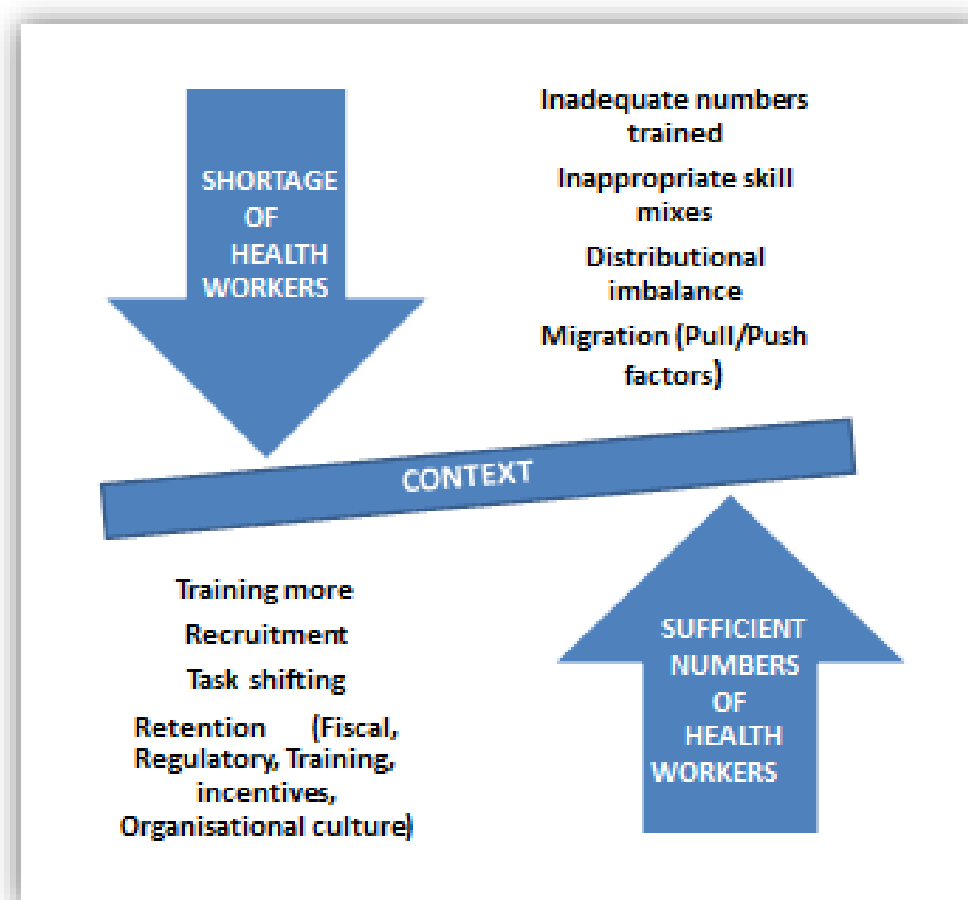
Figure 2.1: Conceptual framework of the thesis

Career decisions are complex and cannot be adequately captured by a simple conceptual framework. Many other factors which are not quantifiable significantly influence individual's career choices. These include personal factors (rural origin and values); facilitating factors (role models, exposure to rural work, the needs of rural people); context (work and environment, nature of rural practice and people); staying factors (family and friends, learning in work, supportive management) and reinforcing factors(relationships and being a role model and an advocate for the community) .[1,2]

2.3   THE HUMAN RESOURCES FOR HEALTH CRISIS

This section uses the literature and current evidence to elaborate on the conceptual framework shown in Figure 2.1. To function optimally, health systems require "the right workers with the right skills in the right places doing the right things".[3] Scheffler however, estimated that in 2015 thirty-nine sub-Saharan African countries would have a deficit of 800 000 doctors, nurses and midwives required to meet the minimum 2.28 healthcare workers per 1000 population with an associated wage deficit of $2.6 billion.[4] This healthcare worker shortage follows the inverse care law [5] with the worst deficits in the areas where the most health services are needed: the public health sector, low-to-middle income countries, poorer regions within these countries, slums within cities and rural areas.[3,6-10] The insufficiency of the health workforce has been attributed to multiple causes including inadequate numbers trained, training that is not informed by local health system needs, inappropriate skill mixes, distributional imbalance and migration (Figure 2.1).[2,10-15]

2.3.1   Training

This section discusses the challenges and opportunities to train more health workers in order to address the inadequate numbers of healthcare workers produced by local health science institutions (Figure 2.1).

Many countries do not train adequate numbers of healthcare workers to satisfy their health system needs. Consequently, those with the financial means make up their shortfalls with migrant workers from poorer countries, deepening the health workforce crisis in those source nations.[3,6,8,14-19] Many low-income countries have a critical shortage of healthcare workers and do not have the economic resources to stem the brain drain or replace those lost through migration.[4,6,13,15] The sub-Saharan Africa Medical Schools survey found that many medical schools struggled to enrol an adequate number of students because of infrastructural and academic staff shortages.[11,12]

Notwithstanding the challenges besetting the training of healthcare professionals in resource constrained settings, there has been a significant increase in the number of medical schools in sub-Saharan Africa in the last twenty years.[12,20] Recent investments by the President's Emergency Plan

For AIDS Relief (PEPFAR) to support nursing and medical training institutions through the Medical Education Partnership Initiative (MEPI) and the Nursing Education Partnership Initiative (NEPI); has added a further impetus to the training of healthcare professionals in sub-Saharan Africa.[21] This initiative has supported an increased enrolment of healthcare workers in many of the grant recipients [22-24], strengthened faculty development[22-27], strengthened and supported postgraduate medical training [28,29] and strengthened research capacities.[22,23,26,30-32] Furthermore, many of the training institutions embarked on curricula innovations aimed at promoting retention of their graduates in rural areas and primary care, by an emphasis on community– and rural-based training.[27,33-35] In addition, eLearning, clinical simulation and mobile technology assisted learning (mLearning) were adopted by many of the institutions to augment shortages of teacher, clinical teaching sites and access to information as well as to enhance the students' experience.[22-25,36-39] Infrastructure development in the form of teaching spaces, hostel accommodation in rural training sites as well as access to the Internet were carried out by a significant number of the schools.[22,26,36-39] The investment, therefore, has gone a long way to address many of the deficiencies identified by the sub-Saharan African Medical Schools Survey.[11,12]

The distinct feature of the MEPI and NEPI programmes is that they are country-led and therefore had the opportunity to be tailored to each country's needs.[25,40] Partnerships based on long-standing functional relationships with mostly American universities facilitated the much-needed technical support without jeopardizing country ownership. [21,25,40] Increasing South-to-South collaboration, both within and outside the MEPI fraternity, has developed regional communities of practice to enhance sustainability.[28,41] The initiative holds promise for long-term success in terms of attracting and retaining healthcare workers, especially in rural areas and primary healthcare.[3,6,9,42] Adoption of a uniform graduate tracking tool by many of the institutions will allow evaluation of the impact of the initiative.[43]

Rwanda's Human Resource for Health Programme and Malawi's Emergency Human Resources plan are also excellent case studies of donor supported training initiatives undergirded by strong national leadership to address pertinent country-specific human resources for health challenges.[13,44] The Rwanda programme, for example, is particularly different in that it prioritises the training of managers for district hospitals. Although it is a comprehensive programme in many regards, the Rwanda programme is very specialist and hospital-centric, with a stark omission of training primary healthcare workers.[44]

Scheffler maintained that many of the countries do not have the capital to finance their human resources for health needs and therefore advocate for continued investments by resource-rich

countries.[4] Although the recommendation is noble it may be unrealistic in the current economic environment. It is therefore imperative that in-country resources are designated to sustain the gains made by these recent training enterprises by endeavouring to meet the Abuja declaration of committing 15% of their annual budget to health.[45]

Cuba, on the other hand, is in a league of its own with revolutionary community-based training of health professionals with a strong focus on primary healthcare. To accentuate this, 97% of medical school graduates have to train as family physicians and may only consider a secondary specialty afterwards. This puts Cuba in the enviable position of having population-to-health worker ratios and health outcomes on par with those of high-income countries.[46]

South Africa has adopted a double-pronged strategy to increase the number of doctors to meet their health service needs: increasing the output of local training institutions[47] and outsourcing medical training to Cuba by annually sending 1 000 students from poor rural communities to train as doctors.[47,48] The hope is that these students will not only settle and work in their rural communities, but will also have the right attitudes and competencies for the community-oriented primary healthcare that South Africa has adopted as a strategy to attain universal health coverage.[47] There is, however, a lot of scepticism about the viability and effectiveness of the strategy as training students in a different context from where they are expected to work may not only dissociate them from their local communities, but also not prepare them adequately to work in South Africa.[48]

2.3.2   Recruitment

This section discusses different innovations that have been adopted by countries to recruit graduates of health professions training institutions to places where they are most needed: public health services, rural areas and primary care (Figure 2.1).

Training should be matched to the needs of the country and supported by effective recruitment, equitable distribution and retention strategies.[3,4,49] Any mismatch can lead to dire shortages in the midst of plenty or to resource-constrained countries effectively subsidising the health systems of resource-rich nations through migration. One extreme example of this misalignment is the Philippines where rural areas were critically short-staffed, while 40 000 nurses were not employed in nursing services, and thousands left each year to high-income countries.[6,10,50] Although this is an extreme example of incongruence, many low-to-middle-income countries are beset with severe distribution imbalances of the health workforce, which have resulted in disparities in health outcomes.[3,7,10,15,42,47]

Training strategies that have been found to be effective in the recruitment and retention of health workers in public health system and rural areas include rural origin of students, training in rural areas and having family medicine training units in rural areas.[9,10] Different countries have therefore implemented these training innovations with some adaptation to their context.

Thailand is among the trailblazers of rural recruitment of students, training them in rural-based training institutions and then posting them to their hometowns on graduation, which significantly reduced the rural–urban disparities.[10,51] The experiences of Walter Sisulu University and the Umthombo Youth Development Foundation in South Africa are also more recent examples of successfully selecting students from rural areas, training them in rural areas, recruiting in the same rural areas and retaining them long-term in these areas.[52,53]

Many countries have also instituted legislative strategies such as mandatory rural service for recent graduates before being allowed to register as independent practitioners in order to increase recruitment of health workers to rural areas.[9,10,51,53,54] Although this ensures a reliable supply of healthcare workers in areas that previously had severe shortage, most of these tend to move from rural areas after the obligatory service period.[10,47,51]

2.3.3 Skill mixes and task shifting

This section debates the use of skill mixes and task shifting as a strategy for increasing the number of healthcare workers (Figure 2.1).

A number of countries can potentially enhance their health workforce by better allocation of tasks and skills between doctors, nurses and other categories of health workers.[3,4,6,15,55] A higher nurse–to–doctor ratio, with clearly defined roles, can improve productivity of the health system without compromising the quality of care.[4,6] Moreover, many countries have introduced mid-level healthcare workers with shorter training in their health systems to augment the expensive and highly mobile healthcare workers.[56] Evidence from Botswana and many low-income countries indicates that with proper supervision and support, task shifting to cadres with lower qualifications can produce

as good an outcome as when done by those more qualified.[56,57]

Figure 2.2: A health education assistant running a well-baby clinic in a primary clinic in Ngamiland

Dovlo [56] found that in countries like Ghana, Tanzania, Malawi, Kenya and Mozambique, mid-level health workers in the form of clinical officers and medical assistants perform what is traditionally medical tasks, especially in rural areas. Moreover, in Malawi these cadres provided the bulk of 'medical' care: giving anaesthesia, providing medical care and carrying out surgical procedures.[59]

Brazil and Peru revolutionised primary health care through the family health team model to increase the numbers of healthcare workers in the public health service and primary care which reduced the urban-rural inequity and also significantly improved health outcomes. These teams are composed of doctors, nurses and a much higher number of auxiliary health cadres.[10]

Recently, South Africa has also embarked on significant task shifting to nurse-led ward-based primary care teams. Each team is made up of a number of community recruited community health workers and a nurse. In the Chiawelo Community Clinic clinical care is provided by nurses and clinical associates. [60,61,62,63]

Inversely, attempts to initiate task shifting in many countries in dire need of health workers have met with strong resistance from nursing and midwifery councils. This has led to the abolishment of enrolled nursing cadres in countries like Ghana, Zambia and Botswana. Zambian law on the other hand barred nurses from prescribing drugs and inserting drips until 2001 when it had to renegade on the decision because of severe shortages of doctors and clinical officers.[64]

2.3.4   Distributional imbalance

This section discusses distributional imbalance of healthcare workers as a contributor to shortage of health workforce (Figure 2.1).

Although most countries suffer from urban versus rural and private versus public distributional inequity, this is accentuated in low-to-middle- income countries, especially Africa.[15,56,57,64] The spatial distribution imbalance is compounded by poor rural infrastructure, limited opportunities for career development and progression, inadequate remuneration and other incentives.[15,64] Moreover, the health services of many African countries are hospital-centric and most hospitals are in urban areas, which promotes urban concentration of health workers[64] Ghana is a typical example of the urban concentration of health workers where the two teaching hospitals in urban areas employ 45% of all the doctors in the country while the districts and sub-districts share only 15%.[65]

Disparity in salaries between the private and public health services also leads to inequity in the distribution of healthcare workers favouring private services. For instance, in 2000, doctors in Portuguese-speaking African countries could earn an equivalent of the government's one month salary in seven hours of private work.[64] The South African health system, on the other hand, has traditionally been heavily invested in the private sector where 60% of their 8.6% GDP spent on health was utilised, benefiting only 16% of the population.[61,62] Additionally, the recent development of medical tourism in Malaysia, Singapore and Thailand threatens to reverse the significant gains that these countries have made in addressing the private–public as well as urban–rural health worker disparity. This has resulted in a significant internal brain drain, which is starting to threaten even Thai medical education as experienced clinical teachers leave medical schools to join the lucrative private market.[6]

2.3.5 Migration

This section presents migration as a contributor to shortage of healthcare workers in low-to-middle-income countries (Figure 2.1).

Despite their dire shortage of healthcare workers, many low-to-middle-income countries lose hundreds to thousands of these scarce resources to more affluent nations. The destination countries are either in the region [6,19] or international [3,6] Mullan [66] computed that foreign-trained doctors constituted 23-28% of physicians in the United States, United Kingdom, Australia and Canada and that 40-75% of these came from low-income countries. In fact, it was estimated that 23% of the doctors and 5% of the nurses trained in sub-Saharan Africa were working in OECD (Organisation for Economic Co-operation and Development) countries in 2006.[3] On the other hand a third of South African doctors and 37% of Zimbabwean nurses were working in OECD countries in 2003.[3,47]

The drivers of migration are diverse and have been classified into 'push' factors that make working in-country unattractive and 'pull' factors in recipient countries that appeal to the potential migrant.[65]

Remuneration, opportunities for career progression, personal safety, hospital or clinic management, availability of resources, continuing professional development opportunities all act as powerful push and pull factors.[3,6,47,64,67,68] The scarcity of these benefits in the home countries act as a push factors, while their perceived abundance in recipient countries act as pull factors. Oberoi [67] purported that push factors may be a stronger determinant of migration than pull factors.

2.3.6 Retention

This section discusses the different strategies adopted by countries to retain their health workforce (Figure 2.1).

Multiple strategies have been adopted to stem the haemorrhage of health workers through international migration, with varying degrees of success. Educational innovations and legislative interventions have already been discussed as a means to retain healthcare workers in rural areas. Financial interventions have been used in countries such as Ghana, Zambia, Malawi, Thailand and the Philippines and have resulted in variable degrees of success.[7,13,50,51,54] The greatest successes were realised where remuneration was part of a bundle of initiatives as in Malawi, Ghana and Thailand. [13,51,52] Other incentives have included opportunities for continuing professional development, hardship allowances for rural service, access to loans, housing, scholarships, support for family and being prioritised for postgraduate training and promotion.[7,13,50,51,52] Development of the rural infrastructure has also been included in comprehensive interventions like those in Thailand.[51] This is in keeping with the framework to guide retention interventions developed by Buykx, which underscores the importance of "bundling" the interventions for efficacy.[49]

2.3.7 Context

This section expounds the centrality of context to strategies intended to build up the human resources for health (Figure 2.1).

Many of the initiatives to build human resources for health in low-to-middle-income countries have external financial and technical support.[7,13,21,25,44] However, differences in geography, health systems, disease profiles, economies, capacities for training health professionals and the existing human resource base, mandates that all strategies must be context-specific, country-based and country-led irrespective of funding source.[3,15,64] This was the philosophy of the MEPI and NEPI programmes for which they are lauded.[20,21,25]

On the contrary, many African countries are not able to meet the wage bill of their health workforce because they have adopted health cadres and health system from high-income countries with very

different disease profiles and resource base.[64] The abolition of enrolled nurse cadres in exchange for the more expensive and highly mobile registered nurses, is a poignant example. This led to very high out-of-pocket expenses for the trainees and high training cost for the government often resulting in extreme shortages of nurses.[64]

Moreover, engagement of all the important in-country stakeholders in developing interventions is crucial for effectiveness and sustainability. Malawi's Emergency Human Resources programme for example succeeded because of its broad stakeholder engagement, which averted imminent resistance from the very strong Nursing and Medical Council.[13] The Zambian Health Worker Retention Scheme for rural areas, on the other hand, was part of the overall national human resources strategy, which also engaged multiple stakeholders.[7]

Very often challenges that affect recruitment and attraction of healthcare workers cannot be solved by the ministries of health alone but require multiple players from government, private sector, health professional council and associations, communities and civil societies. Each of these carries varying weight in the different nations and contributes variably to human resources development, recruitment and retention. Thailand, for instance, had to invest significant resources in developing rural infrastructure as an integral part of recruitment and retention in these areas.[51]

Context is not only important for retention, but also contributes significantly to attrition of healthcare workers (Figure 2.2). The Philippines' highly privatised and poorly regulated health professions training is a poignant example of context contributing to migration and unemployment of very high numbers of nurses in the midst of significant health services shortages.[6,50] South Africa, with its unique political history also illustrates the contribution of context to attrition of health workers: although it has much higher salaries than most other countries in Africa, it still fails to retain its health workforce.[15,47] Additionally its 8.6% gross domestic product spent on health has mostly benefited the private sector as a significant proportion of its health workforce serves those with the resources to access private healthcare.[47,61,62]

Successful strategies to build the health capital of each country must therefore be informed by the real contributors to shortage.[15,64] Furthermore, countries must design health workforce strategies based on a realistic assessment of their burden of disease, minimum standards of care, available resources to train, recruit and retain the health workers and existing human resource base.[64] There should also be significant input from all important stakeholders including the health workers themselves.[3,15]

2.3.8   Organisational culture and supportive supervision

This section discusses the contribution of organisational culture to the retention of health care workers (Figure 2.1).

There is evidence that positive organisational culture is important for retention of healthcare workers in 'developing countries', which has been expressed as good management of health facilities, good human resources management and appreciation.[66,68] Conversely, supervision has been linked to a positive change in the organisational culture.[69] Consequently Buykx's framework stresses the importance of a positive organisational culture characterised by effective management, collegial support and supervision.[49]

Richard Barrett has developed whole systems theory for organisational culture transformation. This is premised on his integral model of human systems.[70] The integral model identifies four critical interacting components for necessary for organisational transformation [Figure 2.2]. These are the values and beliefs of the indivuals in the organisation, the actions and behaviours of the individuals, the group/organisational values or believes and the group group actions and behaviours as demonstrated by its laws, collective rules, processes and governance structures. [70] Concordance between values and behaviours is called authenticity or integrity and leads to trust as the individuals and organisations 'walk the talk'. Trust is believed to be the essential ingredient for organisational performance and growth.[71] There is therefore need for alignment at all four levels: personal alignment (alignment of individuals' values and beliefs with their actions and behaviours); structural alignment (alignment of groups' values and beliefs with their actions and behaviours); values alignment (alignment of an individual's values and beliefs with those of the group/organisation); and mission alignment (alignment of an individual's sense of purpose or mission and the group's mission or purpose). Value alignment and mission alignment lead to group cohesion as they engender employee fulfilment and commitment. Whole systems change takes place when there is a parallel shift in the personal alignment, structural alignment, values alignment and mission alignment [Figure 2.2].[70] Transformation fails when only one area of alignment is addressed. For instance a focus on personal alignment alone will lead to employee frustration in the absence of change in the culture of the organisation. Additionally off-the-shelf interventions that do not take into account the levels of alignment in the organisation will also fail. It is therefore imperative to conduct cultural surveys to determine the levels of organisational culture and alignments.[70]
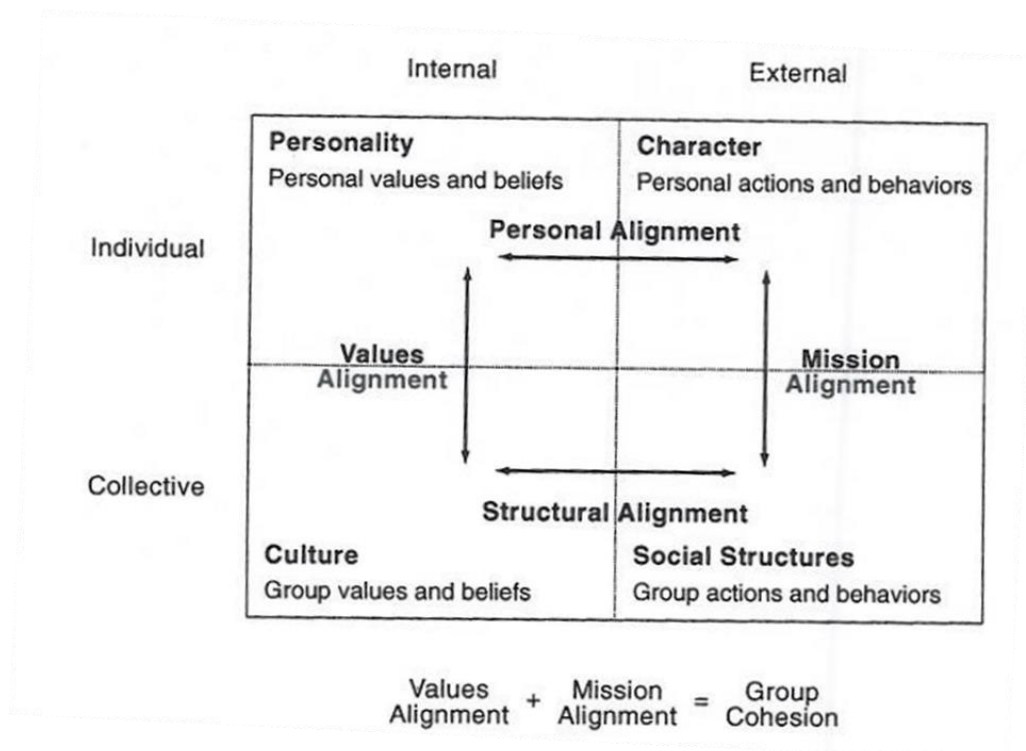
Figure 2.2: Integral Model of Human Systems_ Condition for whole systems change [70]

Another concept related to the whole systems theory of change is that of cultural entropy. This the the proportion of the effort in an organisation that is consumed by non-productive activities because of lack of alignment between the four quadrants. Entropy is inversely proportional to the organisational cohesion. Lack of personal alignment, especially by the leaders, leads to lack of trust amongst the leadership group as well as between them and their staff; lack of structural alignment leads to loss of collective intergrity and cynicism; lack of values alignment leads to lack of cohesion and focus on self-interest; and lack of mission alignment leads to lack of clarity, low motivation and poor engagement.[70]

Undergirding the whole systems theory of change is Barretts' seven levels of organisational consciousness. These are an expansion of Maslow's hierarchy of needs, but are applied to organisations.[72] The levels of consciousness are determined by the level of existential needs. These needs are said to be the chief motivators in all human engagements. The lower three values are focused on the need for physical and financial survival, interpersonal relationships and the need to be esteemed and organisational pride. These three levels can be seen as the focus of the decision-making authorities or leadership group and concentrates on the bottomline and the needs of leaders [Table 2.1]. [72] Level 4 focuses on balancing the organisational needs with those of the staff by empowering the members of staff to participate in decision making. This level is called transformation. The higher

three levels are concerned with strengthening group participation through development of shared vision, mission and values, coaching, mentorship, leadership development, forming strategic alliances, contributing to the greater good and a focus on sustainability.[72] Strong and growing organisations are those that have developed the competencies to meet their needs at all levels of consciousness. An exclusive focus on the leadership needs or levels one to three leads to major unhappiness which can manifest as low levels of motivation, poor productivity, rebellion and even strikes. Tenets of supportive supervision, coaching, mentorship and leadership development are found at leval six.

