Full Length Research Paper

Parts of medical attendants in Sub-Saharan African district

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The goal of this study was to make a model of nursing practice in Sub-Saharan Africa focused around populace needs, current practice and desires of stakeholders. A three segment study was carried out in eight sub-Saharan nations to discover (1) the wellbeing needs and the trouble of malady in these nations, and in addition assessing the structure of their wellbeing frameworks; (2) the perspectives on nursing capacities held by assessment pioneers in the group, other wellbeing experts, patients and their families; and (3) to lead an overview of attendants and birthing specialists to focus the parts that they really perform in doctor's facilities and general wellbeing focuses (Phcs). Four Anglophone and 4 Francophone nations were mulled over with an archive review, and 191 stakeholders included in center gatherings. The current practice of 734 attendants in mobile and healing facility settings was assessed. In light of a triangulation of this information, 9 parts were recognized: the procurement of comprehensive consideration, wellbeing instruction, dealing with the consideration environment, and in addition the support and coordinated effort, giving crisis consideration