Table 2.1 Sevel levels of organisational consciousness

Consciousness level	Example of collective values
7: Service to humanity and social contribution	Social responsibility, long-term perspective, future generations, ethics, compassion, humility
6. Making a difference to the local community or health district	Environmental awareness, community involvement, strategic partnerships, employee fulfilment, coaching, mentoring and leadership development
5. Sense of purpose and strong internal cohesion	Shared vision and values, commitment, creativity, enthusiasm, integrity, generosity, fairness, honesty, openness, transparency and trust.
4. On-going improvement and employee participation	Adaptability, accountability, empowerment, teamwork, goals orientation and continuous improvement
3. High performance and quality of care	Reliability, quality, efficiency, productivity, excellence, best practice, systems and processes. *Bureaucracy, hierarchy, confusion, arrogance, hoarding information* and *complacency*.
2. Relationship with colleagues and patients	Loyalty, open communication, patient experience and friendship. *Blame, internal competition, rivalry, favouritism* and *manipulation*
1.Survival: Resources and safety	Sufficient budget, equipment, employee health and safety. *Control, greed, chaos, caution, job insecurity, exploitation* and *micromanagement*.

Note: Limiting factors are in italics.

Effective human resources management with adequate support and supervision is known to improve health workforce and health systems outcome.[73,74] The health systems effects of supportive supervision include improved leadership and accountability, better allocation of resources, improved health outcomes and change in organisational culture.[69,74,75,76] The healthcare worker outcomes of supportive supervision, on the other hand, comprise self-reported increased clinical competence and confidence, improved healthcare workers' attitudes, enhanced job satisfaction and increased retention.[3,74,77,78,79] Moreover, McAuliffe et al have demonstrated that formal supportive supervision was associated with lower intentions to leave public services by mid-level healthcare workers in three countries. While lack of supervision or predominantly negative feedback were associated with higher scores of intentions to leave the public service.[79]

There is scarcity of evidence associating supportive supervision with positive health systems and health workforce outcomes. Furthermore the quality of the existing evidence is generally low or very

low using the GRADE system.[80,81] The qualitative data evidence is also generally low or Level III.[74,82] Most of the studies were descriptive pre- and post- intervention using non-standardised tools.[74]

Most of what is currently known, however, about effective supportive supervision comes from high-income countries.[83] This is despite the fact that strategies of good human resources management characterised by support, adequate supervision, opportunities for career development and progression are well encapsulated in the human resource strategies of countries in the region. South Africa is an excellent example as it has placed positive organisational culture at the pinnacle of its human resources for health strategy.[47] On the contrary, healthcare workers perceive their work environment as predominantly negative, characterised by a culture of blame, control, manipulation, poor communication and working strictly by the rules.[83] There seems, therefore, to be a disconnect between intentions and implementation. This may be explained by cultural entropy in the system resulting from lack of individual, structural, values and missions alignment.[70] Tanzania appears to be one of the few countries where supportive supervision is a clear integral aspect of the practice of human resources management [73] although its effectiveness and impact on motivation and retention of healthcare workers has not been evaluated.

2.3.9   Knowledge gap addressed by this research

This section discusses the knowledge gap that will be filled by this research, which is point 1 of the overview of the thesis (Figure 1.2).

Botswana lacks well-integrated and readily accessible data on the human resources for health and on the determinants of the shortage of healthcare workers. The first phase of the research was intended to address this knowledge gap by analysing the raw data on human resources available in the country as well as exploring the perceptions of the different stakeholders on the human resources for health situation and possible remedies of the perceived inadequacies. It was important to engage the stakeholders in identifying the problems and participating in the selection of an intervention to engender ownership and commitment.[84]

Based on the initial findings an intervention was developed to strengthen the supportive supervisory capacity of the district health managers as a strategy to improve retention of primary healthcare workers. This was also intended to address lack of evidence on successful examples of supportive supervision in the country and in the region and therefore, develop knowledge that can be adopted nationally in Botswana and possibly elsewhere. Our context is particularly important as supportive supervision challenges deeply entrenched traditional "top down" supervision paradigms.[69,85]

2.3.10 Conclusion

This chapter presented the conceptual framework of the thesis and discussed the literature on the existing body of knowledge about the challenges and opportunities for developing and retaining an adequate health workforce. It also described the knowledge gap that the thesis is seeks to address. Chapter 3 will present the four published articles from the research.

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Chapter 3: The four articles

This chapter consists of the four articles:

1. Article 1. **Nkomazana O**, Peersman W, Willcox M, Mash R, Phaladze N. Human resources for health in Botswana: The results of in-country database and reports analysis. Afr J Prm Health Care Fam Med. 2014;6(1)

2. Article 2. **Nkomazana O**, Mash R, Shaibu S, Phaladze N. Stakeholders' Perceptions on Shortage of Healthcare Workers in Primary Healthcare in Botswana: Focus Group Discussions. PLoS ONE (2015) 10(8): e0135846. doi:10.1371/journal.pone.0135846

3. Article 3. **Nkomazana O**, Mash R, Phaladze N. Understanding the organisational culture of district health services: Mahalapye and Ngamiland health districts of Botswana. Afr J Prm Health Care Fam Med. 2015;7(1)

4. Article 4. **Nkomazana O**, Mash R, Wojczewski S, Kutalek R, Phaladze N. How to create more supportive supervision for primary healthcare: lessons from Ngamiland district of Botswana: co-operative inquiry group. Global Health Action. 2016. 9: 31263.DOI: 10.3402/gha.v9.31263

3.1 HUMAN RESOURCES FOR HEALTH IN BOTSWANA: THE RESULTS OF IN-COUNTRY DATABASE AND REPORTS ANALYSIS

By:

Oathokwa Nkomazana

Department of Surgery, Faculty of Medicine, University of Botswana, Botswana

Wim Peersman

Department of Family Medicine and Primary Health Care, Faculty of Medicine and Health Sciences, Ghent University, Belgium

Merlin Willcox

Department of Primary Care Health Sciences, Division of Medical Sciences, University of Oxford, United Kingdom

Robert Mash

Division of Family Medicine and Primary Care, Faculty of Medicine and Health Sciences, Stellenbosch University, South Africa

Nthabiseng Phaladze

School of Nursing, Faculty of Health Sciences, University of Botswana, Botswana

Correspondence to:

Oathokwa Nkomazana

Email: nkomazanao@mopipi.ub.bw

Postal address: University of Botswana School of Medicine, P/Bag 00713, Gaborone, Botswana

This manuscript was edited after publication in response to the examiners' queries. The method section was was especially edited to better describe the data sources and their perceived reliability.

3.1.1 Introduction

The African region has 3% of the world's health workforce tackling 24% of the global burden of disease.[1] With only 11% of the world's population, the region accounts for half the world's maternal and child deaths and more than 90% of the world's deaths from malaria and HIV.[2] The United Nation's Millennium Development Goals (MDGs) call for reducing under-five mortality by two-thirds and maternal mortality by three-quarters by 2015. Sub-Saharan Africa is unlikely to achieve those goals without significant increases in skilled human resources for health.[3,4] There is ample evidence that an increase in the number and quality of healthcare workers is associated positively with improved health outcomes.[1]

The shortage of human resources for health in sub-Saharan Africa is attributed to a number of complex factors including inadequate numbers trained, inappropriate skill mixes, inequitable distribution and migration.[1] Migration to North America and Western Europe was the major cause of faculty loss in the Sub-Saharan African Medical Schools Survey.[5] The exodus of skilled professionals in the midst of so much unmet health need places Africa at the epicentre of the global health workforce crisis, which contributes to weak health systems.[6]

3.1.1.1 Botswana and human resources for health

Botswana is a landlocked country in Southern Africa with a landmass of 582 000 km^2 and a population of just over 2 million.[7] It has an annual government and total expenditure on health per capita of $246 and $382, respectively.[3] There are 28 health districts consisting of five urban, four rural and 19 rural districts, with one or more urban villages. For the purposes of this paper, urban areas are defined as "all settlements with a population of 5 000 or more persons with at least 75% of the labour force in non-agricultural occupations (subsistence farming)"[7] and villages are defined as "settlements on tribal land, which have tribal administration and some basic services, including a primary care clinic, a primary school and a post office". Combining these definitions, 27 villages were designated as 'urban villages' and this then leads to a distinction between districts that are completely rural and districts that are rural with one or more urban villages.[7]

Botswana's health services are mostly public with a small, but growing private sector. The healthcare system is based on a primary healthcare model and services are provided through a network of three referral hospitals, seven district hospitals, 14 primary hospitals, three private hospitals, three mine hospitals, two mission hospitals, 265 primary care clinics (101 with maternity beds), a number of specialists and general private outpatient clinics (mostly in towns and some urban villages), 343 health

posts and 861 mobile clinic sites. This has brought 95% of the total population (89% of the rural population) within eight kilometres of a healthcare facility. Access to a healthcare facility does not always translate to good health service, as many of the facilities are severely short staffed (MoH, Integrated Health Services Plan [IHSP] 2012, personal communication, Jan 23). Life expectancy at birth is estimated as 61 years.[3] The infant and under-five mortality rates are 36 and 48 per 1 000 live births respectively and the maternal mortality ratio (MMR) is 160/100 000 births.[3,8]

The major employer of health workers in Botswana is the government. Prior to 2010, primary healthcare was managed by the Ministry of Local Government, but from April 1, 2010, all health care was transferred to the Ministry of Health. A shortage of skilled and qualified healthcare workers remains one of the major bottlenecks toward the availability of accessible, high quality healthcare in Botswana with 3.4 doctors and 28.4 nurses per 10 000 people.[3] Training of health workers is achieved through a combination of in-country and foreign training institutions. In-country training is done at the eight institutes of health sciences for diploma courses in nursing, midwifery, health education, laboratory, radiography and dental technology. The University of Botswana provides Bachelor's degrees and Master's degree courses in nursing, including specialist nursing, laboratory technology, environmental health and it will graduate its first class of doctors in October 2014. The institutes of health sciences and the University of Botswana are public institutions. There is one private institution which offers training in phlebotomy, plaster, theatre and dental assistance, as well as training for health care auxiliaries.

Botswana has a paucity of readily-accessible, integrated and comprehensive information on human resources for health. A decision was, therefore, made to collate and analyse the available data from different sources, which are otherwise fragmented and sometimes difficult to access within the Ministry of Health (MoH), Ministry of Local Government and Ministry of Education and Skills Development. Professional regulatory bodies and multiple consultancy reports are also useful sources of information. The Department of Policy, Planning, Monitoring and Evaluation (DPPME) is responsible for human resources planning for the MoH. The Botswana Health Professions Council (BHPC) is the regulatory body for all doctors and allied health professionals, whilst the Nursing and Midwifery Council of Botswana (NMCB) is responsible for the registration and regulation of the practice of nurses and midwives. The Ministry of Education and Skills Development (MESD) provides scholarships for tertiary education, including health sciences, both inside and outside the country. The Department of Tertiary Education Funding (DTEF) is responsible for administering these scholarships.

For the purposes of this study the following definitions of health cadres are used: medical officers are generalist practitioners without specialist training and nurses refers to all nursing cadres including

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midwives, family nurse practitioners, community health nurses and all other nurses; 'clinical support staff' comprises health workers with minimal to no formal training that assist with patient care including theatre technicians, plaster technicians and nurse auxiliaries. Other health workers on the other hand refers to healthcare workers with training of up to 18 months, such as lay counsellors, phlebotomists, healthcare auxiliaries and health education assistants. Pharmacist refers to pharmacists and pharmacy technicians (trained at diploma level). Medical laboratory scientists refers to scientists (degree holders) and technicians (diploma holders).

3.1.2 Aim and objectives

The aim of this study was to analyse the existing databases and report on the health workforce in Botswana in order to quantify and describe the situation with regard to the human resources for health. The specific objectives were:

1. To quantify the different types of health workers in Botswana.
2. To determine the vacancy rates for the different health worker categories at primary and higher levels of healthcare.
3. To compare the Botswana Human Resources Strategic Plan for Health's (BHRSPH) recommended numbers of health workers to baseline levels at primary and higher levels of care.
4. To describe the density and distribution of the different health workers.
5. To describe the country of origin of health workers in Botswana.
6. To determine the number and place of training of Batswana (citizens of Botswana) health workers.

3.1.3 Research methods and design

A compilation and analysis of the existing databases on human resources for health was carried out. This entailed face-to-face meetings with the department of policy monitoring and evaluation of the MoH, the department of tertiary education funding of the MESD, the Botswana Health Professions Council, the Nursing and Midwifery Council of Botswana and the in-country World Health Organization (WHO) office to explain the purpose of the study. Formal requests for their particular databases were subsequently made to each of the bodies. The data were collected from November 2011 to May 2012 and covered the period from 2007 to 2012.

The Ministry of Health provided data from multiple sources including the 2009 head count which was carried out to inform the development of the integrated health services plan. The 2012 database was the most up-to-date record of all the public health sector workers, which is routinely collected. The latter database also provided information on the distribution of the health workers in the country and

information on the number of these workers who were Batswana (citizens of Botswana). The data was perceived to be incomplete as it lack information of vacancies. They also provided a number of consultancy reports, including the National Health Services Situational Analysis (NHSSA) as well as a number of policy and strategy documents including the National Health Policy (NHP), the Botswana Human Resources Strategic Plan for Health (2008–2016) and the 10-year IHSP (2010–2020) and the Essential Health Services Package (EHSP). These are sources for some of the information in this study. The Ministry of Health did nto have data on healthcare workers in the private sector.

The Botswana Health Professions Council provided data on the numbers, country of origin and distribution of the healthcare professionals registered with the council. The Nursing and Midwivery Council of Botswana provided summary statistics of the nurses and midwives registered with the council, including the total number and the countries of origin. Neither of the regulatory bodies differentiated between healthcare workers in the private and public sectors.The database on Batswana students funded to study health science courses from 1997 to 2010, was sourced from the DTEF. The in-country WHO office provided the Botswana Human Resources for Health Country Profile, which is the source of some of the information in this paper.

Once the data were collected, attempts were made to improve their quality by seeking clarification on the definition of categories of health workers used by different sources. The databases were created over different time periods, with data collected for different purposes. They therefore had different types of information and none had enough information to answer all the aims of this study. Therefore, each database was used to answer different aspects of the study objectives, based on the relevance and perceived completeness of their information. The data were used to compile the different categories of health workers and calculate summary statistics. There was not enough information to calculate the change in the numbers or types or distribution of health workers over time.

3.1.4   Results

3.1.4.1 The number of health workers

In 2007/2008, the Ministry of Health at the Ministry of Local Government had a total staff complement of 6 353, which included 2 321 health workers (see Table 3.1). The other employees were non-clinical, non-technical support staff, administrators and non-clinical managers. The health workers included Bachelor's degree holders such as pharmacists, dentists, laboratory scientists, as well as technicians trained to diploma levels, including dental therapists, pharmacy and laboratory technicians (Tables 3.1 and 3.2). Medical Specialists at Primary Health Care level in 2007/2008 were Public Health Specialists.

The recommended posts (Tables 3.1 and 3.2) are the estimated number of healthcare workers that will be required to provide health services in 2016 according to the Botswana Human Resources Strategic Plan for Health's. The projected 2016 vacancy rate is based on the number of filled positions in 2007/2008 (baseline) and the planned 2016 target for posts, assuming that there will be the same number of health workers in 2016 as at baseline.

Table 3.1: Primary care staff establishment 2007/2008 and recommendations for 2016

Health worker category	Total posts *n*	Filled posts (FP) *n*	Current vacancy rate (% total posts)	Recommended posts (RP) *n*	Projected 2016 vacancy rate (% FP/RP)
Dental therapists	2	2	0	0	–
Dieticians	0	0	0	26	100
Environmental health officers	75	70	7	164	57
Medical laboratory scientists	40	40	0	26	–
Medical officers	69	63	9	79	20
Nurses	1897	1816	4	3089	41
Other allied health workers	23	22	4	26	15
Pharmacists	89	78	12	392	80
Physiotherapists	2	2	0	0	–
Radiographers	4	6	0	0	–
Medical specialists	18	13	28	26	50
Social workers	19	19	0	26	27
Clinical support staff	38	38	0	0	–
Other health workers	45	40	11	868	95
Totals	**2321**	**2209**	**5**	**4722**	**53**

Source: Ministry of Health, Botswana Human Resources Strategic Plan for Health 2012, personal communication, January 23

Table 3.2: Secondary and tertiary hospital staff establishment 2007/2008 and recommendations for 2016

Post category	Total posts *n*	Filled posts (FP) *n*	Current vacancy rate (% total posts)	Recommended posts *n*	Projected 2016 vacancy rate (% (FP/RP)
Dentists	28	21	25	40	48
Dieticians	17	15	12	17	12
Dental therapists	61	79	0	105	25
Environmental health officers	51	0	100	33	100
Medical laboratory technicians	248	254	0	587	57
Medical officers	244	195	20	356	45
Nurses	3552	2898	18	3147	8

Other allied health workers	189	134	29	267	50
Occupational therapists	10	11	0	28	61
Pharmacists	241	245	0	509	52
Physiotherapists	16	16	0	58	72
Psychologists	5	4	20	13	69
Radiographers	48	40	17	104	62
Medical specialists	137	89	35	192	54
Speech therapists	1	0	100	13	100
Social workers	2	38	0	65	42
Clinical support staff	89	233	0	387	40
Other health workers	13	18	0	1671	99
Totals	**4952**	**4290**	**13**	**7592**	**43**

Source: MoH, Botswana Human Resources Strategic Plan for Health 2012, personal communication, January 23

[Correction made in response to the external examiner's query: The 'current' vacancy rates on Table 3.1 should have been termed 'baseline' vacancy rates.]

Prior to 2010, the MoH had a total workforce of 9 652 which included 4 952 health workers who were employed on the clinical platform in secondary and tertiary health institutions (Table 3.2). The MoH also employed 220 other health professionals who have been excluded from the analysis as they do not work on the clinical platform, but are teachers at the Institutes of Health Sciences (MoH, Botswana Human Resources Strategic Plan for Health's 2012, personal communication, January 23)

3.1.4.2 Vacancies

In 2007/2008 there were vacancies in seven of the 13 health worker categories in primary care. The vacancies were highest for medical specialists, pharmacists, medical officers and other health workers respectively (Table 3.1). The number of radiographers employed exceeded the number of established positions. The mean vacancy rate in primary care was 5%. There were very high vacancy rates in 10 of the 18 health worker categories in secondary and tertiary health care, the worst of which was for environmental health officers and speech therapists (Table 3.2). Dental therapists, social workers, clinical support staff and other health workers (Table 3.2) exceeded the number of established positions. The mean vacancy rate for secondary and tertiary healthcare services was 13%.

The vacancy rates were much higher in secondary and tertiary healthcare services compared to primary health care (Figure 3.1), except for pharmacists where there were no vacancies in secondary/tertiary care compared to a 12% vacancy rate in primary care. Other health professionals refer to all other health workers excluding nurses, doctors, dentists/dental therapists, and pharmacists/pharmacy technicians (Figures 3.1 and 3.2).
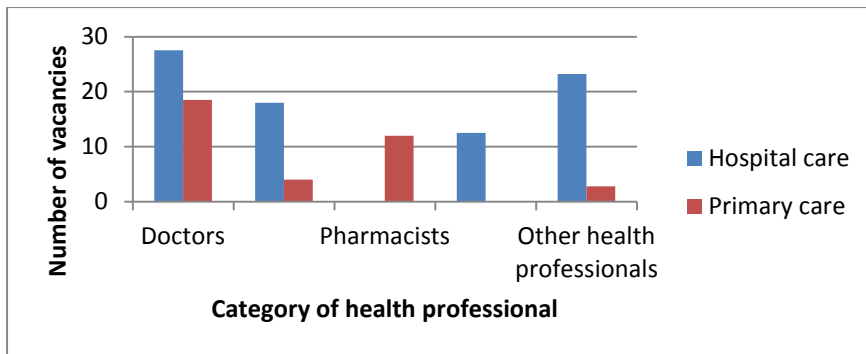
Figure 3.1: Comparison of vacancy rates in primary care versus secondary/tertiary hospital care 2007/2008

Source: Ministry of Health, Botswana Human Resources Strategic Plan for Health 2012, personal communication January 23
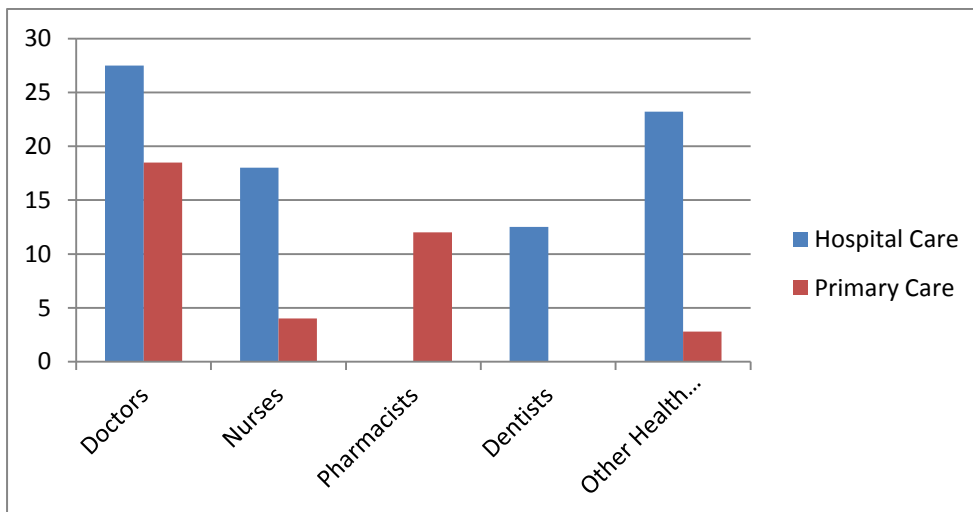
¥**Figure 3.1: Comparison of vacancy rates in primary care versus secondary/tertiary hospital care 2007/2008**

¥This figure was added to correct the original which missed the dentists and nurses lable.
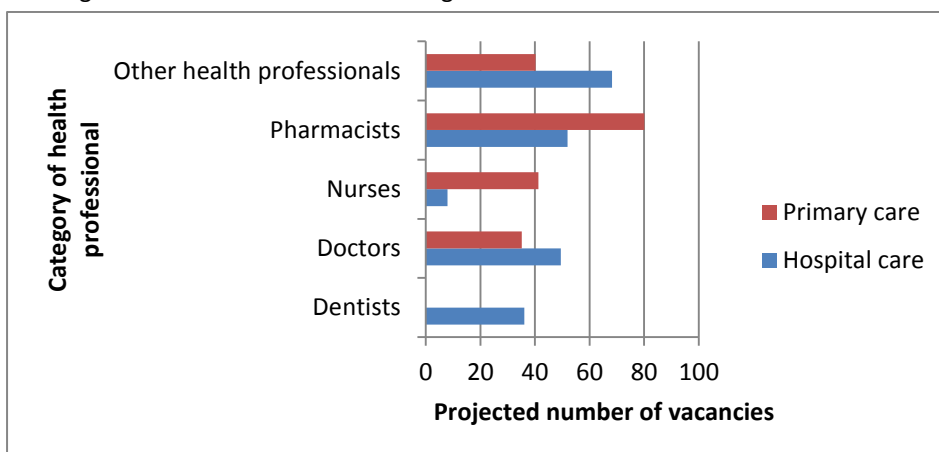
Figure 3.2: Comparison of projected 2016 vacancy rates for primary care versus secondary/tertiary hospital care

3.1.4.3 Recommended number of health workers for 2016 compared to baseline

To implement the Botswana Human Resources Strategic Plan for Health's, moderate increases in the numbers of healthcare workers will be required from baseline to the levels planned for 2016 (Tables 3.1 and 3.2, Figure 3.2). The highest increases at all levels of care will be in the other health worker category with a projected 2016 vacancy rate of 95% in primary care and 99% in higher levels of care. Dieticians will be introduced in primary care and pharmacists increased significantly (Table 3.1). Some types of health workers are to be removed completely from primary care, including dental therapists, radiographers, physiotherapists and clinical support staff (Table 3.1). The number of nurses in secondary/tertiary care is to be reduced whilst those in primary care are to increase significantly (Figure 3.2). The mean 2016 vacancy rate, based on the 2007/2008 filled positions and the planned 2016 targets, is 53% in primary care compared to 43% in the secondary/tertiary care levels.

3.1.4.4 Density and distribution of health workers

The density of health workers was highest in urban areas and lowest in the rural districts with one or more urban villages (Table 3.3). In 2012, Gaborone, with 11% of Botswana's population, was home to 250 (34%) doctors and 1 113 (17%) nurses whilst Francistown, with 5% of the population, had 100 (13%) doctors and 530 (8%) nurses (MoH 2012, personal communication, Jan 23). In 2009, the proportion of doctors working in Gaborone and Francistown was 43% and 15% and for nurses, 11% and 4%, respectively (MoH, IHSP 2012, personal communication, Jan 23).

Table 3.3: Density of health workers (per 10 000 population) in Botswana per district type

District type	Population	Doctors	Nurses/midwives	Pharmacists	Dentists	Healthcare workers
Rural	98 816	3	26	1	0	45
Rural with urban villages	1 515 181	2	22	1	1	35
Urban	424 231	9	77	4	1	115
Total	**2 038 228**	**4**	**42**	**2**	**1**	**65**

3.1.4.5 Country of origin of Botswana health workers

In 2012, 13 713 health workers were registered with the BHPC and NMCB. The BHPC had 4 416 registrants whilst the NMCB had 9 297 (Table 3.4). There were 1 820 doctors registered with the Botswana Health Professions Council. Batswana (native-born and naturalised citizens of Botswana) made up 41% of all health professionals registered with BHPC and 84% of the nurses registered with NMCB (Table 3.4). Only 21% of the doctors registered with the BHPC were Batswana compared with 84% of nurses (Table 3.4). Batswana were also in the minority amongst physiotherapists (39%),

radiographers (13%) and optometrists (35%) (Mr Modiitsane, BHPC 2012, personal communication, May 16).

Table 3.4: Health workers who are citizens of Botswana as compared to the total number of health workers in Botswana

Health workers	Total number	Batswana	
		n	*%*
Doctors	1820	382	21
Nurses	9297	7845	84
Dentists/dental therapists	296	223	75
Pharmacists/pharmacy technicians	764	402	53
Other health workers	3645	2226	61
Total	**13 713**	**9635**	**70**

Source: Mr Modiitsane, Ministry of Health, Botswana Health Professions Council and Nursing and Midwifery Council of Botswana 2012, personal communication, May 16

The major contributors to health professionals registered with the BHPC in 2012 were Botswana, Zimbabwe, Democratic Republic of Congo (DRC) and Zambia (Table 3.5). Zimbabwe mainly contributed doctors (*n* = 191), laboratory scientists (*n* = 127), physiotherapists (*n* = 34), radiographers (*n* = 90), pharmacy technicians (*n* = 49), pharmacists (*n* = 52) and laboratory technicians (*n* = 43), whilst Zambia mainly contributed doctors (*n* = 73), laboratory technicians (*n* = 28), pharmacy technicians (*n* = 42), physiotherapists (*n* = 19) and radiographers (*n* = 77). The Democratic Republic of Congo (DRC) was a significant source of doctors (*n* = 333) (Mr Modiitsane, BHPC 2012, personal communication, May 16).

Table 3.5: Country of origin of health professionals registered with the Botswana Health Professions Council in 2012

Country of origin	All healthcare workers N = 4416		Doctors N = 1820	
	n	%	*n*	%
Botswana	1790	40	382	21
Zimbabwe	630	14	191	10
Democratic Republic of Congo	351	8	333	18
Zambia	266	6	73	4
India	199	4	97	5
Nigeria	174	4	96	5
Republic of South Africa	140	3	101	6
United States of America	110	2.5	70	4
Kenya	109	2.5	37	2
Tanzania	101	2.3	65	4
Ethiopia	72	1.6	69	4
China	59	1.3	55	3
Uganda	56	1.3	40	2
Other African	90	2.0	48	3
Other non-African	**269**	**6.1**	**163**	**9**

Source: Mr Modiitsane, Ministry of Health. Botswana Health Professions Council 2012, personal communication, May 16

3.1.4.6 Training of health workers

Between 1997 and 2010, an estimated 7 154 Batswana graduated as health professionals with government financial support (Table 3.6). Of these, 1 665 (23%) graduated from universities in 21 countries in Europe, North America, South America, Australia, Africa and South East Asia. This latter group included doctors (48%), pharmacists (10%), dentists (11%) and nurses (11%), as well as physiotherapists, nutritionists, dieticians, biomedical engineers, optometrists, occupational therapists, radiographers, audiologists and speech therapists, and occupational health and safety officers.

Table 3.6: Numbers and place of training of state-supported health professionals graduated between 1997 and 2010

Health Cadre trained	N	Botswana		Other countries	
		n	%	*n*	%
Dentists[1]	272	89	33	183	67
Pharmacists[1]	350	190	54	160	46
Nurses[1]	5031	4846	96	185	4
Doctors	802	0	0	802	100
Other health workers	699	364	52	335	48
Total	**7154**	**5489**	**77**	**1665**	**23**

[1]Bachelors and diploma levels

Source: Mr Maedza, DTEF 2012, personal communication, Apr 06

3.1.5 Discussion

The density of doctors and nurses per 10 000 population was 4.3 and 41.3, respectively, using the MoH database of 2012. The frequency of doctors and nurses in rural districts were significantly lower than urban districts. This is in keeping with the findings in many low- and middle-income countries.[9,10,11] Disparity in the distribution with significant skewing favouring urban areas is also well described in many settings.[12,13] The densities are a little higher in purely rural districts because these are very sparsely populated, with some clinics attending to as few as four patients a day (MoH, IHSP 2012, personal communication, Jan 23). The arrangement is necessary to meet the government targets of bringing 95% of the population within eight kilometres of a health facility.[8] The frequency of doctors and nurses in Botswana was similar to Namibia and higher than many countries in the region such as Zambia and Zimbabwe, but lower than South Africa.[4] A number of African countries are said to have a critical shortage of health workers, with fewer than 2.3 health workers per 10 000 population.[1] Although Botswana is not amongst the countries with a critical shortage of health workers, it still has far fewer numbers than countries with established health systems such as the United Kingdom (UK).[1]

There is evidence that adequate numbers of health workers are associated with positive health outcomes.[1] Botswana's life expectancy at birth as well as maternal and under-five mortalities were similar to Namibia, which had equivalent densities of health workers, but much better than Zimbabwe, Zambia, Uganda, Mali and Sudan, all of which had much lower health worker densities.[4] Surprisingly, Botswana's health indices were better than those of South Africa although the latter had higher health worker densities.[4] Botswana's health indices were much worse than the UK, which was in keeping with the UK's higher densities of health workers.[4] There are, of course, other factors that also contribute to these differences.

The mean vacancy rate in primary healthcare was less than that for secondary and tertiary care. This is different from many low-income countries, which have very high vacancy rates in primary healthcare compared with higher levels of care.[14,15] However, with far fewer posts at baseline than projected for 2016 in primary care compared with secondary/tertiary care, the number of health workers required in primary care was grossly underestimated. This shows that the system has been skewed toward recruitment in secondary/tertiary care settings since only 34% of filled posts and 32% of total posts were in primary care settings. This is the inverse of what would be needed in a more efficient system based on universal access to good quality primary healthcare.[15]

Since about 2006/2007, the government has been rolling out the management of patients with HIV infection to primary care, which may explain the significant projected increases in the numbers of pharmacists, nurses, other health workers and medical specialist, as well as the introduction of dieticians. The national HIV/AIDS programme has a number of facets beyond just the provision of antiretrovirals. [These include nutritional support and food baskets and hence the need for more dieticians and social workers. *This sentence was not in the original paper but added in response to the examiner's comment*] It is not clear from the data as to which medical specialties were intended for primary care, but according to a more recent strategy document, the Essential Health Services Package (2010–2020), family physicians are to be based in primary hospitals and not in primary care clinics (MoH, IHSP 2012, personal communication, Jan 23). Primary hospitals are part of secondary-level care with less than 100 in-patient beds and usually do not have specialist doctors. The planned increases in other healthcare workers reflect the intention to shift a number of tasks currently done by nurses and doctors to health workers with shorter training such as health education assistants and lay counsellors as well as an increase in the links between primary care and the community-based services (MoH, EHSP 2012, personal communication, Apr 06).

Task shifting, when properly implemented and with adequate supervision, can improve significantly the ability of countries to increase their health workforce, improve skill mixes and reduce international

migration. The challenges are maintaining the quality of care and patient safety.[16] Removing radiographers, physiotherapists and dental therapists from primary care is likely to have an adverse effect on the ability of the health system to provide equitable and accessible care. The increases in the number of health workers at all levels of the health services mandates significant increases in the training of nurses, other health workers, pharmacists and doctors, including medical specialists. With only 21% of the doctors in the country being Batswana (citizens of Botswana), Botswana is heavily dependent on a migrant health workers, mostly from countries such as the Democratic Republic of Congo, Zimbabwe and Zambia, which are plagued with significant political and/or economic hardships. This overdependence on an expatriate health workforce puts the country at significant risk as these health workers are likely to want to return to their countries as situations improve, or to migrate to higher-income countries.

Local training appears to significantly reduce the dependence on expatriate health workers. The dependence on foreign training institutions for doctors has proven to be ineffective and unsustainable as the majority of the graduates have tended to remain in the host countries on completion of training, which tend to be higher-income countries with better salaries and more career development opportunities (Maedza M, DTEF 2012, personal communication, Apr 06). Some of the host countries also see the foreign students as a potential solution to their own human resources for health shortages. Australia, for instance, is exploring the potential contribution of international medical students in Australian medical schools to the Australian medical workforce.[16] The establishment of a local medical school is intended to reduce the dependence on expatriate doctors. This will need to be monitored closely, however, as many developing countries have continued to experience a reduction in the numbers of doctors despite in-country training, because of migration to higher-income countries.[17]

3.1.6 Limitations

The major limitation of the study was the incompleteness and inaccuracy of the data, which made it difficult to get a reliable estimate of the quantities, densities and distribution of health workers. An unidentifiable number of health professionals on the BHPC register work outside the country. None of the databases had detailed information on health workers in other sectors of the health system such as the private sector and non-governmental organisations. Therefore, an accurate estimation of the total health worker density is not possible. Although the data span from 2007 to 2012, it is not adequate to calculate trends in human resources for health.

None of the databases available had information on the distribution of health workers according to the level of care and the data were not disaggregated to the level of the individual clinic or hospital. The only data on vacancy rates are very old, being from 2007/2008.

3.1.7   Recommendations

Botswana has an urgent need to establish a comprehensive human resource information system that will be resourced adequately in order to keep it up-to-date in real-time and accessible to all stakeholders. The information should differentiate between the different levels of healthcare and should also be disaggregated to the level of the healthcare facility. The disparity in the distribution of health workers between the rural and urban districts should be addressed as a matter of priority in order to achieve universal access to healthcare. For an optimally-functioning health system, all levels of care must be resourced both adequately and appropriately. Research is needed so as to find out how health workers can be attracted to and retained in Botswana's rural areas in order to address the disparity.

Training of doctors, including medical specialists, nurses, pharmacists and pharmacy technicians, as well as lay counsellors and health educations assistants, needs to be increased in order to meet the planned Essential Health Services Packadge and Botswana Human Resources Strategic Plan for Health requirements. All training should be supported by strategies for attraction and retention so as to reduce the heavy dependence of the country on an expatriate health workforce, especially doctors.

3.1.8   Conclusion

The Ministry of Health is the sole employer for the public health service. In 2007/2008 there were relatively high vacancy rates for different types of health workers, especially in secondary/tertiary care. Plans to significantly increase the numbers of health workers at all levels of health care by 2016, if not coupled with a significant injection of new health workers, will exacerbate the vacancy rates.

The density of health workers in Botswana is relatively high compared to its neighbours, but this is still too low to enable the country to achieve its millennium development goals. Similar to many countries, health workers tend to be more densely distributed in urban compared to rural areas. Botswana has a worrisomely high dependence on an expatriate health workforce and, until recently, out-of-country training of doctors and dentists and allied health professionals. Attraction and retention of internationally-trained health workers has been unsuccessful and localisation of training is intended to more effectively meet the country's needs. In order to meet the country's human resources for health needs in a sustainable manner, more health workers will need to be trained, recruited and retained.

3.1.9 Acknowledgements

3.1.10 Competing interests

The authors declare that they have no financial or personal relationship(s) that may have inappropriately influenced them in writing this article.

3.1.11 Authors' contributions

O.N. (University of Botswana School of Medicine) conceptualised the project, collected and analysed the data and drafted the manuscript. W.P. (Ghent University), M.W. (Oxford University) and R.M. (Stellenbosch University) reviewed the draft manuscript and approved the final version. N.P. (University of Botswana School of Nursing) collected the data, reviewed the manuscript and approved the final version.

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Figure 3.3: The first medical graduates from the University of Botswana take the Hippocratic Oath

3.2   STAKEHOLDERS' PERCEPTIONS ON SHORTAGE OF HEALTHCARE WORKERS IN PRIMARY HEALTHCARE IN BOTSWANA: FOCUS GROUP DISCUSSIONS

By:

Oathokwa Nkomazana[*]

Faculty of Medicine, University of Botswana, Gaborone, Botswana

Robert Mash

Division of Family Medicine and Primary Care, Stellenbosch University, Cape Town South Africa

Sheila Shaibu

School of Nursing, University of Botswana, Gaborone, Botswana

Nthabiseng Phaladze

School of Nursing, University of Botswana, Gaborone, Botswana

Correspondence to:

Oathokwa Nkomazana

Email: nkomazanao@mopipi.ub.bw

Postal address: University of Botswana School of Medicine, P/Bag 00713, Gaborone, Botswana

3.2.1   Background

"Health workers save lives"[1] and primary healthcare (PHC) holds the key to improving access to healthcare for underserved communities and reaching the Millennium Development Goals.[2] Severe shortages of healthcare workers (HCWs) have, however, hampered the efforts of many low-to-middle-income countries in providing universal primary healthcare.[3, 4] Promoting the retention of healthcare workers and developing effective systems for primary healthcare delivery will facilitate

improvements in community health and equity, and potentially reduce the total cost of healthcare services.[2]

A well-performing health workforce is one of the six pillars of strong and effective healthcare systems.[5] There is, however, a documented global shortfall of over two million doctors, nurses and midwives, and 36 of the 57 countries with a critical shortage of healthcare workers are in sub-Saharan Africa. In addition, sub-Saharan Africa, with only 1.3% of the global health workforce, bears 25% of the global burden of disease, dominated by infectious diseases.[1, 6] The shortage of healthcare workers is complicated by inequitable distribution, skill mix imbalances, negative work environments and a weak knowledge base.[6]

The causes of shortages in human resources for health are many and complex. Effective mitigating strategies should, therefore, be comprehensive and context-specific and derived from an adequate understanding of the context.[7]

Botswana is an upper middle income country with relatively high expenditure per capita on health [8] and a destination for many health professionals, especially from sub-Saharan Africa.[3] The country, therefore, has more health workers per population than many countries in the region.[8] That, notwithstanding, the country has a documented deficiency of healthcare workers which hinders it from providing universal primary healthcare.[8, 9]

Although Botswana has a recognised inadequacy of human resources for health, which is worse in primary healthcare,[9] no research has been done to investigate its determinants. Therefore, the qualitative research reported in this article explored the perceptions of healthcare workers, policy makers and members of the community on the shortage of healthcare workers in Botswana and to identify the perceived causes and potential solutions. Based on the proposed solutions, an intervention will be developed and piloted in one health district.

3.2.2 Method

A descriptive qualitative design [10] was used to explore the perceptions of policy makers, healthcare workers and members of the community on the shortage of healthcare workers in primary healthcare in Botswana. The checklist for consolidated criteria for reporting qualitative research guided the research process.[11]

3.2.2.1 Setting

The study was conducted in three of Botswana's 28 health districts, namely Gaborone, an urban health district, Mahalapye sub-district, with headquarters in Mahalapye, a rural health district and Ngamiland, with headquarters in Maun, a rural and remote district.

Botswana has a population of just over two million, 59.4% of whom live in urban areas.[12] The healthcare system is based on a primary healthcare model and services are provided through a network of three national referral hospitals, seven district hospitals, 14 primary hospitals, 265 primary care clinics (101 with maternity beds), 343 health posts and 861 mobile clinic sites.[9] Management of the health services, including recruitment and deployment of healthcare workers, procurement and distribution of equipment and drugs, is centralised at the Ministry of Health headquarters. District health management teams (DHMTs) were created in 2010 to manage healthcare services in their respective districts. The district health management teams work closely with the tribal, political and executive leadership of their districts to enable inter-sectorial coordination of services.

Until 2007, training of doctors, dentists, laboratory scientists, pharmacists, physiotherapists and other allied health professionals was outsourced to universities in the region and overseas. The training of doctors and laboratory scientists was localised in 2009 through the creation of the University of Botswana's Faculty of Health Sciences in Gaborone.

3.2.2.2 The study design

Fifteen focus group discussions were facilitated with policy makers, healthcare workers and members of the community from March to May 2012 in all three districts chosen for the study.

3.2.2.3 Sampling strategy

Separate meetings were held in January and February 2012 with policy makers, healthcare workers and members of the community in each of the three districts to recruit participants for the interviews. In Gaborone only one combined meeting was held with all groups. The following criteria were used to purposively select people to attend the meetings:

1. Policy makers were defined as administrative, political, or traditional leaders in the districts whose work had an impact on healthcare. District executive managers (district commissioners) and district health management teams were invited as administrative leadership in the district. The district health management teams included senior doctors, nurses, other healthcare workers and health administrators in the district. In Gaborone, the capital city, the national human resources manager and primary healthcare coordinator were also invited. The village health committee, village development committee and district council

chairpersons were invited as political leaders and local tribal chiefs as traditional leaders. They were included as policy makers and not in the community groups as they were part of the district inter-sectorial leadership. All of the designated people above were invited to the meeting.

2. Healthcare workers were defined as public employees involved in primary healthcare. These comprised doctors, dentists, nurses, community health workers, lay counsellors, pharmacy technicians, laboratory technicians, health education assistants and family welfare educators. Invitations were sent to all the primary healthcare facilities in the district.

3. Members of the community were defined as people that had lived in the district for at least 6 months. Invitations were extended to those in organised community groups and structures such as village health committees, home-based care volunteers, and village leadership (including village development committee members and village headmen). Invitations were sent to all villages in the district.

4. At the meeting the study was explained and all attendees were invited to participate. All attendees were asked to identify additional suitable people who could be invited should more be needed for the interviews or who could replace them should they be unwilling or unable to participate (Figure 3.3).
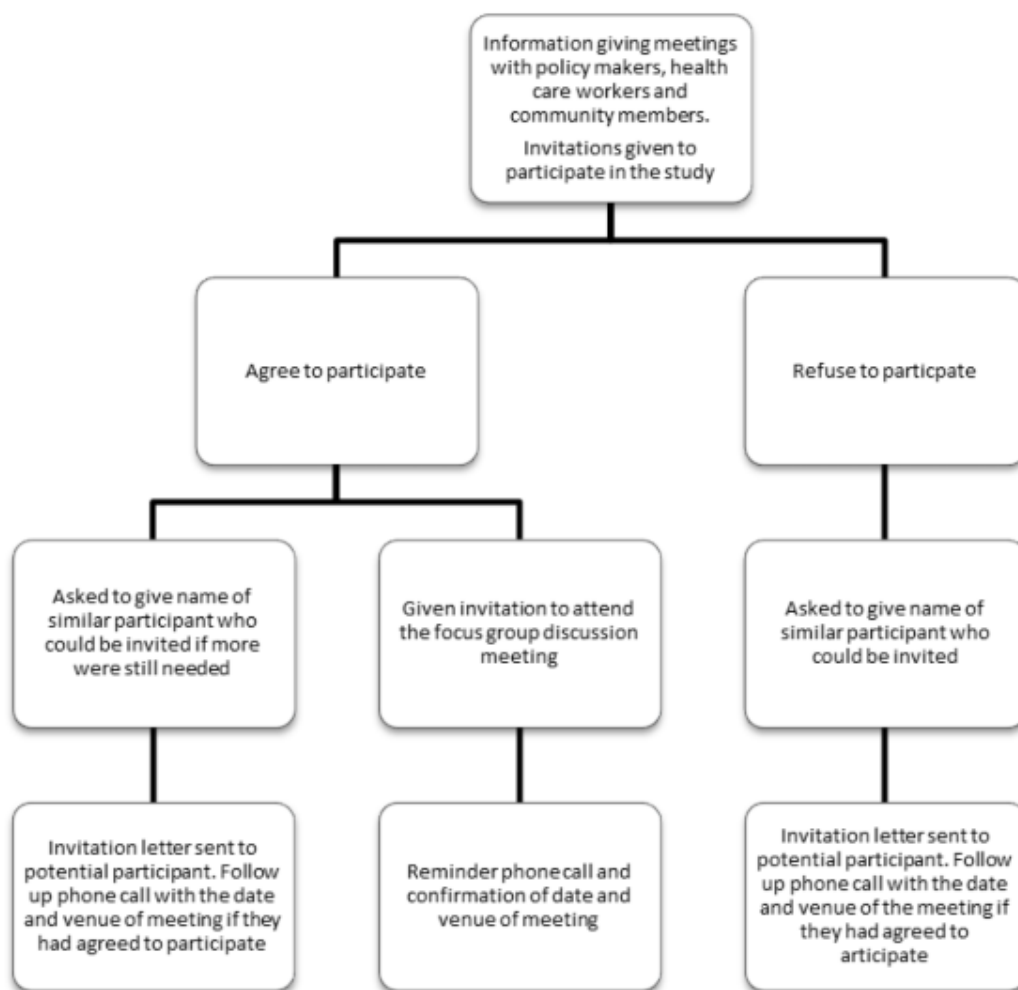
Figure 3.4: Sampling Strategy

3.2.2.4 Data collection process

A series of 15 focus groups, comprising five to 12 participants each, were conducted in the three districts. Each district had one focus group with policy makers, two with healthcare workers and two with community members. We conducted the interviews using a semi-structured interview guide. Each focus group was held in a quiet and private space and lasted between 2 to 3 hours. The groups discussed the following questions:

1. In your opinion, is there a shortage of healthcare workers in primary healthcare in Botswana?
2. What do you believe are the causes of any shortage?
3. What do you think can be done to address any shortage of healthcare workers in primary healthcare?

The interview guide was piloted with members of the university community (healthcare workers and support staff) and revised based on their feedback. The discussions with community members were

in Setswana (the national language of Botswana) and the other group discussions used both Setswana and English. ON (female, MD) facilitated 12 of the 15 interviews while NP (female: PhD, Nursing) and SS (female, PhD, Nursing) facilitated the remaining three. The discussions were audio-recorded and transcribed verbatim. All the members of the team were trained in qualitative interviewing and were bilingual (English and Setswana). The Setswana documents were translated into English before analysis.

3.2.2.5 Ethical considerations

Ethical clearance to conduct the research was obtained from the University of Botswana Institutional Review Board and the Ministry of Health Research and Development Unit: Reference No: PPME 13/18/1 V11 (368). Written informed consent was obtained from each study participant.

3.2.2.6 Data analysis

Data analysis was performed using the framework method.[13-15] ON developed a thematic framework under the supervision of RM, using two of the transcripts. ON then applied the index to code the remaining 13 transcripts. The themes were derived inductively from the data. ATLAS.ti software (version 7.1.3) was used to manage the transcribed data and to expedite data analysis. No new themes were identified after analysing the first seven transcripts; nevertheless, all the transcripts were analysed. The number of times that a code, relating to particular theme, was used in the 3 groups was also tabulated to indicate the relative strength of the item in the respondent groups. The emerging themes were also presented to and discussed with the different participant groups for respondent validation.[16]

3.2.3 Findings

Fifteen focus group discussions (Table 3.7) were conducted with a total of 133 participants: 46 healthcare workers, 27 policy makers (PMs) and 60 community members (CMs). The average length of service of healthcare workers at the districts was: Gaborone (G) 13 years, Mahalapye (MH) 10 years and Maun (M) 8 years. In the quotes below the voice of the participant can be identified by using the abbreviations above for the district and type of participant.

Table 3.7: Membership of the policy makers and healthcare workers' focus groups

Cadre	Policy makers N=27 (3 females)	Healthcare workers N=46 (36 females)	Community members N=60 (50 females)
Doctor	8	8	0
Nurse/midwife	4	21	0
Administrator	7	0	0
Other health worker	2	15	1
Community/political leaders	6	0	1
Civil society organisations	0	0	2
Home-based carers	0	0	6
Traditional healers	0	0	1
Other community members	0	0	49

The themes that emerged from the data are presented in three sections below as they relate to the perceived shortage of healthcare workers in primary healthcare, the reasons for shortages of healthcare workers and suggested strategies to rectify the situation.

3.2.3.1 Shortage of healthcare workers in primary healthcare

All the groups believed there was a shortage of healthcare workers, more especially of Setswana-speaking doctors, midwives, and specialist nurses (Table 3.8):

> *". . .doctors are not enough. . . you can go to the clinic. . . when you get there they will tell you he will come on Friday while you are sick on that day. . ." (GCM1).*

> *". . .most of the time we meet only foreigners. When he consults with me what can I say since I do not know English? And if there is no nurse you are in trouble." (GCM2)*

Table 3.8: Frequency of coding for a perceived shortage of healthcare workers

Themes	Community members ¥(n=60)	Healthcare workers ¥(n=46)	Policy makers ¥(n=27)
No shortage of HCW	4	2	2
Shortage in rural and remote areas	12	2	4
Shortage of Setswana speaking doctors	11	3	1
Shortage of doctors	7	3	1
Shortage of health-care workers	16	14	12
Shortage of nurses	7	1	0
Shortage of midwives and specialist nurses	15	10	11
Shortage of pharmacy technicians	3	2	1
Shortages of other healthcare workers	3	7	2

¥ The numbers of participants were added in response to the examiner's comments

The community perceived a greater scarcity of healthcare workers in rural and remote areas with comments such as:

> ". . .I think that there is shortage, especially at faraway places, deep in the rural areas." [GCM3]

Conversely, a smaller dissenting voice from the three groups denied there was a shortage, blaming the inadequate health services on idleness, poor morale and inequitable distribution of healthcare workers:

> ". . .there are enough, the problem is laziness that is too much. . .instead of starting at half past seven, the doctor will show up. . .around eleven. . .[this] results in people becoming too many until the sun goes down. . ." (MCM1)

3.2.3.2 Reasons for the scarcity of healthcare workers in primary care

Increased need for health services, inequitable distribution, migration, and training inadequate numbers were blamed for the deficiency of healthcare workers in primary healthcare (Table 3.9).

Table 3.9: Frequency of coding related to the causes for a shortage of healthcare workers

Category	Community Members ¥(n=60)	Health Care Workers ¥(n=46)	Policy Makers ¥(n=27)
Increased service need	4	2	6
Inequitable distribution	9	14	4
Migration from public sector	23	28	10
Training of health workers	35	40	37

¥ The numbers of participants were added in response to the examiner's comments

The participants argued that population growth, the HIV/AIDS epidemic, and increasing prevalence of non-communicable diseases led to the establishment of new clinics and services, without equivalent increases in the number of healthcare workers:

> ". . .when we plan to build extra health facilities, we don't come up with extra nurses. . ." (MHCW1)

> ". . .the epidemic of HIV and other diseases have gone beyond what we even expected to have at this time. . ." (MPM3)

Healthcare workers and the community were particularly unhappy about the unfair distribution of healthcare workers, which favoured towns and large villages:

> ". . .mostly it's to do with the distribution. . . they tend to focus mostly on the cities. . . and forget the rural areas. . ." (MHCW2)

Nonetheless, some healthcare workers alleged that allocation was reasonable, but there was higher attrition in rural areas:

> *". . .they are distributed equally, but. . . they leave the service in high numbers. . . in rural areas. . . compared to urban areas." (GHCW1)*

The problem of training inadequate numbers of healthcare workers was reported by all the groups, who also claimed that those trained in other countries did not return to work in Botswana:

> *". . .research. . . revealed. . . that at the rate at which Botswana was training doctors. . . it would take. . . 150 years to have adequate numbers. . . people sent abroad to study. . . do not even come back. . ." (MHCW3)*

On the contrary, some community members claimed that adequate numbers of health workers were trained, but not retained:

> *". . .[there] are many institutions that produce nurses. . . every year. . . let's just say they are not happy [and leave]. . ." (GCM5)*

At the same time, healthcare workers and policy makers were concerned that training of healthcare workers was not always informed by Botswana's health system needs:

> *". . .the government will allow me, if I choose [to] study community health nursing, not to do midwifery. . . while we don't have enough midwives." (MHCW4)*

> *". . .but I think the training is too focused on curative medicine. . . the primary health component of healthcare is being eroded. . . But. . . our kind of problems can be best addressed at primary healthcare level. . ." (MPM1)*

Migration of healthcare workers from the public health system was held as a worrisome contributor to HCW scarcity in rural areas by all the groups (Table 3.10). The migration was mainly to private health services, to urban areas, and to other countries:

> *". . .they leave us here and look for jobs in private companies. . ." (GCM6)*

> *". . .most of the nurses migrated to European countries around 2000 or 1999. . . saying they were going to greener pastures. . ." (GHCW2)*

Table 3.10: Frequency of coding for the reasons underlying the migration of healthcare workers

Category	Community members ¥(n=60)	Healthcare workers ¥(n=46)	Policy makers ¥(n=27)
Poor healthcare management	98	85	60
Poor human resources management	63	104	83
Lack of incentives for primary care	12	29	30
Personal and family factors	7	18	12
Socioeconomic and contextual issues	37	32	39
Poor working conditions	23	31	9

¥ The numbers of participants were added in response to the examiner's comments

The study participants acknowledged that ineffective healthcare and human resources management, inadequate incentives, personal and family issues coupled with socioeconomic and contextual challenges contributed to the movement of healthcare workers from primary healthcare. Healthcare management was also deemed weak and ineffective by all the groups. This resulted in demoralising working environments characterised by poor infrastructure and absence of critical resources such as patient transport, medicines and equipment:

> *". . .there are no tablets. Daily you see sick people. . . as a human being this depresses you. . . there is not even a car to take that person to the next clinic. . ." (MPM3)*

> *". . .you don't have equipment and drugs. . . how are you going to work. . .?" (GHCW4)*

Human resources management practice was a matter of concern for all the groups, especially healthcare workers and PMs, who maintained that policies on the length of rural deployment, transfer, promotion and continuing professional development were unclear and not always informed by the need for health services:

> *". . .whenever a midwife is transferred out of Maun. . . they would take junior nurses who have just finished from [school] and send them as a replacement. . ." (MPM3)*

> *". . .imagine somebody of my age just going for a degree [course] after 25 years of service the nomination of people for further studies. . . you don't know which criteria are used because people who are long in service are left [overlooked]. . . and those newly qualified are the ones who are nominated to go for further studies. . ." (MHCW3).*

These policies were also inconsistently and unfairly applied and often favoured those working in hospitals:

´. . .you find that. . . more health workers working at the hospitals are promoted unlike in clinics.
. .” (GHCW5)

Additionally, a lack of supportive supervision was of particular concern to healthcare workers who were generally demoralised by the lack of appreciation, recognition and rewards:

". . .how are you going to be seen that you are doing well when they visit you once in six months.
. . and all they hear is when you are referring [accompanying] a patient to Princess Marina
hospital and someone complains that there is no nurse in the clinic. How are you going to be
on the list of people who are rewarded?" (GHCW1)

The community, on the other hand, blamed ineffective supervision for the tardiness of healthcare workers:

". . .the leadership is supposed to take action, against nurses or doctors who refuse to see
patients at night. . . but. . . they are reluctant. . . there is lack of supervision. . ." (MCM5)

Furthermore, all the groups were worried about the demotivating practice of posting junior and inexperienced single nurses to clinics, without the possibility of adequate supervision and support:

". . .young nurse, who just [graduated] from school. . . you are sending that particular person
to the health post [to work] alone. . ." (MHCW4)

The participants decried the non-competitive remuneration packages and the absence of incentives for rural and remote service:

". . .the government has no incentives for the people who are staying in very remote areas. . .
they end up being demoralised. . ." (MHCW3)

Policy makers intimated that loneliness, lack of psychosocial support and recreational facilities, in rural and remote areas, increased the risk of depression, substance abuse and attrition of healthcare workers:

". . .it is so depressing that people can find refuge in alcohol and drugs in those areas." (MPM3).

All the groups reported special difficulties that were encountered by healthcare workers who were separated from their families when deployed elsewhere:

". . .the government doesn't recognise the social needs of workers. . . you will stay there, a
distance of a thousand and something kilometres [from your spouse]. . . you end up resigning"
(GHCW5)

". . .a lot of divorce! Even if you don't divorce you are not connecting well. . ." (MHCW7)

All the groups indicated that inadequate rural infrastructure such as roads, telecommunication, electricity, running water, shops, accommodation and schools for children, were reasons for the increased loss of healthcare workers in rural areas:

> ". . .some people are not coming because of the school for the kids. . . they wanted their kids to study in English [medium] school. . ." (MHHCW3).

> ". . .frustration in these people who are in this primary healthcare is a lot. . . poor accommodation. . . no electricity. . . they cook what they are going to eat now, because they cannot keep it for tomorrow." (MHPM7)

Likewise they viewed the deficient rural infrastructure as an impediment to continued professional development and further education:

> ". . .where there is no electricity you can't do anything to further your studies. . ." (MHHCW2)

3.2.3.3 Proposed solutions for the scarcity of healthcare workers

The research participants advanced a number of potential solutions to the shortage of healthcare workers in primary healthcare. These propositions mirrored the reported determinants for the shortage of healthcare workers.

The participants stressed the importance of tackling staff welfare problems, which should include keeping families together as much as possible:

> ". . .those who are married. . . ensure that they have easy accessibility to having a good family. . . staying together. . ." (GHCW2)

All the participants wanted the resource deficiencies to be addressed urgently:

> ". . .There is use of cell phones nowadays; there has to be an arrangement where you can pick the cell phone and talk to a doctor. . . about the patient. Now you find that there is no such facility and you end up using your own cell phone, which is wrong." (GHCW4)

In addition, policy makers and healthcare workers desired the decentralisation of healthcare management to the districts or at least to allow for district-specific health service delivery models:

> ". . .maybe the government should come up with flexible or area-specific models of service delivery. . ." (MPM3)

The participants recognised that the socioeconomic obstacles to retention of healthcare workers could not be tackled by the Ministry of Health alone, but required a concerted multi-sectorial

approach. However, they wanted appropriate accommodation to be provided to healthcare workers as a matter of urgency:

> ". . .sometimes you may find that an issue is beyond the scope of. . . the ministry. . . example of electricity maybe or telephone. . . water. . . so if these resources are not available in the clinic you may have the best nurse and all the drugs, but find a fridge does not work. . . [inter-sectorial] coordination is very important." (MHPM1)

Policy makers and healthcare workers contended that there should be more incentives for healthcare workers working in rural and remote areas:

> ". . .but if people in remote areas were given some incentives. . . that would help. We are not only talking about monetary incentive but. . . about other things like housing. . ." (MPM1)

Furthermore, they argued that differential incentives should be given to midwives and nurses with additional qualifications or who perform non-nursing duties:

> ". . .government should start giving incentives for some of these courses, like midwifery. Midwifery. . . is a high risk job. . ." (MHCW5).

The participants proposed that human resources management policies on promotion, transfer, length of service in rural areas and in-service training needed to be clarified and applied fairly, consistently and transparently. They also insisted that healthcare workers should not work in rural areas for a very long time. In addition, they recommended that the career structures for nurses be reformed:

> ". . .you need to make a clear policy of transfers, because if you send someone to a rural area he has to know and be prepared that I'm going. . . to provide service [for] two years. . ." (MHCW3)

> Healthcare workers also wanted their supervisors to visit them regularly to appraise their work accurately, understand their work challenges and reward them appropriately:

> ". . .how do we reward people for putting in long hours and working so hard. . . your employees when they've done a good job, do you congratulate them or do you always look at the bad things. . ." (GHCW6)

All the participants requested role clarification and adequate supervision, especially for junior and inexperienced staff. Additionally they participants advocated for differential increases in the numbers of healthcare workers trained, based on the healthcare needs of the country. They also proposed that training should instil appropriate knowledge, skills and attitudes:

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". . .midwifery should be a compulsory course [for nurses]. I think also the government should strike a balance between all the post basic [advanced nursing] courses." (MHCW4)

". . .During training they can do their practical in rural areas. So they can be familiar with rural experience. . ." (MHPM2).

3.2.4 Discussion

To our knowledge this study is the first to explore the perceptions of policy makers, healthcare workers and the community on human resources for primary healthcare in Botswana. The number of healthcare workers in primary healthcare were perceived to be inadequate, a perception that is confirmed by existing evidence.[9] That notwithstanding, Botswana, an importer of healthcare workers from other countries [3] has more healthcare workers per capita than many low and middle income nations.[8]

Like many other African countries, Botswana is perceived to be failing to produce enough health professionals for its health systems.[17, 18] This situation has been exacerbated by failure to retain those who were trained in the public health system.[9, 19]

Botswana's situation has been further complicated by its policy of outsourcing the training of many health professionals to other countries, with the result that the majority have remained in the host countries after graduation.[9] There is hope, however, that the opening of a medical school and a faculty of health sciences for the training of doctors and other healthcare workers at the University of Botswana will address this challenge. Local production of healthcare workers in Botswana, as in many other countries in sub-Saharan Africa, is however hampered by the limited capacity of training institutions.[17, 18, 20] The policy makers and healthcare workers were of the opinion that the training of the healthcare workers was not informed by the needs of the health system.

Inequitable distribution, favouring hospitals and urban areas, and higher attrition rates in rural areas have resulted in fewer healthcare workers in primary healthcare and rural areas.[9] This 'inverse care law'[21] besets many health systems, especially in low- and middle-income countries.[1, 22, 23] Similar to other southern African countries, Botswana's need for healthcare workers has also grown, primarily because of the HIV/AIDS epidemic, which has placed increasing demands on the healthcare system.[1, 24]

Despite its being a destination of migrant health workers from the region,[3,9] Botswana suffers from both internal and external migration of healthcare workers, a problem which plagues many low- and middle-income countries.[25, 26] The determinants of migration are multiple, but personal and family

issues stand out as a priority. Living away from the family is significantly associated with attrition of healthcare workers from primary healthcare and rural areas.[22] Healthcare workers also migrate because of a dearth of opportunities for career progression and continuing professional development, especially in rural areas.[19]

Weak and sometimes incompetent healthcare and human resources management, characterised by lack of essential resources for patient care, poor career structures, unclear policies, absence of supportive supervision as well as poor conditions of service, were identified as 'push factors' for HCW migration. This finding is in keeping with studies on migration of African healthcare workers.[19, 27, 28]

Healthcare workers are also reluctant to work in rural areas because of poor infrastructure such as roads, schools for children, accommodation and telecommunication, and limited opportunities for career and continuing professional development. Deficient development has also been blamed for the failure of many countries to staff rural healthcare facilities adequately.[7, 22, 23]

Incentives and remuneration packages were deemed unattractive and non-competitive compared to those in Namibia and South Africa. Inadequate incentives and low salaries are known to be strong 'push' factors for migration of health professionals.[7, 23] Conversely, the hope of 'greener pastures' is a 'pull' factor to high-income countries.

Our study suggested that in order to tackle staffing insufficiency in primary healthcare, multiple barriers must be addressed simultaneously.[28, 29] Few such strategies have been evaluated in Africa, but Ghana's monetary incentives and Zambia's more comprehensive strategies have had some success.[23, 25]

Interviewing the three groups from three different settings enabled the exploration of different perspectives, varying experiences of the healthcare system and triangulation of themes. The study was conducted in three of the 28 health districts only and it is possible that other viewpoints would have been obtained elsewhere. Given the consistency of responses and saturation of themes, as well as the exposure of respondents to other districts in previous postings, we believe the results are transferable and likely to be replicated throughout Botswana.

3.2.4.1 Implications and recommendations

Various recommendations can be made based on this research, as suggested below.

Capacity should be built in human resources for health, healthcare management and systemic monitoring and evaluation. Botswana should also institute strategies to train and retain more healthcare workers. The training should be informed by needs of the health system and also inculcate appropriate competencies.[30] The retention strategies should include better incentives including fiscal, accommodation, continuing professional development opportunities, and improvement of rural infrastructure. Moreover, the capacity of district health management teams to provide supportive supervision to healthcare workers in primary healthcare, should be strengthened.

3.2.5 Conclusion

Botswana, despite its relatively high expenditure per capita on health,[8] has a shortage of healthcare workers, which is worse in primary healthcare and rural areas as a result of multiple complex factors. The causes of the deficiency of health workers are similar to those of countries which spend much less on health, some of which are also sources of the Botswana health workforce.[9, 23] To address the scarcity the country should train adequate numbers of competent healthcare workers and distribute them equitably to sufficiently resourced healthcare facilities. These healthcare workers should be competently managed and adequately remunerated and the living conditions and rural infrastructure should be improved.

3.2.6 Acknowledgements

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3.2.7 Author contribution

Oathokwa Nkomazana conceptualised the research, collected data, analysed the data and wrote the manuscript.

Robert Mash analysed data and reviewed the manuscripts and approved the final manuscript.

Sheila Shaibu collected data and reviewed the manuscripts and approved the final manuscript.

Nthabiseng Phaladze collected data, reviewed the manuscript and approved the final manuscript.

All the authors agree to be accountable for all aspects of this manuscript.

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Figure 3.5: Focus group discussion with members of the community in Maun

3.3 UNDERSTANDING THE ORGANISATIONAL CULTURE OF DISTRICT HEALTH SERVICES: MAHALAPYE AND NGAMILAND HEALTH DISTRICTS OF BOTSWANA

By:

Oathokwa Nkomazana

Faculty of Medicine, University of Botswana, Gaborone, Botswana

Corresponding author

Robert Mash

Division of Family Medicine and Primary Care, Stellenbosch University, Cape Town South Africa

Nthabiseng Phaladze

School of Nursing, University of Botswana, Gaborone, Botswana

Correspondence to:

Oathokwa Nkomazana

Email: nkomazanao@mopipi.ub.bw

Postal address: University of Botswana School of Medicine, P/Bag 00713, Gaborone, Botswana

3.3.1 Introduction

Primary health care has been identified as an essential part of the health system when countries strive to provide universal access to quality, cost-effective health services.[1] Effective primary healthcare services in many low- to middle-income countries are, however, limited by high disease burdens, dysfunctional health systems and shortage of appropriately skilled and sufficiently motivated healthcare workers.[2-6]

Job satisfaction and motivation are strongly associated with retention and high performance of healthcare workers.[5,7,8] Motivation, however, is complex as it is influenced by multiple intrinsic and extrinsic factors.[5,7-9] Nevertheless, employees are known to have higher levels of productivity, commitment and creativity in organisations where their personal values and goals can be expressed or realised. These workers are said to have a kind of 'psychological contract' with the organisation.[10,11] Successful organisations, therefore, will highly value their employee's satisfaction and experience in order to enhance their engagement, retention and the organisation's performance.[10-12]

Botswana's national health policy (2010) and the ten-year Integrated Health Services Plan (2010-2020) seek to ensure that there is "an appropriately skilled, motivated, well-distributed and productive workforce for the effective and efficient provision of quality health services to all the people living in Botswana."[13,14] The two policies subscribe to the following core values: "ethics; equity; ownership; evidence base; innovation; gender equity; client satisfaction; skilled staff retention; and circulation and partnership". The national Ministry of Health, which is the custodian and driver of policy and strategic planning, has the following core values: "customer focus (consistently meeting customer expectations), botho (providing service with respect, kindness in a friendly manner), timeliness (always delivering services on time to clients), equity (equal service delivery to all regardless of religion, social status or geographical location), teamwork (working together for a common goal) and accountability (responsible, liable and answerable for one's actions)". All the district health management teams (DHMTs) espoused the values of the Ministry of Health. It is notable that the Ministry of Health and hence, the district health management teams have no value on staff experience or satisfaction despite the plan to have a motivated and productive health workforce.

Shortage of health care workers and their inequitable distribution were identified as major bottlenecks to the delivery of quality health services in Botswana.[6,14] The health workers, especially doctors, are also more concentrated in urban areas and hospital services compared to rural areas and primary care clinics.[2,6,14] The government has used training (both in and outside the country), recruitment of expatriate workers, as well as bilateral agreements with China and Cuba to address the shortage of health professionals in the public health system. Conversely, many Batswana health professionals trained in other countries have remained in the host countries on completion of their training.[2,6,14] In addition, a significant number of those who returned and a number of those trained locally have migrated from the public to the private or non-governmental sectors or left the country.[6],[Thupayagale-Tshweneagae G. Migration of Nurses in Botswana. Botswana Nursing Council. Gaborone. 2009. Personal communication].

Administratively, Botswana is divided into 28 health districts and primary health care is provided through a network of 265 primary care clinics (101 with maternity beds), 343 health posts and 861 mobile clinic sites.[2] The health facilities have been grouped into functional clusters centred around a larger clinic with maternity beds. Clinical services in the clusters are coordinated by cluster heads who are senior nursing officers. Management of all health services, including recruitment and deployment of health care workers (HCWs), procurement and distribution of equipment and drugs, is centralised at the national Ministry of Health headquarters. District health management teams were created in 2010 to administer healthcare services in their respective districts. Being a relatively recent structure many of the managers at the health districts are still being appointed and there is uncertainty about their roles.

Ineffective human resources and healthcare management systems and inadequate supportive supervision that does not focus on improving staff satisfaction and experience have been identified as important determinants of low health worker motivation and retention in Botswana's public health service.[6]

This manuscript reports on the findings of a survey to evaluate the healthcare workers experience of the primary care organisation within Ngamiland and Mahalapye districts. The survey evaluated the organisational culture and was intended to also inform the work of a co-operative inquiry group that was initiated in the Ngamiland district to improve supportive supervision by the district health management team and cluster heads and to evaluate if this would increase staff motivation, experience and retention. The cooperative inquiry group was seen as the intervention in a quasi-experimental study and its findings will be presented later in separate articles.

3.3.2 Methods

3.3.2.1 Study design

A cross sectional survey of personal values, current organisational culture and desired future organisational culture, from the health workers' perspective, was conducted in Ngamiland and Mahalapye health districts.

The values assessment was based on a conceptual framework that recognised the interrelation between the individual personality and character on the one hand and the organisational culture and structures or systems on the other (Table 3.11).[11] At the individual level, one's internal values drive one's personality and are expressed through actions and behaviours as one's character. At the collective level the organisation's values drive its culture and are expressed in its collective actions, structures, procedures and processes.

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Table 3.11: Four quadrants of human systems[12]

	Individual	Collective
Objective (External)	Character: Individual actions and behaviours	Structures and procedures: Collective actions, behaviours and processes
Subjective (Internal)	Personality: Individual values and beliefs	Culture: Guiding values, attitudes that limit, shared strategic vision

Organisations therefore, like individuals, are living systems which possess internal values and external behaviours.[11,12] The survey tools supplied by the Barrett's Value Centre make the internal individual and collective values visible and allow an assessment of the alignment between the four quadrants shown in Table 3.11.[11,12] Highly functioning organisations have greater alignment or congruence between the four quadrants of this model. Personal alignment refers to the degree of congruence between one's individual values and behaviour, while structural alignment refers to the alignment between organisational values and structures or procedures. Values alignment refers to the extent to which individual values are congruent with organisational values and mission alignment refers to how well individual behaviour is congruent with organisational behaviour and procedures.[10] A system that is well aligned across the quadrants will have employees that are more engaged and motivated, with high organisational performance.[12] This model implies that a system or organisation that wants to improve its performance must work on alignment in and between all four quadrants simultaneously as they are interdependent.[11] At the organisational level the leadership has the greatest influence over creating and maintaining the prevailing culture and therefore transformation almost always involved leadership transformation.[15]

In the model developed by Richard Barrett, the values selected in the survey can also be assigned to seven different levels of organisational consciousness (see Table 3.12). The seven levels of consciousness were originally developed from Maslow's hierarchy of needs and the distribution of values provides insight into what the organisation currently needs from its employees and what the employees need the organisation to focus on in the future. A well-functioning organisation will have positive values across all the levels.[11,12,15] In the bottom three levels there can be both limiting and positive values. Limiting values are values which are usually detrimental to the functioning of the organisation and limit the organisation's performance. In the model, the total percentage of all values chosen that are potentially limiting corresponds to the organisational or cultural entropy, which is a measure of the amount of dysfunction and wasted energy in the system.[12,15]

Table 3.12: Seven level of organisational consciousness[12]

Consciousness level	Example of collective values
7: Service to humanity and social contribution	Social responsibility, long-term perspective, future generations, ethics, compassion, humility
6. Making a difference to the local community or health district	Environmental awareness, community involvement, strategic partnerships, employee fulfilment, coaching, mentoring and leadership development
5. Sense of purpose and strong internal cohesion	Shared vision and values, commitment, creativity, enthusiasm, integrity, generosity, fairness, honesty, openness, transparency and trust.
4. On-going improvement and employee participation	Adaptability, accountability, empowerment, teamwork, goals orientation and continuous improvement
3. High performance and quality of care	Reliability, quality, efficiency, productivity, excellence, best practice, systems and processes. *Bureaucracy, hierarchy, confusion, arrogance, hoarding information* and *complacency*.
2. Relationship with colleagues and patients	Loyalty, open communication, patient experience and friendship. *Blame, internal competition, rivalry, favouritism* and *manipulation*
1.Survival: Resources and safety	Sufficient budget, equipment, employee health and safety. *Control, greed, chaos, caution, job insecurity, exploitation* and *micromanagement.*

Note: Limiting factors are in italics.

3.3.2.2 Setting

The research was performed in the health districts of Ngamiland (Population: 96 356) and Mahalapye (Population: 117 492), which are serviced by 29 and 40 primary care facilities (clinics and health posts) respectively. According to the 2011 National Health Policy, 80% of the Botswana population use public health services.[13]

The district health management team is led by a head, who is usually a doctor with public health training, with heads of preventive, curative and corporate services reporting to him, while he reports to the Deputy permanent secretary, clinical services. The clinic clusters are managed by cluster heads who are nursing officers based at the larger clinics. Each clinic, in turn, is managed by a nursing sister-in-charge, who reports to the cluster heads. The majority of the healthcare workers employed at these clinics and health posts are nurses and midwives with small numbers of pharmacy technicians, social workers, health education assistants and medical officers (general practitioners). The doctors are based at the larger clinics and support the smaller facilities through regular outreach.

3.3.2.3 Study population

All primary healthcare workers in Ngamiland and Mahalapye health districts were eligible to participate in the survey, whereas support staff such as drivers, cleaners, and healthcare workers based in hospitals, were excluded. The research teams visited most primary care facilities to deliver the survey forms. Those facilities not visited, the forms were given to the cluster heads. The plan was

to recruit all consenting health workers on duty in the facilities during the two weeks of data collection. All health care workers on duty during the two weeks of data collection were invited to complete the survey. Cluster heads were also invited to complete the survey as they were also based in the primary health care facilities.

3.3.2.4 Data collection

The anonymous questionnaire was a standardised and validated tool developed by the Barrett Value Centre.[16] The participants were asked to select ten values, from a predetermined list, that best described their personal values, the organisational culture as they currently experienced it and the culture they desired in the district health service. We also collected demographic data which included, gender, age, name of health facility, length of stay at the facility and job title. The questionnaire was administered in English, which is the normal language of communication in the organisation. The tool was piloted for understanding among health care workers working at the University of Botswana clinic, who were considered to be of the same level of training and experience as the study population. The hard copy survey was self-administered by the participants and trained research assistants provided clarification as required. The collated questionnaires were then captured in the password-controlled Barrett Value Centre website by one of the research assistants.

3.3.2.5 Data analysis

The Barrett's Value Centre analysed the data and provided the study team with the results and a report. The results were descriptive and provided the numbers and frequencies for the selected values. The results were presented in figures and words and mapped to the seven levels of organisational consciousness.

The results were presented to the healthcare workers in each district in order to explore the meanings of the selected values. They were also presented to the Ngamiland District Health Management Team and cluster heads as part of the input into the cooperative inquiry process.

3.3.2.6 Ethical consideration

Approval to conduct the study was given by the University of Botswana Institutional Review Board, the Ngamiland District Ethics Committee, the Stellenbosch University Health Research Ethics Committee (Protocol Number: S13/03/051) and the Botswana Ministry of Health Health Research Development Committee (Reference No: PPME 13/18/1 V11 (368)). Written consent was obtained from each study participant.

3.3.3 Results

3.3.3.1 Demographic data

In Mahalapye, 60 primary healthcare workers on duty during the data collection period completed the survey compared to 67 in Ngamiland (see Table 3.13). All those on duty during the data collection period agreed to participate in the survey although one form from Mahalapye and five from Ngamiland were incomplete and therefore excluded from the data analysis. The health workers were recruited from 25 of Mahalapye's 40 (63%) clinics and health posts and 19 of Ngamiland's 29 (66%) primary care facilities. The majority of participants were female in Ngamiland (64%) and Mahalapye (66%).

Table 3.13: Age, length of service in the district and the different staff categories

	Mahalapye	Maun
	N=60	N=67
Mean age (range) years	35.7 (23-51)	35.4 (23-60)
Mean length of service in district (range) years	5.6 (1-20)	4.9 (1-21)
Staff categories	**n (%)**	**n (%)**
Doctors	1 (1.7)	1 (1.7)
Nurses	55 (91.7)	60 (89.5)
Others	4 (6.8)	3 (4.5)
Unknown	0	3 (4.5)

Most of the healthcare workers in primary care in these districts were nurses (Table 3.13). The staff category labelled "others" included social workers, pharmacists and health education assistants. Health education assistants are specifically trained for 18 months to be a link between primary care facilities and the community.

3.3.3.2 Ngamiland health district values

Table 3.14 shows the top 10 values in rank order for the Ngamiland respondents' personal values, current experience of the organisation and desired future experience of the organisation. The values in italics are personal values that were also desired organisational values and those in bold were current organisational values that health workers wanted to continue to experience in the future. None of the personal values were currently experienced in the organisation.

Table 3.14: Top ten personal, current organisational and desired future organisational values for Ngamiland health district

Personal values	N=62 n	Current organisational values	N=62 n	Desired organisational values	N=62 n
Accountability	40	Working in isolation (L)	22	Transparency	26
Caring	30	Confusion (L)	21	Leadership development	20
Trust	24	Job Insecurity (L)	20	**Teamwork**	**20**
Respect	23	Information sharing	20	Staff recognition	17
Honesty	22	Working strictly by the rules (L)	9	*Accountability*	**16**
Cooperation	20	Blame (L)	18	Productivity	16
Commitment	19	Not sharing information (L)	18	Shared decision making	15
Openness	18	**Teamwork**	**18**	Professional growth	14
Compassion	16	Patient satisfaction	17	Staff engagement	13
Responsibility	16	Manipulation (L)	16	Staff health	12

(L) = limiting value

Values in bold are both current and desired organisational values

Seven of the top ten current organisational values were potentially limiting (marked with L) and only three were positive (see Table 3.14). When all the limiting values were analysed there was a cultural entropy rate of 36%, which is a high level of entropy "requiring cultural and structural transformation, and leadership development".[10]

There were no limiting values among the top ten desired organisational values. These included only one currently experienced organisational value, namely teamwork, and one personal value, namely accountability (Table 3.14).

3.3.3.3 Mahalapye health district values

Table 3.15 shows the top 10 values in rank order for the Mahalapye respondents' personal values, current organisational and desired future organisational values. The values in italics were personal values that were also desired organisational values and those in bold were current organisational values that health workers wanted to continue to experience in the future. None of the personal values were currently experienced in the organisation.

Table 3.15: Top ten personal, current organisational and desired organisational values: Mahalapye health district

Personal values	N=59 n	Current Organisational values	N=59 n	Desired organisational Values	N=59 n
Accountability	37	*Teamwork*	22	Transparency	24
Caring	24	Blame (L)	18	Professional growth	18
Respect	20	Community involvement	17	Staff recognition	18
Commitment	19	Confusion (L)	17	Shared decision making	15
Compassion	19	Job insecurity (L)	15	Accountability	14
Honesty	19	Patient satisfaction	15	Productivity	14
Cooperation	17	Not sharing information (L)	14	Organisational growth	12
Responsibility	17	Long working hours (L)	13	Staff fulfilment	12
Trust	15	Control (L)	12	Empowerment	11
Fairness	14	Manipulation (L)	12	Fairness	11
		Professionalism	12	Leadership development	11
		Shared vision	12	Mission focus	11
		Working strictly by the rules (L)	12	*Teamwork*	11

Values (L) are limiting values

Eight of the current organisational values were potentially limiting (marked with L) and five were positive. When all the limiting values were analysed there was a high cultural entropy rate of 32%.

None of the top ten desired organisational values were potentially limiting. Teamwork was the only desired value currently experienced in the organisation. Two of the top ten personal values, accountability and fairness, were desired for the future organisation (Table 5).

3.3.3.4 Comparison of Mahalapye and Ngamiland health district values

Primary healthcare workers in Mahalapye and Ngamiland shared nine common personal values (Table 3.16) and two dissimilar values, namely, fairness (Mahalapye) and openness (Ngamiland).

Table 3.16: The top ten common personal current and future organisational values for Mahalapye and Ngamiland

Personal Values	Current organisational values	Desired organisational values
Accountability	*Teamwork*	**Transparency**
Caring	*Patient satisfaction*	**Professional growth**
Respect	Blame	**Staff recognition**
Commitment	Confusion	**Shared decision making**
Compassion	Job insecurity	**Accountability**
Honesty	Not sharing information	**Productivity**
Cooperation	Manipulation	**Leadership development**
Responsibility	Working strictly by the rules	Teamwork
Trust		

Values in bold are desired values that are not part of the prevalent culture

Eight of the top ten values in the current culture were also shared by the two districts. These included two positive values and six limiting values as shown in Table 3.16. Working in isolation was another potentially limiting value currently experienced in Ngamiland while long hours and control were experienced in Mahalapye. Furthermore, Mahalapye had the following positive values: community involvement, shared vision and professionalism compared with information sharing for Ngamiland. None of the personal values of the health workers were currently experienced in either district.

The primary health care workers in Ngamiland and Mahalapye also shared eight of the top ten desired organisational values (Table 3.16). These included seven new (bold) values and one that is currently experienced in both districts. Moreover, Mahalapye health workers also selected the following desired values: organisational growth, staff fulfilment, empowerment, fairness and mission focus while those in Ngamiland chose staff health and staff engagement.

Figure 3.6 shows the percentages of all personal values of healthcare workers in Mahalapye and Ngamiland according to the level of organisational consciousness. Healthcare workers in the two districts had almost identical distributions of personal values which were concentrated at level 5 followed by levels 4 and 2.
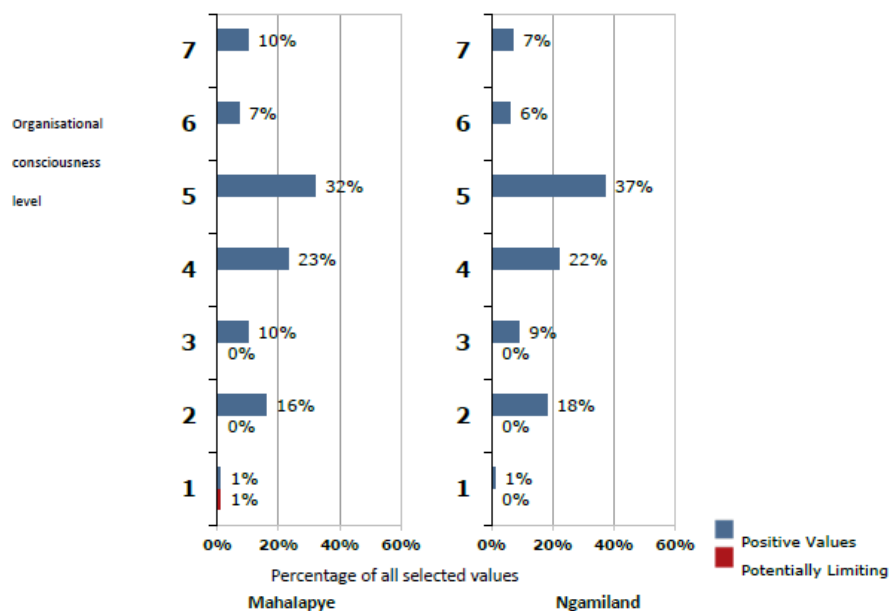
Figure 3.6: Personal values of Mahalapye and Ngamiland healthcare workers mapped to organisational consciousness level

The distribution of current organisational values for the two districts was concentrated at level 3 (Figure 3.7). The employees' experience of the organisations at this level was largely negative. The organisations were experienced as bureaucratic and people felt confused, isolated and needed more

information. This was followed by level 4 with an organisational emphasis on teamwork and level 2 with a positive focus on relationships with patients, but a negative experience of relationships in the organisation due to a sense of being both blamed and manipulated. At level 1 there was also a concern about job security.

Figure 3.7: Current organisational values Mahalapye and Ngamiland health districts mapped to organisational consciousness level

The distribution of the desired values for the two districts were similarly concentrated at level 4 with a need for more accountability and shared decision making, followed by level 5 with a call for more transparency to build alignment and internal cohesion (Figure 3.8). Level 3 represented a positive commitment to improved productivity and professional growth. The other levels suggested a need for more attention to staff welfare and more recognition of the work they were doing as well as a call for development of the leadership within the organisation.
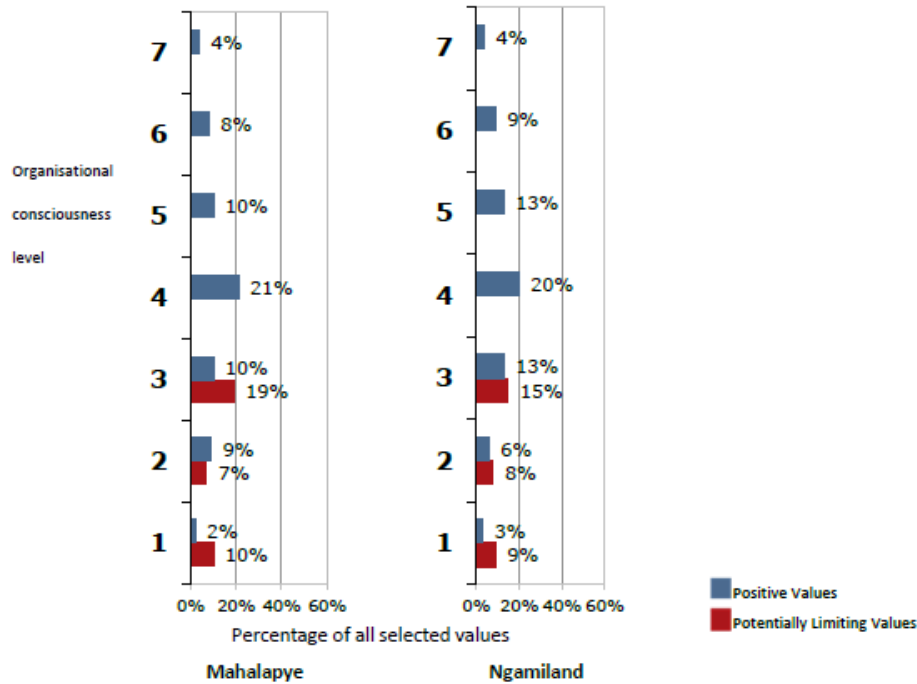
85
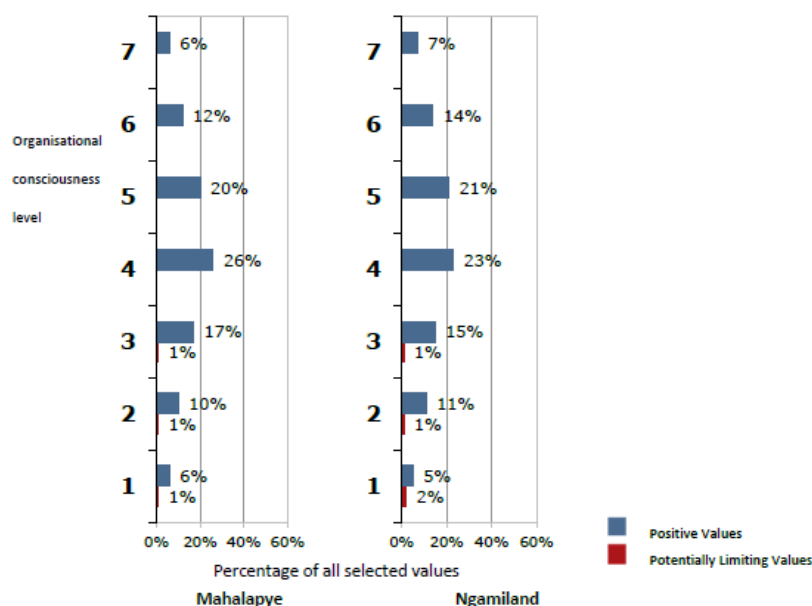
Figure 3.8: Desired organisational values for Mahalapye and Ngamiland health districts mapped to organisational consciousness level

Table 3.17 summarises the feedback from the health workers in both districts on their interpretation of the values seen in the current organisational culture. "The current organisational values reflect the employees' perceptions of what their organisation focuses on and how it behaves. These attributes provide a picture of the working environment, the positive aspects of the business, and its potential problem areas. These are a description of what the situation is between these groups at this point in time".[11,12]

Table 3.17: Implications of the top current organisational values for Mahalapye and Ngamiland health districts

Value	Implication
Teamwork	People in the two districts were aware that they could accomplish more together than alone. The continued appeal for teamwork in the future was a call to build a complete team. The people believed the team was incomplete and, as such, ineffective as some critical health care cadres were either missing or in short supply. The people also wanted their contribution to the team effort to be recognised and rewarded (*staff recognition*).
Blame	Some people in both organisations were being mistreated by being held accountable for the misdeeds of others. Poor communication in a bureaucratic environment had led to employees also blaming management for problems and vice versa. The call for *accountability* implied that employees wanted to be acknowledged and rewarded for good performance and made to account for poor performance. They also placed a very high value on *transparency* and *honesty* to facilitate accountability.
Community involvement	The clinics are embedded in the community and in Mahalapye the respondents saw the district health services as engaged in local issues and working closely with the community. However, the interaction with the community was not always perceived as positive by healthcare workers, who often felt unfairly criticised by the community for things they had no control over. Unrealistic expectations and interference by some community and political leaders was also disruptive to efficient running of the clinics.

Confusion	The district health management teams were a fairly recent invention whose implementation was not properly communicated to the health workers, who were still unsure of the district health system governance structure. Moreover, the people in both districts experienced a lack of clarity as well as mixed messages from the national ministry of health and district health management team, which left them unsure of motives and directives. This confusion was compounded by poor communication. The request for *leadership development* implied they saw the need for learning opportunities that would help their leaders in uniting and guiding the employee population. The people were also calling for clear transparent communication and staff engagement to bring about common understanding especially in issues that affected the way they work.
Job insecurity	There was fear and uncertainty in both districts about the people's ability to keep their jobs. As such people tended not to question the status quo, but worked strictly by the rules. An environment of blame, poor information sharing, control and manipulation all heightened this insecurity. Some human resources management policies were construed as unclear and unfairly applied. There was a call for *professional growth* as employees sought learning and career opportunities in their organisations. The people also sought transparency and fairness in implementation of human resources policies.
Patient satisfaction	Each of the districts emphasised the fact that they existed to meet the needs of their patients.
Not sharing information	The people in the two districts did not have access to the truths that would provide clarity and understanding about what was going on in the organisation. Information flow was often just from top to bottom and not vice versa. Even the information from the top often didn't trickle down to all the health facilities and especially not to all employees. These employees called for *transparency* and *openness* and that those giving directives should actively provide clarity around their motives and orders to promote shared understanding.
Long hours	In Mahalapye people were overworked. They acknowledged that some clinics had few patients, but these sought health care around the clock leaving very little time for nurses working alone in the clinic to rest. Increased numbers of programmes without an increase in staff had also stretched this limited resource with minimal reward and recognition. They were, therefore, burnt out and demoralised and called for an organisational focus on *staff fulfilment* and *staff recognition.*
Control	In Mahalapye the people were not empowered to do their work, but were rather micromanaged. The employees sought to be empowered to utilise and develop their skills and be held accountable for their actions. They also wanted to share in decision making. Leadership development at all levels was also needed to create a more open and supportive management style.
Manipulation	Nurses in both districts felt exploited as they were expected to do tasks traditionally done by doctors, pharmacists and laboratory technicians without any extra reward. The clear call for *shared decision making*, *staff recognition* and *staff fulfilment* was intended to address this.
Professionalism	Mahalapye had a focus on high standards of care and conduct.
Shared vision	Mahalapye health district also recognised the importance of a sense of purpose and direction that united and inspired their efforts.
Working strictly by the rules	In both districts bureaucracy and the status quo hampered the employees' efforts who tended to keep quiet and adhere to the business norms of the health districts. The call for *empowerment* (Mahalapye) and *staff engagement* (Ngamiland), *professional* and *leadership development* were made in order to free the innovation and creativity of the staff.
Information sharing	Those from Ngamiland were focused on exchanging knowledge and resources across the business in order to help empower employees' efforts. Despite this a similar number of respondents experienced lack of information sharing as the predominant culture.
Working in isolation	Ngamiland is a large remote and rural district where many health workers work alone. These health workers felt detached from the rest and unsupported. Consequently, depression and loneliness were experienced by many. The employees therefore sought support for their basic well-being (*staff health*). They also want to be involved in decisions about their deployment as well as opportunities (*staff engagement*) to fully utilise their talents and skills.

3.3.4 Discussion

This study investigated the personal values of the healthcare workers in the Mahalapye and Ngamiland health districts as well as the perceived current and desired organisational culture of the health districts. Organisational culture has been strongly linked to employee satisfaction and organisational commitment and hence, their retention.[17] An understanding of the prevailing organisational culture in the Botswana district health system and how this is likely to affect retention of primary healthcare workers is critical to guide organisational transformation.

The results of this study showed that the healthcare workers' personal values were focused on demonstrating ownership for their actions, being truthful and trustworthy. They also placed emphasis on fostering kind and supportive interactions with the people around them. The prevailing culture in the districts, on the other hand, was predominantly perceived as potentially limiting and likely to cause frustration among employees and hinder organisational performance. None of the personal values of the healthcare workers were currently experienced in either district where a culture of blame, control, manipulation, poor communication and working strictly by the rules dominated. Healthcare workers in both districts also experienced high levels of job insecurity. It is also notable that more than a third of the current organisational values were perceived as constraining organisational performance. The incongruence between personal and organisational values is likely to negatively affect job satisfaction, performance and organisational commitment.[12,17]

The personal values of the primary healthcare workers in the two health districts in Botswana were almost identical to their counterparts in the Cape Town primary care services where the primary health care services were also equally experienced as negative with levels of entropy above 30%.[18] Similar organisational dysfunction has also been reported by Kenyan healthcare workers in Kenya's district hospitals.[19]

With the exception of teamwork and customer focus (patient satisfaction), the current organisational values were not aligned to the espoused values of the national Ministry of Health and district health services of botho (kindness, compassion, respect), integrity, timeliness and accountability.[14] These espoused values, however, are similar to the actual personal values of the employees, implying that the staff have the potential to manifest the espoused values of the Ministry if given a chance to do so. Interestingly, the Western Cape government embraces similar core values of caring, competence, accountability, integrity, responsiveness and respect, despite its mostly negative employee experiences.[20] This incongruity between personal and organisational values as well as espoused and actual values is very likely to result in low health worker motivation, high attrition and poor patient outcome.[8,10-12]

Primary care workers in the two districts desired organisational transformation that concentrates on building a sense of shared purpose, internal community and employee participation. They were in agreement that a more supportive and innovative culture with a focus on transparency, professional growth, staff recognition, shared decision making, accountability, productivity and leadership development should replace the current largely limiting culture.

The healthcare workers also wanted to see teamwork continue as part of the future culture of the district health services. A more supportive and innovative culture, together with considerate supportive supervisors has been associated with increased job satisfaction and organisational commitment.[17] Organisational culture and leadership styles determine the work environment which can be either helpful or detrimental to organisational effectiveness and job satisfaction.[21] Furthermore, the perception of a limiting work environment and paucity of supportive supervision is strongly correlated with low job satisfaction and intention to migrate.[22] Alignment of the distribution of the desired organisational culture and personal values denotes that the health workers are capable of affecting the change they want to see.[18]

Botswana's human resources for health are heavily skewed towards cities and hospital care, displaying an 'inverse care law,'[23,24] despite the national Ministry of Health and the district health systems' espoused value of equity.[14] Attraction and retention of motivated and committed health workers to primary health care services, especially in rural areas, should therefore be prioritised. This mandates a new emphasis on employee experience with a focus on professional development, shared decision making and staff engagement in the district health system.

The response rates were relatively low, but the study captured the views of the different healthcare cadres working in two thirds of the health facilities of each district. The study was conducted in two of the 27 health districts in the country, which means the findings may not be applicable to the rest of the health system. The concordance in the personal and perceived organisational values in these two dissimilar districts, however, suggests that similar findings may be elicited in other health districts. The very strong similarity and distribution of the values and culture with Cape Town's primary care services also suggests that this state of affairs may be prevalent in the region.

3.3.5 Conclusion

The primary healthcare workers in Mahalapye and Ngamiland health districts perceived the organisational culture of the health districts to be mostly limiting organisational effectiveness. The health workers' personal attributes were strongly correlated with the transformed culture they desired to see in their health districts, reflecting personal capacity to effect the changes. The

employees' personal attributes and those they want to see in the future, transformed organisation are in keeping with what is known about organisational cultures and leadership styles that create employee satisfaction, organisational commitment and retention. Transformation of the leadership from a bureaucratic controlling style focused on keeping the status quo to a more supportive type is urgent in order to restore employee trust and retain them in primary care.

There is an urgent need for organisational transformation of the healthcare services at the district and national levels to translate the espoused organisational values to the felt culture. This transformation should accentuate employee experience with an emphasis on accountability, transparency, professional growth, staff recognition and shared decision making. Opportunities for professional growth as well as employee recognition are well-known to improve healthcare worker motivation and retention.

Leadership have the greatest influence in creating and sustaining the prevailing organisational culture. Leadership development is therefore imperative at all levels of the health system for organisational transformation to succeed.

Implementation research to explore whether developing more supportive leaders will improve employee motivation and retention is required. Additionally, investigation of aspects of organisational transformation that will significantly impact staff motivation and retention in the Botswana primary healthcare services will need to accompany the transformation.

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3.3.7   Conflict of interest

The authors declare that they have no financial or personal relationship(s) that may have inappropriately influenced them in writing this article.

3.3.8   Author contribution

ON (University of Botswana, Faculty of Medicine), NP (University of Botswana School of Nursing) and RM (Stellenbosch University, Division of Family Medicine and Primary Care) conceptualised the research

ON facilitated data collection and wrote the manuscript.

RM helped interpret the results, reviewed the manuscripts and approved the final manuscript.

RM and NP reviewed the manuscript and approved the final manuscript.

All the authors agreed to be accountable for all aspects of this manuscript.

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3.4 HOW TO CREATE MORE SUPPORTIVE SUPERVISION FOR PRIMARY HEALTHCARE: LESSONS FROM NGAMILAND DISTRICT OF BOTSWANA: CO-OPERATIVE INQUIRY GROUP

By:

Oathokwa Nkomazana

Faculty of Medicine, University of Botswana, Gaborone, Botswana

Robert Mash

Division of Family Medicine and Primary Care, Stellenbosch University, Cape Town, South Africa

Silvia Wojczewski

Unit Ethnomedicine and International Health, Department of General Practice and Family Medicine, Centre of Public Health, Medical University of Vienna, Vienna, Austria

Ruth Kutalek

Unit Ethnomedicine and International Health, Department of General Practice and Family Medicine, Centre of Public Health, Medical University of Vienna, Vienna, Austria

Nthabiseng Phaladze

School of Nursing, University of Botswana, Gaborone, Botswana

Correspondence to:

Oathokwa Nkomazana

Email: nkomazanao@mopipi.ub.bw

Postal address: University of Botswana School of Medicine, P/Bag 00713, Gaborone, Botswana

3.4.1 Introduction

Primary healthcare makes an important contribution to achieving equitable access to comprehensive and cost effective health services.[1] Effective primary healthcare services in many low-and-middle-

income countries, however, have been hampered by severe shortages and inequitable distribution of the health workforce.[2-5] Migration of health workers has exacerbated the shortage and inequity in many of these countries.[3,4,6]

Multiple innovative strategies have been tried to increase the number of healthcare workers, distribute them and retain them especially in rural and remote areas.[7,8] These innovations have comprised educational, fiscal and regulatory approaches as well as diverse incentives and have had varying degrees of success.[5,7-10] Based on existing evidence of effective retention strategies, Buykx et al developed a framework to guide retention interventions.[11] While the emphasis was on 'bundling' multiple strategies for efficacy, the framework underscores the centrality of effective management, collegial support and supervision.

Botswana has a documented shortage of healthcare workers which is worse in primary care.[2] The scarcity of primary healthcare workers has been attributed to inequitable distribution favouring towns and hospital care, an increased need for health workers because of the HIV pandemic, and high attrition.[2,12] Poor working environments and living conditions as well as inadequate human resource management practices, including poor support and supervision, are the main contributors to poor health worker motivation and high attrition.[12] The supervision was perceived to be either authoritarian or inadequate and incompetent.[12,13]

Supportive supervision has been shown to improve health workers' satisfaction, motivation, performance, retention and may also enhance competence and patient outcomes.[14-16] However, implementation of supportive supervision can be hindered by the entrenched authoritarian supervisory paradigm.[14] A shift to supportive supervision demands a significant paradigm shift, which supervisors may not always find socially or even culturally acceptable.[14,17] Additionally, there is a dearth of successful supportive supervisory practices in low- and middle-income countries to use as benchmarks.[15]The socio-cultural barriers to supportive supervision may be accentuated in Botswana where many of the healthcare workers have migrated from other African countries.[2]

This article reports on the findings of participatory action research whose aim was to change the management and supervisory practice of the district health management team (DHMT) and cluster heads in order to discover how to create a more supportive environment for primary healthcare providers. Because of its focus on enhancing practice and expanding knowledge and understanding of the process of change, the co-operative inquiry group was deemed the most appropriate method to address the socio-cultural barriers to supportive supervision.[18]

3.4.2 METHODS

3.4.2.1 Study design

The cooperative inquiry group (CIG) is a form of participatory action research that involves a cyclic process of planning, action, observation, and reflection (Figure 3.9).[18-21] The CIG method is a way of "working with professionals who would like to reflect on and change their practice" and of "learning and reflection … [on] pertinent everyday practice related problems and attempting to resolve them as part of the research process".[18, 21,]
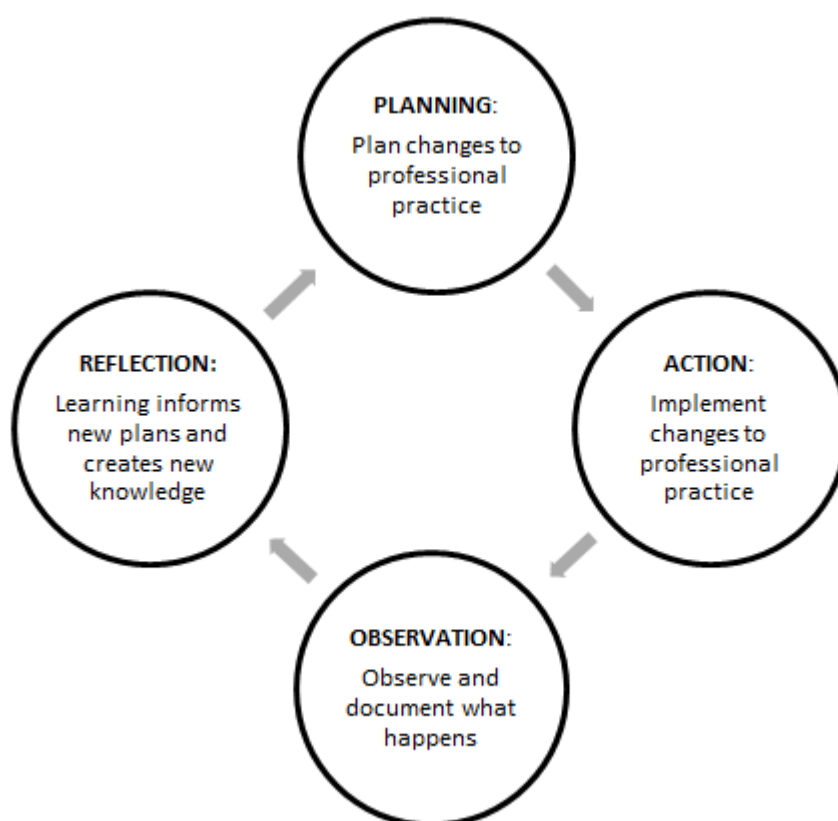
Figure 3.9: The cooperative inquiry action-reflection cycle [18,19]

3.4.2.2 The setting

The Ngamiland health district (Population: 74792), which has 29 primary healthcare facilities (clinics and health posts), is in the extreme North Western part of the Botswana and is both rural and remote. The district has many areas with very difficult terrain which are inaccessible especially during the rainy season. The headquarters of the district is in Maun, where the DHMT and cluster heads are based.

The Ngamiland DHMT was headed by a public health specialist, who was responsible for the overall leadership of the district health services. The head of preventive services, a senior nursing officer, had oversight of the primary healthcare and public health services. The head of curative services, a doctor,

was mainly responsible for hospital based clinical care. The head of corporate services, an administrator, was in charge of all the support services. The one principal nursing officer was mainly accountable for hospital based nursing services while the subordinate principal nursing officer was the direct supervisor of the cluster heads. (Figure 3.10). The primary care clinics and health posts were functionally organised into seven clusters, each feeding into a larger 'mother' clinic. Each cluster was managed by a cluster head who was a nursing officer based at the larger clinic in the cluster. These were the direct supervisors of the healthcare workers in the clinics within their clusters.
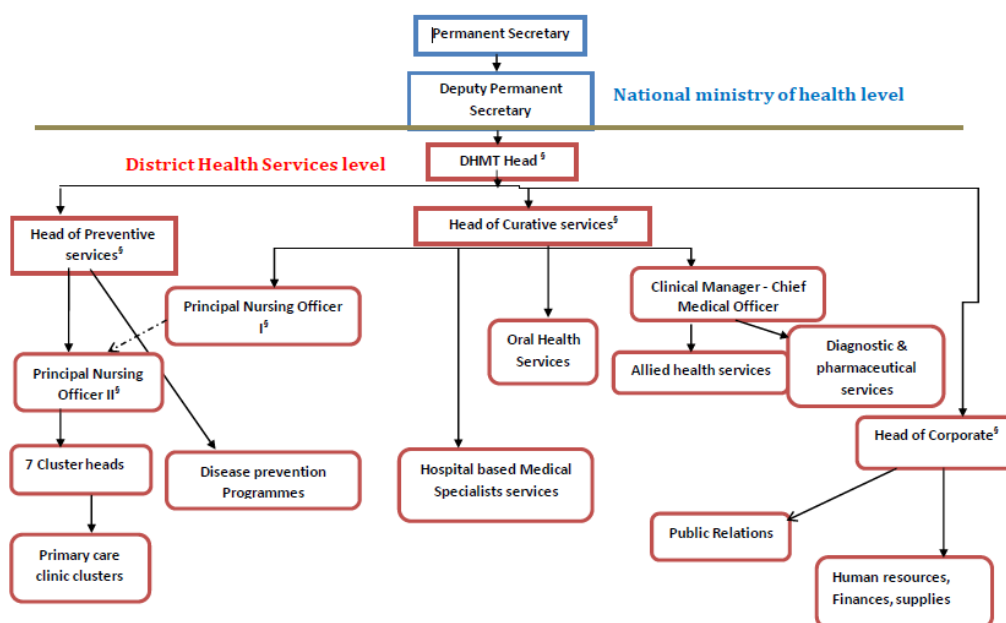
[§] Member of the District Health Management Team

Figure 3.10: The organogram of the Ngamiland District health services

At the time of this research there were no guidelines for supervision of primary healthcare workers. However, all government employees, including primary healthcare workers, are mandated to sign an annual performance contract with their supervisors. The supervisors are therefore expected to meet at least quarterly with their subordinates to review progress and address challenges but these meetings rarely took place.[12] The interaction between the supervisors and their subordinates was largely limited to submission of mandatory statistical reports, passing on directives from the national ministry of health and crisis management when problems arose.[12,13] Both the DHMT and cluster heads had scheduled regular meetings: monthly for the DHMT and weekly for the cluster heads.

3.4.2.3 The CIG process

Members of the DHMT and cluster heads were invited to a meeting in Maun where the findings of prior research to assess the deficit in human resources for primary health in Botswana were

presented. One of the important findings of the research was that there was inadequate support and supervision of primary healthcare workers, which had led to poor motivation, high attrition and poor patient care. [12] They were invited to participate in a co-operative inquiry that would address the question "How can managers change their practice to create a more supportive environment for primary care providers?" Although they were initially sceptical about the validity of the CIG as a research method, all the managers consented to commit a year to participating in the study. Each group member was given a journal to record their actions and reflections. The group was trained to reflect using the adapted reflectivity 5-step method [21] (Table 3.18), as well as to give and receive feedback.[22]

Table 3.18: Adapted reflectivity 5-step [19]

1.	Read and re-read your observation and observe your reaction, thoughts and emotions, while doing justice to the text. Write them down one by one
2.	What main issue jumps out for you?
3.	Formulate a theme from/on the basis of the issue.
4.	Scrutinise your relationship with the theme. Look at whether this theme occurs often in your life, your work? Is this part of your pet theory? Do you want to re-formulate your theme here?
5.	Select a theoretical concept (or lens) to give new meaning and understanding to the theme
6.	Continue this process until the text is exhausted

The CIG meetings were conducted in quiet venues where refreshments were served, but there were no financial incentives for participation. The discussions were conducted in English, the official language of organisational transaction. The CIG went through three cycles between March 2013 and March 2014, each lasting two to six months (Table 3.19). ON facilitated three while RM facilitated two of the CIG meetings. At the meetings each group member presented their personal actions, reflections and new knowledge by responding to these questions: What did I do? What happened? What was different from what I expected? What did I not do? What did I do instead? What have I learnt from this? What is the issue now? What specific action should I take?[22] Other members of the group then gave feedback to the presenter. After individual presentations, the group reflected on overall experiences and what they had learnt as a group. They then planned individual and collaborative actions for the subsequent cycle.[18,22,23] The facilitator reminded the group of the research question at each meeting to ensure alignment of actions and reflections with the purpose of the inquiry.

Table 3.19: Summary of the facilitated CIG meetings

Date	Type of Meeting	Members of CIG in attendance
28/02/13	Introductory meeting	12
17/04/2013	Planning meeting	9
03/07/13	Co-operative inquiry group meeting	12
11/09/13	Co-operative inquiry group meeting	6
15-16/03/14	Building consensus of learning	9

The group was reminded of the objective of the inquiry at each meeting to ensure alignment of actions and reflection with the purpose of the inquiry. The group dynamics and facilitation were democratic and collaborative, and commitment to practical action and experience was encouraged. Ownership of the inquiry process was gradually transferred to the group and the process was documented in personal and group reflections and experiences. All these were critical to the quality of the inquiry process.[16]

At the meeting of the 11/09/2013, in addition to the usual feedback, the results of a survey on the perceived current and desired organisational culture in Ngamiland health district were presented to the group. The results of the survey have been fully described elsewhere.[13] The cultural values survey gave insight into how the district health service was experienced by the primary healthcare workers and what kind of organisational and leadership transformation would create a more enabling and supportive environment.

3.4.2.4 Construction of new knowledge

The individual contributions by group members and the group discussions were audio recorded using digital voice recorders and then transcribed verbatim. After each meeting ON summarised the transcripts and circulated, via email, the synopsis of the individual feedback and reflections, group's learning and further plans for action during the subsequent cycle. Key insights and learning from the group's reflections during the CIG process are presented in the results section with quotations extracted from the transcripts to support and illustrate the learning in the words of the CIG members. [18,22]

The final meeting of the CIG group in March 2014 constructed a consensus of the group's learning using the nominal group technique to identify and prioritise the key issues.[24,25] Each member of the CIG was given an A4 sheet of paper and asked to quietly write their responses to the question: How can managers change their practice to create a more supportive environment for primary care providers? After about 15 minutes the group came together and each member in turn gave one answer to the question until all the answers were recorded on a flip chart. The group then clarified

the items and those that overlapped or were duplicates were combined. Each member was then given a voting paper and asked to write down 5 items that were the most important for them and score them from 5 (most important) to 1 (least important). The scores were then summated and the items ranked from what the CIG considered most to least important in terms of their learning.

3.4.2.5 Ethical consideration

Approval to conduct the study was given by the University of Botswana's Institutional Review Board, the Ngamiland district ethics committee, the Stellenbosch University Health Research Ethics Committee: Protocol Number: S13/03/051 and the Botswana Ministry of Health Health Research Development Committee: Reference No: PPME 13/18/1 V11 (368). Written consent was obtained from each study participant.

3.4.3   Results

All the 12 (100%) district health services managers, which included five DHMT members and seven cluster heads, participated in the CIG. Two of the members were male doctors, one a female administrator and nine were female nurses. Two mangers left the district during the twelve months of the inquiry and one was replaced by a new member who also joined the inquiry group.

The key actions carried out by the members of the CIG included developing their supervisory visit schedules and sharing them with their subordinates, conducting supervisory visits, addressing the difficulties identified by the supervisees during the visits and optimising the use of transport. The managers also adapted a supervisory checklist to use during their visits.

3.4.3.1 Key insights and learning

Important lessons and key insights emerging from the CIG are discussed below.

3.4.3.1.1   Current supervision practice

Managers recognised that they had not had a culture of regular supervisory visits to their supervisees in the workplace and had tried to supervise remotely from their offices in Maun. They also realised that their current supervisory style was top-down and characterised by demanding information and giving directions:

> *"… like the analysis has shown that there is a lot of giving directions [making demands] and at times we just give directions not knowing the other people's side … what they want or what they would like to happen …"* (Cluster head 1) [15/03/14]

3.4.3.1.2   Perceptions of healthcare workers' experiences

The managers reported that the healthcare workers appreciated the new supervisory visits:

> *"…if you visit them they really show they appreciate … they will just be telling you … even if things are so difficult … [it] shows that you care"* (Cluster head 2) [03/07/13]

The managers on the other hand gained new insights into the challenges faced by the healthcare workers, for example the long hours that many are expected to work:

> *"…. So we were still seeing patients at that late hour … I have learned that those guys [healthcare workers] are really working hard. They are trying their level best …"* (DHMT member 1) [03/07/13]

One of the DHMT members visited some of the remote clinics for the first time and was shocked by the deplorable working and living conditions of the healthcare workers:

> *" … I have been taking reports from the nurses maybe by phone … I never visited these facilities. … I [recently] visited three remote facilities and I realized that their living conditions … are very, very, very poor …"* (DHMT member 2) [11/09/13]

3.4.3.1.3   Appreciation of the need for change in the supervisory paradigm

The managers realised that they needed to change their management style to include the more 'human' elements of supervision and each manager selected one or more values to transform their supervisory style. The selected values were teamwork, information sharing, transparency, affirmation, caring, staff health and collaboration. Each manager defined their understanding of the selected values as outlined below.

The values of transparency and information sharing encompassed making the organisational rules and regulations known to employees as well as sharing any pertinent information affecting their work:

> *"… at the moment people discover what the rules are when they have transgressed them … [we should] be more transparent about the expectations …"* (DHMT member 2) [15/03/14]

The values of caring and looking after staff health meant trying to create an environment that encouraged healthcare workers to be open with their supervisor about their stress and health issues:

> *"… I am personally looking at caring **…** we need to really care about them and this will look at things like their health … so that even if they have problems they can freely come to me …"* (Cluster head 3) [15/03/14]

The new caring supervision style encouraged healthcare workers to share personal problems which were then addressed:

> *"… a lot of our staff members … were bringing sick leaves … we found out that they didn't have any money … they were living above their means. … didn't have money even for transport … they ended up going to get a fake sick leave … then it was agreed by the management that there should be some financial training … So this workshop was conducted last month for each and every person …"* (Cluster head 5) [15/03/14]

The value of affirmation entailed acknowledgement, appreciation and recognition of performance and excellence:

> *"… when you work with people you should always appreciate what they do … So I visited all of my facilities and during our interactions I appreciated what they are doing so that this can motivate them …"* (Cluster head2) [15/03/14]

The value of collaboration meant shared decision making and problem solving as opposed to all decisions and plans being made by the supervisors:

> *"…we will sit down and make decisions together so that … everybody has an input on what is supposed to happen …"* (Cluster head 1) [15/03/14]

The value of teamwork emphasised the importance of each employee to the success of the whole team:

> *"… teamwork, I was looking at people … regardless of their rank in the organisation to look at themselves as being important in the organisation …"* (DHMT member 3) [15/03/14]

3.4.3.1.4   Barriers to supportive supervision and efforts to overcome them
Hindrances to supportive supervision included inadequate supervisory skills, lack of transport, and lack of support from the national Ministry of Health. A number of managers felt inadequately prepared to deal with difficult and uncooperative subordinates:

> *"… I have realized that even in one mother clinic the nurses there they are having problems with communication … Now I was just confused I didn't know what to do …"* (Cluster head 5) [11/09/13]

> *"…I had a problem in my cluster because of drivers not cooperating. I had to call all of them but unfortunately one of them was a bit problematic … he didn't want to cooperate. … I've learnt that a supervisor should have a skill of leading …"* (Cluster head 7) [03/07/13]

The other big challenge was unscheduled meetings, workshops and visits by the national Ministry of Health, which significantly interfered with the managers' ability to effectively implement their own plans to the point where they sometimes felt defeated:

> *"… I feel the sense … [of] being defeated … if you are told that the permanent secretary is coming … you cannot say "no" or leave it to someone else …"* (DHMT member 3) [03/07/13]

Shortage of transport was one of the major challenges faced by the primary healthcare workers and supervisors consequently managers were sometimes stranded in remote areas when conducting scheduled supervisory visits:

> *"… I had to stay in Toteng to wait for any transport from Maun to Sehithwa or that other side … it's really a very big challenge because I scheduled that [supervision visit] but still with their transport [shortage] it was difficult …"* (DHMT member 1) [03/07/13]

The managers realised though that the shortage of transport was exacerbated by a failure to utilise the existing vehicles and drivers optimally to benefit all the clinics:

> *"….When the one clinic did not have a vehicle, drivers from clinics with vehicles just passed it without going to check if there was anything they needed transported to Maun … "* (Cluster head 7) [03/07/13]

The managers also recognised that there were opportunities to piggyback their supervisory visits onto other activities in order to ameliorate the transport challenge:

> *"… I realized that the anti-Retroviral [programme] has regular transport … there is also space for me to go for supervisory visits …"* (Cluster head 3) [11/09/13]

The managers also started collaborating amongst themselves to solve complicated transport challenges:

> *"…one of the clinics in my cluster [operates for] 24 hours … it has been running with three drivers … none of them were knocking off … so I … called other cluster heads [as] … some of their drivers were just not doing anything because they had no vehicles … and two drivers … came to join my drivers …"* (Cluster head 7) [03/07/13]

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3.4.3.1.5   Appreciation of professional growth afforded by the CIG process

The managers appreciated the new skills of reflection, giving and receiving feedback and listening actively, which they viewed as important to their personal development as leaders and which were different from the usual theoretical workshops. They also discovered their ability to influence some of the challenges that plagued them:

> *"…I think … I have to be very honest with the people above [Ministry of Health management] and give them the real picture. Because when … I agree to all their schedules … it's like it is fine …"* (DHMT member 8) [03/07/13]

3.4.3.1.6   Ownership of the transformation process

Although initially the CIG members referred to the CIG as "your research project" once they appreciated its impact they embraced it as theirs:

> *"… my project now … it's better I shift things now to … look into all facilities one by one and … improve their conditions of living, especially in the issue of maintenance …"* [DHMT member 2] (11/09/13)

By the 16th March 2014, the CIG members were confident they could implement supportive supervision without external facilitation as they had already started to integrate it into their internal processes.

3.4.3.2 Consensus on the findings of the CIG

Members of the inquiry group collectively contributed 20 items they considered key to supportive supervision in terms of their learning (Table 3.20). Availability of resources and training of managers were considered the most important enablers of supportive supervision.

Table 3.20: Consensus on how to strengthen supportive supervisory practice of district health managers

Priority Level	How can managers change their practice to create a more supportive environment for primary care providers
1	Provide the resources needed for supervision, especially transport. Empower district health management team to have skills in supervision, such as conflict resolution
2	Improve sharing of information from district health management team and cluster heads to health workers
3	Transform the organizational culture (values) to bring more congruence between actual experience and espoused/desired values
4	Offer psychosocial support to staff/be aware what is available to improve staff wellness
5	Create space during the supervisory visit to meet with staff and hear what is happening and do collaborative problem solving Give feedback to MOH on reality of the situation on the ground such as staffing levels and transfer policy
6	Have norms and standards of what should be in place in terms of equipment, medicines and human resources according to facility level. Have an appreciative style of supervision (not the blame game)
7	Change the leadership style to be more of a collaborative practice (teamwork) and to model this downward
8	Clarify roles and contribution to supervision of primary healthcare workers by different levels of managers Improve coordination between managers/supervisors on how they supervise Have a policy on length of stay in rural areas Build resilience of leaders by offering them support e.g. psychological/emotional
9	Increase awareness of the importance of supervisory visits in district health management team Respond to the deficiencies in resources at clinics/health posts level Have monitoring and evaluation to hold people accountable for progress with actions/responsibilities
10	Give constant feedback to the healthcare workers on progress of jointly identified challenges and strategies. Benchmark ourselves against best practice in supervision Recognize leaders/managers through promotion

3.4.4 Discussion

This study has demonstrated that developing supportive supervision for primary care providers in Ngamiland required significant leadership and contextual transformation. The managerial leadership of the district gained insight into the need for personal development and to build more effective communication and relationships between multiple role players. In addition, it became clear that major contextual changes were required to provide an environment within which supportive supervision could flourish. The most essential changes within the context included the need for transportation and a culture of visiting the healthcare workers, even in remote rural settings.

District health managers recognised the need to change their supervisory paradigm from authoritarian to supportive supervision.[14] The participatory process enabled them, with assistance from colleagues, to challenge their assumptions and change their practice.[20,21] The change in paradigm was a necessary step to implementing supportive supervision, which requires motivation, investment and shift in behaviour.[14] Moreover, dictatorial supervision, demotivates healthcare workers, while

supportive supervision has been shown, though inconsistently, to improve health workforce performance, productivity, quality of care, motivation and retention.[16, 26-28]

Although the managers in Ngamiland health district were inspired to be supportive supervisors, motivation can only be sustained if identified obstacles are addressed and supervision is prioritised. The Ministry of Health has an important role to develop strategies that support supervisors and improve their performance.[29,30] Despite formidable challenges, the managers made significant inroads in solving some of them and were optimistic that with adequate support, some degree of autonomy and sufficient resources they could resolve many more.

The ideas expressed in the CIG's consensus of learning correlate very closely with the organisational values that the primary healthcare workers in Ngamiland and Mahalapye health districts would like to experience in the district health services. These sought after values were transparency, professional growth, staff recognition, shared decision-making, accountability, productivity, leadership development and teamwork.[13] Similar organisational values were also called for by primary healthcare workers in Cape Town suggesting that these challenges may be widely prevalent in district health services in the region.[31]

Locally developed evidence on how to create more supportive supervision is more likely to be seen as relevant, applicable and feasible to implement by policymakers in Botswana and the region.[14,15] It is notable, however, that the consensus contains many of the tenets of supportive supervision that are recognised internationally, such as a shift from checklists to proactive planning, collaborative problem solving, promoting high standards, teamwork and two-way communication.[14,30,31] Additionally, the learning of the CIG recognised that supportive supervision should be prioritised at all levels of the healthcare system and that it requires adequate resources and skilled supervisors; factors which are known to be integral to successful supportive supervision.[14,30] Despite scheduling challenges, flexibility, excellent rapport and empathetic communication facilitated value-based reflectivity with busy district managers in a resource limited setting. The CIG approach therefore offers a potential vehicle for the transformative process necessary to make the well-known tenets of supportive supervision a reality in district health services.

The CIG process remained well aligned with its purpose and the members gradually developed a sense of ownership of the inquiry process. The range of possible actions by the CIG members was significantly limited by the context, particularly the lack of transport. Reflectivity developed well during the inquiry as demonstrated by the richness of the final consensus. Group meetings were

difficult to organise due to the busy schedules of the management team and more regular meetings might have enabled the inquiry to progress faster and to go deeper.

The consensus on supportive supervision was developed in one of Botswana's 28 health districts which may limit its applicability nationally. This however is unlikely as previous studies by the team have shown that the primary health workforce in Botswana have almost identical experiences of the district health services. [12,13] The consensus is also congruent with what is known to be important for supportive supervision and may thus may be transferrable to wider settings.[14,29, 30, 32,]

There is a risk of desirability and confirmation biases especially because of the hierarchical composition of the group and some participants may have deferred to the learning of more senior members. However, the democratic nature of the CIG with emphasis on individual action, reflection and learning significantly reduces these sources of bias.[18]

This study was part of a quasi-experimental research with pre and post motivation and organisational culture surveys and the results of the surveys are still to be published. However, further research is still required on the healthcare workers' perceptions of the changes and how these can be sustained.

3.4.5 Conclusion

Through participatory action research, district health managers in the Ngamiland health district have come to appreciate the value of supportive supervision and have changed their management style. The managers also became aware of the experiences of the primary healthcare workers in their district and the challenges to implementing supportive supervision. Furthermore the managers developed a consensus on what is required to develop supportive supervision that can potentially be integrated into the management of district health services across the country and may be applicable in other similar settings. Supportive supervision should be prioritized at all levels of the health system and be adequately resourced and accompanied by training and mentoring of the managers.

3.4.6 Paper Context

Supportive supervision is associated with higher levels of health workers motivation, performance, retention and patient outcome. The bulk of this evidence however is derived from high-income countries. Nevertheless, this paper reports that, through a participatory process, district health managers in resources limited settings can become supportive supervisors. Additionally, for supportive supervision to flourish the supervisors must possess the technical skills and appropriate attitudes and be supported by an enabling policy and resource environment.

3.4.7 Conflict of interests

The authors declare that they do not have any conflict of interest.

3.4.8 Author contribution

ON (University of Botswana, Faculty of Medicine), NP (University of Botswana School of Nursing) and RM Stellenbosch University, Division of Family Medicine and Primary Care) conceptualised the research.

ON facilitated data collection, analysed the data and wrote the manuscript.

RM facilitated data collection, assisted in the data analysis and interpretation, reviewed the manuscripts and approved the final manuscript.

SW, RK and NP participated in the data collection, analysis and interpretation, reviewed the manuscripts and approved the final manuscript.

All the authors agreed to be accountable for all aspects of this manuscript

3.4.9 Authors' information

ON: Ophthalmologist; MSC in community eye health; PhD candidate at Stellenbosch University (2013-2015). Associate Programme Director at the Faculty of Medicine, University of Botswana

RM: Family physician; PhD in family medicine. Professor and Head of Family Medicine and Primary care at the Faculty of Medicine and Health Sciences, Stellenbosch University.

SW: Medical Anthropologist, Mag. phil. (equivalent to Master), Unit Ethnomedicine and International Health, Dept. for General Practice and Family Medicine, Center for Public Health, Medical University of Vienna

RK: Medical Anthropologist; Associate Professor. Director: Unit Ethnomedicine and International Health, Department for General Practice and Family Medicine, Centre for Public Health, Medical University of Vienna

NP: Associate Professor, Head of School of Nursing, PhD Nursing Administration and Community Health Nursing. University of Botswana

3.5.0 Acknowledgements

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Figure 3.11: Part of the co-operative inguiry group during one of the sessions

Chapter 4: Conclusions and recommendations

4.1   INTRODUCTION.

In this chapter I present the conclusions of the research, discuss the impact of the research to date, as well as make recommendations for policymakers and further research. This is point 8 of the overview of the thesis given in Chapter 1 (Figure 1.4) and brings the thesis full circle.

4.2   CONCLUSIONS RELATED TO THE OBJECTIVES

In this section I conclude on each of the study objectives that were described in Chapter 1.

4.2.1   Objective 1

To analyse the existing databases and reports on the health workforce in Botswana in order to quantify and describe the situation with regard to the human resources for health.

The Ministry of Health is the sole employer for the public health service. In 2007/2008 there were relatively high vacancy rates for different types of health workers, especially in hospital care. Plans to increase the numbers of health workers at all levels of health care by 2016, if not coupled with a significant injection of new health workers, will exacerbate the vacancy rates. With four doctors and 42 nurses per 10 000, the density of health workers in Botswana is relatively high compared to its neighbours, but this is still too low to enable the country to achieve universal health coverage. The number of healthcare workers in primary healthcare is very low because of the limited numbers of positions. Furthermore, Botswana's health workers are more densely distributed in urban compared to rural areas. The country also has a worrisomely high dependence on an expatriate health workforce and, until recently, on out-of-country training of doctors and dentists and allied health professionals. Attraction and retention of internationally-trained health workers has been unsuccessful and localisation of training is intended to more sustainably meet the country's needs.

4.2.2   Objective 2

To explore the perspectives of policy makers, healthcare workers and community members on the causes of shortages in human resources for primary health care.

The different stakeholders in Botswana perceived that there was a shortage of healthcare workers, which was worse in primary healthcare and rural areas. The causes of the deficit included an increased need for health services, inequitable distribution of healthcare workers, migration and too few such

workers being trained. Migration was mainly the result of unfavourable personal and family factors, weak and ineffective management of healthcare and human resources, low salaries and inadequate incentives for rural and remote area service. To address the scarcity the country should train adequate numbers of competent healthcare workers and distribute them equitably to sufficiently resourced healthcare facilities. These healthcare workers should be competently managed and adequately remunerated and the living conditions and rural infrastructure should be improved.

4.2.3   Objective 3

To explore the perspectives of policy makers, healthcare workers and community members on potential solutions to the shortages in human resources for primary health care at both national and regional levels.

The stakeholders believed that Botswana should introduce mid-level healthcare workers and reinstate enrolled nurses as these tend to be less mobile and, therefore, more likely to improve the shortage of healthcare workers—especially in rural areas. They also wanted better incentives for rural service, which should include opportunities for promotion and further studies, better housing as well as a hardship allowance and provision of transport for monthly groceries shopping for those in remote rural areas. The stakeholders wanted the policies on transfer and length of stay in rural areas to be made clearer and also to be fairly applied. There was also a call for improvement of the health facilities' infrastructure, equipment and drug availability as well as better support and supervision of healthcare workers. There was an understanding that inter-sectorial collaboration was required to tackle the poor rural infrastructure, which should be part of the strategy to retain healthcare workers in these areas.

4.2.4   Objective 4

To evaluate the organisational culture of the primary healthcare organisation as experienced by primary healthcare workers in the Ngamiland and Mahalapye health districts.

The organisational culture in the district health services was perceived as being negative with significant misalignment between current organisational culture and personal, espoused organisational and desired organisational values. There is, therefore, an urgent need for organisational transformation of the healthcare services at the district and national levels to translate the espoused organisational values into the felt culture. This transformation should focus on employee experience with an emphasis on accountability, transparency, professional growth, staff recognition, shared decision making and leadership development. Implementation research to explore whether developing more supportive leaders will improve employee motivation and retention

is required. Additionally, there is a need for investigation of aspects of organisational transformation that significantly impact staff motivation and retention in the Botswana primary healthcare services.

4.2.5 Objective 5

To explore how to strengthen the supportive supervisory practice of the district health management team and mid-level health managers in one district as a pilot intervention that may impact on recruitment and retention of healthcare workers.

Supportive supervision was identified as an important aspect of organisational culture transformation in the Botswana district health services. Through participatory action research, district health managers in the Ngamiland health district came to appreciate the value of supportive supervision and changed their management style to be more supportive of their subordinates. The managers also became aware of the experiences of the primary healthcare workers in their district and the challenges to implementing supportive supervision. Furthermore the managers developed a consensus on what is required to develop supportive supervision that can potentially be integrated into the management of district health services across the country.

Finally, a number of barriers to supportive supervision were identified. Changing the supervisory practice of district health managers across the country is urgently needed to improve quality of patient care, performance, productivity, motivation and retention of Botswana's primary care workforce. Supportive supervision should therefore be prioritised at all levels of the health system and be adequately resourced and accompanied by participatory training and mentoring of managers. Implementation of supportive supervision should be coupled with research to measure its impact and ascertain the determinants of successful implementation.

4.3   CONCLUSIONS RELATED TO THE CONCEPTUAL FRAMEWORK

The conceptual framework for the thesis is presented again below (Figure 4.1) and the key conclusions of the thesis are related to how they add new knowledge to the conceptual framework.

4.3.1   Factors contributing to shortage of healthcare workers

Inadequate numbers: Botswana, like many countries in the region, has inadequate numbers of healthcare workers with only four doctors and 42 nurses for 10 000 population with a significant urban-rural imbalance (Figure 4.1). [Article 1]
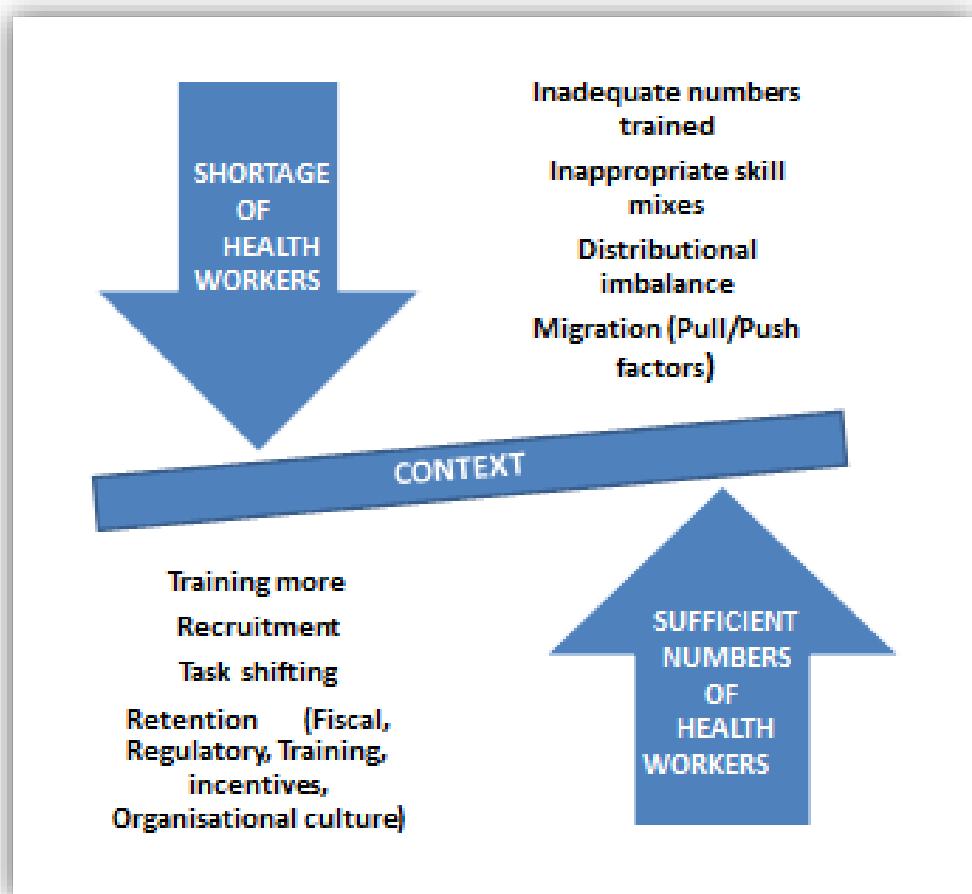
Figure 4.1: conceptual framework of the thesis

Inappropriate task shifting and task allocation: The stakeholders perceived inappropriate skill mixes with an overrepresentation of general nurses and ineffective task allocations, which was exacerbated by the poor career structure of nurses (Figure 4.1). [Article 2]

Migration: Botswana's healthcare workers migrate from rural to urban areas and from public health services to private or nongovernmental organisations, exacerbating the shortage of healthcare workers in rural areas and public services (Figure 4.1).[Article 2] The determinants of migration were mostly 'push' factors although stakeholders also referred to greener pastures as possible 'pull' factors. The 'push' factors included separation from family, poor rural infrastructure, poor schools for children, lack of opportunities for continuing professional development and promotion, inadequate remuneration and incentives, poor working conditions and lack of support and supervision. The 'pull' factors were mainly the hope of better remuneration, opportunities for further training and better schools for children elsewhere (Figure 4.1).[Article 2]

Knowledge gap addressed: The research has quantified the healthcare workers to population ratios of the different types of districts in the country: rural, urban and rural with urban villages as well as the current and anticipated vacancy rates in hospital and primary care (Figures 1.2 and 4.1).[Article 1] This information is important for planning interventions to address the shortage and also as a baseline against which intervention can be monitored. The qualitative part of the research has explored the causes of shortage of healthcare workers in Botswana. Although the causes of the shortage found by the study are not peculiar to Botswana, prior to this research there was only anecdotal information on the determinants of inadequate numbers of health workers in the country.

4.3.2   Factors contributing to sufficient numbers of healthcare workers

Training: Botswana has relatively higher numbers of healthcare workers per population compared to many countries in sub-Saharan Africa.[1] Botswana's strategy to build an adequate health workforce included training of different health cadres , the majority of whom are trained in the country (Figure 4.1). Prior to 2007 though, the training of doctors and many allied health professionals was outsourced to other countries with the result that many failed to return to the country upon graduation.[Articles 1and 2]

Recruitment: Botswana also recruited healthcare workers from other countries, especially from other sub-Sahara African countries: 71% of all the doctors registered to practice in 2012 were non-Batswana (Figure 4.1).[Article 1]

Task shifting: The primary healthcare services in Botswana are nurse-run and nurse-led. [Articles 1, 2 and 3] The tasks that are normally done by doctors, counsellors, and pharmacists are done by nurses who are available in higher numbers in the country (Figure 4.1). This task shifting is, however, resented by nurses who see it as exploitation as it is not coupled with additional remuneration and recognition.[Articles 1 and 2].

Retention: Botswana's strategies to retain healthcare workers in primary healthcare and public health services, especially in rural areas, are deemed inadequate (Figure 4.1). The remuneration is perceived as unattractive and there are no incentives for rural services. [Article 2] The opportunities for in-service training and career progression are limited especially in rural areas.

The organisational culture of the district health services was perceived as negative and potentially limiting to organisational performance (Figure 4.1). [Article 3] This may actually increase the risk of attrition of healthcare workers and negate retention efforts (Figure 4.1). The co-operative inquiry

group was the intervention to improve the prevailing negative organisational culture of hierarchical top-down supervision to supportive supervision. [Article 4]

Knowledge gap addressed: The research quantified the numbers of healthcare workers trained at government expense over a ten-year period as well the numbers of Batswana doctors working in the country (Figures 1.2 and 4.1). [Article 1] The shortfall between the two numbers gives an estimate of the haemorrhage of healthcare workers from the country. The research also quantified the proportion of doctors working in Botswana who are from other countries, which uncovered a serious dependence of the Botswana health system on expatriate doctors. [Article 1] This is useful baseline information against which interventions to address healthcare worker shortages can be evaluated.

The research has also contributed stakeholder inputs into potential strategies to improve recruitment and retention of healthcare workers in primary healthcare and rural areas in Botswana (Figures 1.2 and 4.1). [Article 2] Getting stakeholder inputs in not only defining the problem but also solutions is important in developing relevant and acceptable strategies.

The co-operative inquiry group developed a consensus on what is required for implementation of supportive supervision in district health services. [Article 4] This list of recommendations can potentially be used to facilitate implementation of supportive supervision in the district health in Botswana, helping to reduce the incongruence between strategy and implementation.

4.4   LIMITATIONS OF THE THESIS

An important limitation of the thesis is the use of quantitative data of differing quality that was collected over many years by different institutions for different purposes. It was therefore not uniform and difficult to collate. Furthermore, the data was not detailed enough to allow an estimation of the changes in the Botswana health workforce ove time. The data also did not have adequate information on healthcare workers in private and non-governmental institutions and therefore likely to grossly underestimate the true human resources for health situation.

The organisational culture survey was conducted as part of the baseline data before the intervention. This was conducted in two districts, the intervention district, Ngamiland, and the comparison districts, Mahalapye. Although the survey was repeated after the intervention, the results were not ready in time to inform the thesis. There was however suggestive evidence that there was a positive change in the organisational culture of the intervention of the intervention district compared to the comparison district. This evidence is being prepared for peer reviewed publication.

4.5   THE IMPACT OF THE RESEARCH TO DATE:

In February 2013, the researcher presented the findings of the stakeholder's perceptions on human resources for health in Botswana to the Permanent Secretary of the Ministry of Health and the Deputy

Permanent Secretary, Corporate Services and the Director for Human Resources. The main issues raised were the non-competitive remunerations, absent financial and non-financial incentives for rural service, unfair and non-transparent transfer and promotion policies as well as poor career structure of nurses. After a very interactive session, the leaders assured the researcher that they are working on addressing many of the issues and grateful for the information, which they would use for advocacy within government.

We were recently informed that this advocacy may have been successful as government is now seriously considering delinking the salaries of healthcare workers from those of the rest of the civil service. The Permanent Secretary also recently informed us that the career structure of nurses has been partly solved. Previously there were many nurses with the same rank in the same health facility, but with different levels of responsibility, for example some of them were assigned to head health units and clinics without any additional reward or recognition. This year saw hundreds of nurses who were in this unenviable situation promoted to higher ranks.

I also presented the findings as part of the input into the stakeholder discourse on attraction and retention of Batswana doctors. This has resulted in the development of a collaborative initiative between the Ministry of Education and Skills Development, the Ministry of Health, the Botswana Human Resources Development Council, University of Botswana and the Botswana Health Professions Council, which has hosted a forum on retention of doctors for three consecutive years. I coordinate these forums, which were jointly hosted by the Deputy Permanent Secretary Corporate Services Ministry of Health and the Dean of the Faculty of Medicine. This initiative's greatest success is the record number of Batswana medical graduates who have returned to Botswana for their mandatory internship: 125 in 2014 alone.

In April 2015 the researcher organised a dissemination workshop for the results of the organisational culture and co-operative inquiry group. In attendance were the leadership of the Ministry of Health, the Department of Public Service Management (the employer of all civil servants), WHO country representative, leaders of the District Health Management Teams and healthcare workers. The Ministry of Health leadership opined that this was very important information, which they want presented to the new Minister as soon as possible as the Ministry is in the process of reviewing its strategy, which is intended to turn it around and improve its effectiveness. The Department of Public Service Management wants the findings to be written up so they can inform the curriculum for training of health managers at the Civil Service College.

The findings of the co-operative inquiry group were also presented at the HURAPRIM review meeting in Khartoum in November 2014. There was consensus at the meeting that supportive supervision should be considered by the other African countries as all health workers, from traditional birth attendants in Mali and Uganda, nurse assistants in Sudan to community health workers and nurses in the nurse-led primary care teams in Soweto, South Africa, will be more productive and have higher motivation if effectively supervised.

The principal researcher had the opportunity in March 2015 to also discuss the research with the medical consultant of the Global Programme of the United States Government Health Resources and Services Administrator, who was leading the site visit to one of the other research programmes that the principal researcher leads. The medical consultant felt that the findings of this thesis represented significant in-country knowledge and expertise that the Botswana Ministry of Health should utilise. He also let the principal researcher know that they have plans to help four African countries, with fragile health systems, develop their human resources for health and will be looking for assistance from the expertise developed in this study.

The findings of the cultural values survey [Article 3] were presented at the 6th Primafamed Workshop on Capacity building and priorities in Primary Care Research in Pretoria, South Africa, 22-23 June, 2014. The findings of the supportive supervision study [Article 4] were presented at the 7th Primafamed workshop meeting, held in Accra Ghana, 4-6 May, 2015 as an oral presentation and at The Network Towards Unity for Health conference in Fortaleza, Brazil as a poster presentation, 19-23 November, 2014.

Based on the work on human resources for health in Botswana, the principal researcher has been invited to be a member of the Health Sector Committee of the Botswana Human Resources Development Council (HRDC). HRDC is a parastatal organisation under the Ministry of Education and Skills Development that has been charged with guiding the development of a human resources capital for Botswana. The health sector committee leads the development of the human resources for health.

4.6   RECOMMENDATIONS

This section makes recommendations for the future and positions the recommendations in the Botswana human resources for primary healthcare context using a conceptual framework (Figure 4.2)
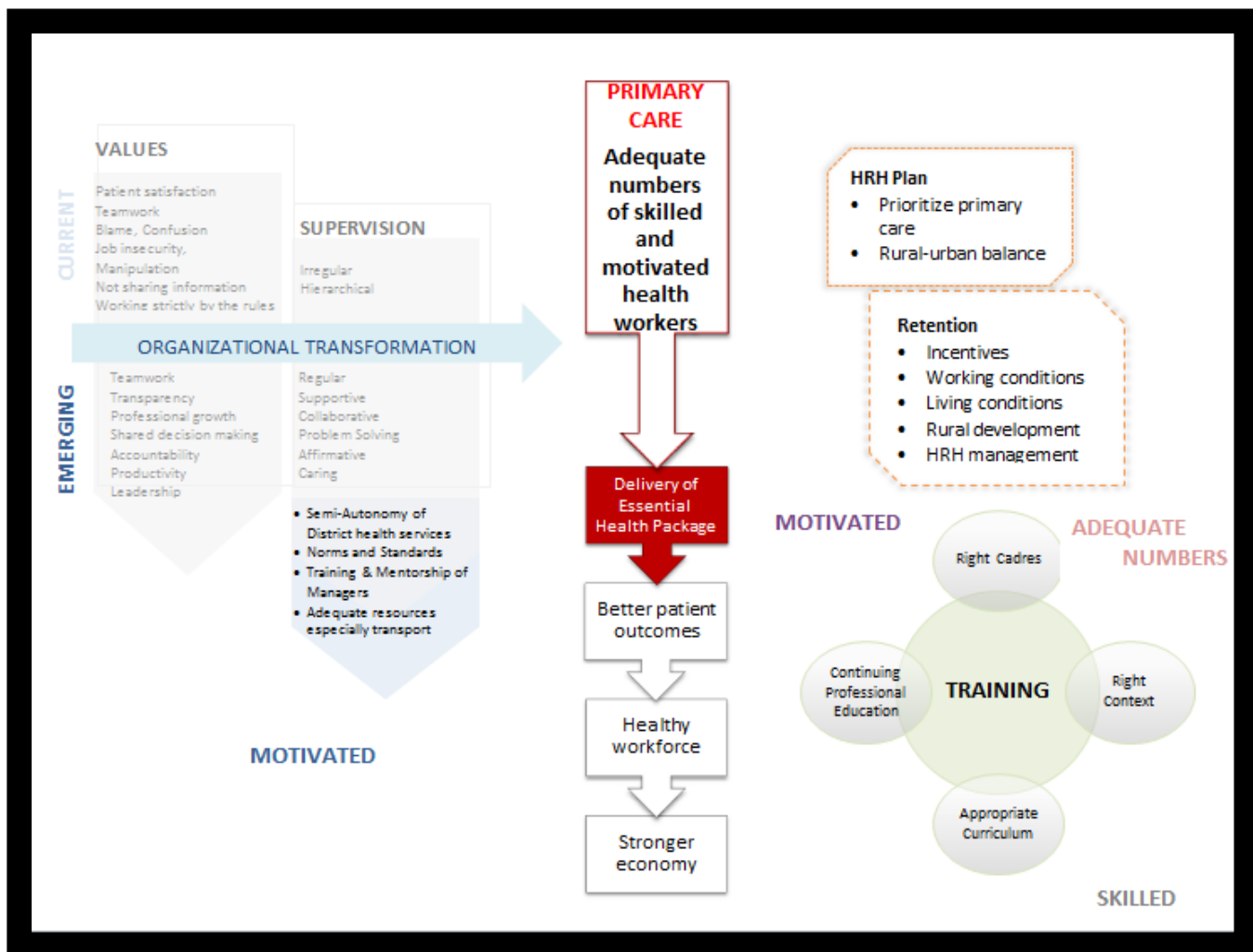
Figure 4.2: Recommendations within the Botswana human resources for primary healthcare context

These recommendations are mostly addressed to the national Ministry of Health, Ministry of Education and Skills Development and district health management teams.

1. The Ministry of Health should, in collaboration with the district health management teams, Ministry of Education and Skills Development, private health service providers and health professions councils, develop a comprehensive and integrated human resource for health information system. The system should be user-friendly and regularly updated. This should be supported with adequate human resources and infrastructure, especially information technology. [Article 1] The system should capture all healthcare workers working in Botswana and be disaggregated according to the level of care. This recommendation is transferrable to all countries in the region as a comprehensive and up-to-date human resource information is important for planning and also for evaluation of interventions to address the shortage of healthcare workers.

2. The human resources for health plans of the Ministry of Health should reflect the national health policy that purports that healthcare in Botswana is based on a primary healthcare model.[2] The human resources in a primary healthcare-based system should be greater in primary healthcare at the base of the pyramid and fewer in tertiary hospital services at the apex of the pyramid. Currently, the healthcare workforce in Botswana's looks like an inverted pyramid with more workers in the hospital-based services than in primary healthcare (Figure 4.2).[Article 1, Article 2] The fewer numbers of healthcare workers in primary care is mainly a result of fewer positions and not a failure of recruitment as vacancy rates are very low. [Article 1] The Ministry of Health should, therefore, create more positions at the primary healthcare level. Higher numbers of these positions should be occupied by cadres with shorter training who will work closely with the communities and are more likely to be retained in primary healthcare and rural areas. [Article 2][3] Some of these positions, however, should be occupied by family physicians who should ideally be placed in the 'mother clinics' in each clinic cluster. This recommendation is also transferrable to others in the region. Additionally, this strategy to develop primary healthcare teams made up of different levels of health cadres has been successful in Brazil, Cuba and Peru in increasing the population to healthcare worker ratios as well as in reducing mortality and morbidity.[4,5]

3. Developing human resources for a health plan that correctly reflects a primary care-based health system is imperative as it is also likely to alleviate the rural–urban healthcare worker imbalance to some degree (Figure 4.2). [Article 1] This is because most of the rural areas are served by primary care clinics with hospitals based in cities, towns and urban villages.

4. The Ministry of Health should communicate the types and numbers of health cadres to be trained to meet the planned Essential Health Services Package requirements (Figure 4.2). [Article 1, Article 2] Currently, the health professionals training institutions are training the types and numbers of health cadres based on what has been done traditionally as well as their present capacities to train. The ministry has not yet communicated its needs with these institutions.

5. The health professionals training institutions should conduct a significant proportion of the training of healthcare workers in primary care and rural areas to improve familiarity and contribute to retention (Figure 4.2). [Article 2][6] The curricula should also be informed by Botswana's peculiar disease profile and health system.[Article 2]

6. The Ministry of Health and district health management teams need to implement the Ministry of Health's Human Resources for Health Guidelines in a way that will be perceived as fair and

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transparent (Figure 4.2 [Article 2] Although the guideline sufficiently covers length of stay in rural areas and promotion, its implementation is perceived as unfair and not transparent.

7. The Ministry of Health should review the incentives for healthcare workers, including remuneration, rural areas service allowance, accommodation, continuous professional development and promotion opportunities (Figure 4.2). [Article 2]

8. The district health services should be afforded a semi-autonomous status to give them room to plan and implement their plans with minimal interference from the national Ministry of Health. The semi-autonomous status should be supported by monitoring and evaluation strategy for accountability, assessment of efficiency and to find out if the district health services will become more responsive to their local population health needs (Figure 4.2). [Article 2, Article 4] Currently the district health services feel unable to fully implement their plans as they get many unplanned meetings, workshops and visits organised by the central Ministry of Health. They therefore neither control their budget nor their schedules.

9. The Ministry of Health and the district health management teams should endeavour to improve the physical infrastructure of the primary care clinics as well as improving availability of drugs and functioning equipment at these facilities (Figure 4.2). [Article 2] This recommendation is transferrable to most health systems in the region.

10. The espoused values of the Ministry of Health and district health services should be reviewed to include those that are more supportive of a positive healthcare worker experience (Figure 4.2). [Article 3] Currently the values are only focused on the patients' experience, as it should in a patient-centred care system, but there are none that address staff development and welfare. This recommendation is transferrable to others in the region as one of the important reasons for migration of health workers from sub-Saharan Africa was lack of appreciation and career development [7,8].

11. The Ministry of Health and the district health management teams should develop strategies to turn their espoused values into felt values (Figure 4.2) [Article 3]. One important way to turn desired values into felt values is to develop leadership as it is the leaders who largely shape the organisational culture.[9] Leadership development should be undertaken through both training and mentoring. This recommendation is also transferrable to other health systems in the region as leadership has been identified as one of the four primary healthcare reforms necessary to "refocus health system towards health for all".[10]

12. The Ministry of Health should couple promotion to managerial positions with training and mentorship to equip the candidates with both administrative and supportive supervisory competencies (Figure 4.2) [Article 4]. Training and mentorship is required as most people in

the system are promoted not so much based on evidence of managerial competency, but often on longevity in service. This recommendation is also transferrable to others in the region as poor health facilities and human resources management have been identified as one of the leading reasons healthcare workers migrate from sub-Saharan Africa.[7,8]

13. Supportive supervision should be included in the annual performance plans of all managers at all levels of the health system (Figure 4.2). [Article 4] Although district health managers are expected to supervise subordinates, this is done irregularly or not at all as it is not integrated into their annual performance plans against which they will be appraised at the end of the year. This recommendation is transferrable to others in the region.

14. Supportive supervision should be prioritised at both the Ministry of Health and district health services level and adequately resourced, especially with transport and telecommunication facilities (Figure 4.2) [Article 4].

15. The Ministry of Health should advocate for the development of infrastructure and services in rural areas, especially roads, schools, electricity, and information technology (Figure 4.2) [Article 2]. This recommendation recognises that although the lack of development impairs the ministry's ability to recruit and retain health professional to rural areas, it is beyond their sphere of control. They can, however, influence the development through advocacy.

4.7   RECOMMENDATIONS FOR FUTURE RESEARCH

This section makes recommendations for further research to address remaining knowledge gaps.

1. Research is required to guide the human resources for health plan that reflects a primary care-based health system. The research should determine the numbers and types of health cadres required.

2. Further research will also be required to determine the cost-effectiveness of the human resources for health plan that emphasises primary care.

3. Research is required to determine whether training of health professionals in rural areas in Botswana improves their retention in these areas over time.

4. Implementation research is required to determine which incentives are most effective in retaining healthcare workers in primary healthcare and rural areas in Botswana.

5. Research is also required to explore how the espoused values of the Ministry of Health and district health services can be actualised.

6. Further research is also required to evaluate the impact on healthcare workers' perceptions, motivation and performance of implementing supportive supervision.

4.8   CONCLUSION

This chapter has presented the conclusions of the thesis in terms of the five objectives of the research project and the conceptual framework. It has also outlined the impact of the work to date and presented 15 recommendations for addressing the human resources for primary healthcare shortages in Botswana, based on the findings of the research.

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6. Appendix 6: Organisational values survey form

LETSHOLATHEBE II HOSPITAL

Fax   : (+267) 6860819
Telephone: (+267) 6879000

Republic of Botswana

P. O. Box 12
Maun, Botswana

REFERENCE NO: M 6/50/12

18TH February 2013

TO: **Dr. O. Nkomazana**
UB School of Medicine
Private Bag 0022
GABORONE

Dear Sir

RE: APPROVAL OF YOUR RESEARCH PROPOSAL

Following the meeting of the Institutional Review Board (IRB) of the Ngami DHMT held at Letsholathebe II Hospital on 13th February 2013, the Board deliberated on your Research Proposal entitled HUMAN RESOURCES FOR PRIMARY HEALTH CARE IN AFRICA (HURAPRIM).

The approval was granted on 13th February 2013.

The IRB wishes you a successful time of study in our Institution.

Thank you

Yours Faithfully

Dr. David Tlhabano
(IRB CHAIRPERSON)

DT/KS

Appendix 1: The Ngamiland District Health Management Team Institutional Review Board ethical approval letter

Telephone: (267) 363200
FAX (267) 353100
TELEGRAMS: RABONGAKA
TELEX: 2818 CARE BD

MINISTRY OF HEALTH
PRIVATE BAG 0038
GABORONE

REPUBLIC OF BOTSWANA

REFERENCE NO: PPME 13/18/1 VII (368)   26 March 2012

Health Research and Development Division
Notification of IRB Review: New Application

Dr Oathokwa Nkomazana
Private Bag 00713
Gaborone

Dear Dr Nkomazana

PERMIT: HUMAN RESOURCES FOR PRIMARY HEALTHCARE IN AFRICA (HURAPRIM), THE BOTSWANA CHAPTER

Your application for a research permit for the above stated research protocol refers. We note that your proposal has been reviewed and approved by the University of Botswana Research Ethics Committee.

Permission is therefore granted to conduct the above mentioned study. This approval is valid for a period of 1 year effective 26 March 2012.

This permit does not however give you authority to collect data from the selected sites without prior approval from the management. Consent from the identified individuals should be obtained at all times.

The research should be conducted as outlined in the approved proposal. Any changes to the approved proposal must be submitted to the Health Research and Development Division in the Ministry of Health for consideration and approval.

Furthermore, you are requested to submit at least one hardcopy and an electronic copy of the report to the Health Research, Ministry of Health within 3 months of completion of the study. Approval is for academic fulfillment only. Copies should also be submitted to all other relevant authorities.

Yours sincerely

P. Khulumani
For Permanent Secretary

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Appendix 2: Ministry of Health, Health Research and Development Division research permit

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Approval Notice
New Application

01-Aug-2013
Nkomazana, Oatlhokwa OM
Victoria Street
Stellenbosch
Stellenbosch, WC

Ethics Reference #: S13/03/051

Title: Determining the causes of human resources for primary health care shortage in Botswana and developing and piloting an intervention to address the problem

Dear Dr Oatlhokwa Nkomazana,

The New Application received on 05-Apr-2013, was reviewed by Health Research Ethics Committee 1 via Committee Review procedures on 31-Jul-2013 and has been approved.
Please note the following information about your approved research protocol:

Protocol Approval Period: **13-Jul-2013 -13-Jul-2014**

Present Committee Members:
Kinnear, Craig CJ
Mukosi, M
Weber, Franklin CFS
Unger, Marianne M
Nel, Etienne EDLR
Rohland, Elvira EL
Els, Petrus PJJS
Potgieter, Sunita S
Hendricks, Melany ML
Barsdorf, Nicola
Whitelaw, David DA
Pillay, Mershen M

Please remember to use your protocol number (S13/03/051) on any documents or correspondence with the HREC concerning your research protocol.

Please note that the HREC has the prerogative and authority to ask further questions, seek additional information, require further modifications, or monitor the conduct of your research and the consent process.

After Ethical Review:
Please note a template of the progress report is obtainable on www.sun.ac.za/rds and should be submitted to the Committee before the year has expired.
The Committee will then consider the continuation of the project for a further year (if necessary). Annually a number of projects may be selected randomly for an external audit.
Translation of the consent document to the language applicable to the study participants should be submitted.

Federal Wide Assurance Number: 00001372
Institutional Review Board (IRB) Number: IRB0005239

The Health Research Ethics Committee complies with the SA National Health Act No.61 2003 as it pertains to health research and the United States Code of Federal Regulations Title 45 Part 46. This committee abides by the ethical norms and principles for research, established by the Declaration of Helsinki, the South African Medical Research Council Guidelines as well as the Guidelines for Ethical Research: Principles Structures and Processes 2004 (Department of Health).

Provincial and City of Cape Town Approval

Please note that for research at a primary or secondary healthcare facility permission must still be obtained from the relevant authorities (Western Cape Department of Health and/or City Health) to conduct the research as stated in the protocol. Contact persons are Ms Claudette Abrahams at Western Cape Department of Health (healthres@pgwc.gov.za Tel: +27 21 483 9907) and Dr Helene Visser at City Health (Helene.Visser@capetown.gov.za Tel: +27 21 400 3981). Research that will be conducted at any tertiary academic institution requires approval from the relevant hospital manager. Ethics approval is required BEFORE approval can be obtained from these health authorities.

We wish you the best as you conduct your research.

Appendix 3: Stellenbosch University Health Research Ethics Committee research permit

Appendix 4: Interview guide for policy makers and healthcare workers: Human resources for primary healthcare

Introduction:
I am going to ask you questions about the health care workers in your area. There is no right or wrong answer. Please answer each question in detail. Your truthful answer will help the ministry of health to understand the health care workers situation in the country
1. What is your understanding of Primary Healthcare?

Studies in Botswana have showed that there is a shortage of healthcare workers in primary care, especially in rural areas.
2. Do you think there are enough or not enough health care workers in Botswana? If there are not enough why do you think it is so (**probes)**
a. Are there adequate numbers trained?
b. What about deployment/distribution?
c. What about retention?

3. Do you think there are gaps, issues or problems related to health care workers for primary health or not? If there are gaps/problems what do you think are the most important gaps, issues and problems? (**Probes)**
d. Are they adequately trained for the job?
e. Are health workers assigned jobs they adequately are trained for?
f. Is there more shortage in certain cadres?
g. Is there adequate support to do the job (resources, coordination and management)?
h. What about conditions of service?

4. Is there a problem of health care workers in the rural areas? If yes why do you it is so?

(Probes)
a. Do living conditions in the rural areas contribute?
b. Does remoteness contribute?
c. What about the cost of living in rural areas?
d. What about opportunities for continuing professional development/ further education?
e. What about availability of jobs/schools for partners /children?

5. What do you think should be done about the lack of health workers for primary healthcare in

Botswana? (**Probes)**
a. Training (quantity and quality)
b. Deployment/ distribution?
c. Retention strategies?
d. To get the right skill mix?
e. What about task shifting?

6. In your experience, what solutions /interventions have already been tried to resolve these problems? **(Probes)**

a. Performance based reward system?

b. Moving primary care from Ministry of Local government to Ministry of Health?

c. Setting up of district management teams?

d. Introduction of Medical school programmes and faculty in rural areas and primary care?

7. Did the solutions work? Why or why not?

8. What interventions would make the biggest difference to improve primary healthcare?

Building of effective primary care team has been suggested as a potential intervention to improve primary care in Botswana.

9. What is your understanding of effective primary care team? (**Probes**)

a. What is the value of primary care team?

b. Who should be the members of an effective primary care team?

c. What should the roles of the different members be?

d. Who should lead the team?

e. How should the quality of the team work be evaluated and the impact its work evaluated?

10. What is your opinion about building primary care team as one of the interventions to improve primary care in Botswana?

Healthcare workers ONLY:

11. Do you remember any problematic situation in your work, you found particularly morally difficult? If yes.

(a) Can you tell us about this situation, about what happened? **(probes)**

i. Turning patients away without treatment?

ii. Making patients wait too long?

b. Why was it difficult?

Policy makers only:

12. Can you tell me what kind of ethically or morally challenging issues you had to tackle in your function? **(probes)**

a. In your opinion, what are the major issues?

i. Allocation of resources?

ii. Transfer of health workers?

b. Why is it difficult?

13. In conclusion, is there anything else we haven't discussed that you wish we had

Appendix 5: Interview guide for community members: Human resources for primary healthcare

Introduction:
I am going to ask you questions about the health care workers in your area. There is no right or wrong answer. Please answer each question in detail. Your truthful answer will help the ministry of health to understand the health care workers situation in the country.

Studies in Botswana have showed that there is a shortage of healthcare workers in primary care, especially in rural areas.
1.Do you think there are enough or not enough health care workers in Botswana?If there are not enough why do you think it is so **(probes)**
      a. Are there adequate numbers trained?
      b. What about deployment/distribution?
      c. What about retention?

2. Do you think there are gaps issues or problems related to health care workers for primary health or not? if there are gaps/problems what do you think are the most important gaps, issues and problems?(**Probes)**
      a. Are they adequately trained for the job?
      b. Are health workers assigned jobs they adequately are trained for?
      c. Is there more shortage in certain cadres?
      d. Is there adequate support to do the job (resources, coordination and management)?
      e. What about conditions of service?
      f.

3. Is there a problem of health care workers in the rural areas? If yes why do think it is so? **(Probes)**
      a. Do living conditions in the rural areas contribute?
      b. Does remoteness contribute?
      c. What about the cost of living in rural areas?
      d. What about opportunities for continuing professional development/ further education?
      e. What about availability of jobs/schools for partners /children?

4. What do you think should be done about the lack of health workers for primary healthcare in Botswana?
      a. Training (quantity and quality)
      b. Deployment/ distribution?
      c. Retention strategies?
      d. To get the right skill mix?
      e. What about task shifting?

5. In your experience, what solutions /interventions have already been tried to resolve these problems? (**Probes**)
      a. Performance based reward system?
      b. Moving primary care from Ministry of Local government to Ministry of Health?
      c. Setting up of district management teams?
      d. Introduction of Medical school programmes and faculty in rural areas and primary care?

6. Did the solutions work? Why or why not?

7. What interventions would make the biggest difference to improve primary healthcare?

Building of effective primary care team has been suggested as a potential intervention to improve primary care in Botswana.

8. What is your understanding of effective primary care team? (**Probes**)
    a. What is the value of primary care team?
    b. Who should be the members of an effective primary care team?
    c. What should the roles of the different members be?
    d. Who should lead the team?
    e. How should the quality of the team work be evaluated and the impact its work evaluated?

9. What is your opinion about building primary care team as one of the interventions to improve primary care in Botswana?

One of the values of the Botswana Integrated Health Services plan: 2010-2020 is ethics. Human resources shortage can however severely compromise the quality of care provided and adversely affect the patient healthcare worker interaction..

10. Do you remember any situation when your interaction with a healthcare worker as a patient, an observer, a companion of a sick person etc was particularly unfair/afflicting/humiliating/discriminating/compromising?

    a. Can you tell us about it?

    b. Why was it difficult?

Do you know of a situation where it happened to someone you know?

Appendix 6: Organisational values survey form

A. Demographic Details

1. Omang/Identity   number……………………..   Age…………..
   Sex…………………Marital Status: single/ married/ divorced/widowed
2. Name of Health facility …………………………………………
3. Type of facility: Health Post/ Clinic without maternity/clinic with maternity (circle answer)
4. How long have you been working in clinics in this district? ……….
5. What your Position? ………………………………………………………

B. Personal and organisational values

List of values that will be used in the survey questions below

accountability	internal competition
achievement	job insecurity
adaptability	leadership development
balance (home/work)	listening
being the best	long hours
blame	long-term perspective
caring	loyalty
caution	making a difference
clarity	manipulation
coaching/mentoring	mission focus
commitment	not sharing information
community involvement	open communication
community opinion	openness
compassion	organisational growth
conflict resolution	partnerships
confusion	passion
continuous improvement	patient collaboration
continuous learning	patient satisfaction
control	personal growth
cooperation	positive attitude
cost reduction	poverty reduction
creativity	power
diversity	productivity
ease with uncertainty	professional growth
efficiency	professionalism
empire building	profit
empowerment	quality
encourage new ideas	reliability
enthusiasm	respect
environmental awareness	responsibility
equality	results orientation
ethics	risk-taking
excellence	shared decision making
exploitation	shared values
fairness	shared vision
financial stability	short-term focus
forgiveness	social responsibility
future generations	staff engagement
goals orientation	staff fulfilment

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hierarchy	staff health
honesty	staff recognition
human rights	strategic alliances
humour/fun	teamwork
inclusiveness	transparency
information sharing	trust
innovation	well-being (physical/emotional/mental/spiritual)
integrity	wisdom
interdependence	working in isolation
	working strictly by the rules

Personal values

Please select TEN of the values/behaviours that are listed above and which most reflect <u>who you are now</u> and write them below. Only choose from the values listed on page above. This should reflect your current personal values and not what you desire or wish for in the future. Please write your ten selected values below:

1.	6.
2.	7.
3.	8.
4.	9.
5.	10.

Current organisational values

Please select TEN of the values/behaviours that are listed above and which reflect most <u>how your clinic, the Ministry of Health, District Health Services, currently operates</u>. Only choose from the values listed above. This should reflect your current experience of the organization. Please write your ten selected values below:

1.	6.
2.	7.
3.	8.
4.	9.
5.	10.

Future organizational values

Please select TEN of the values/behaviours that are listed above, which in your opinion are essential for your <u>organization, the Ministry of Health and District Health Services, to achieve its highest performance in the future.</u> Only choose from the values listed above. Please write your ten selected values below:

1.   6.

2.   7.

3.   8.

4.   9.

5.   10.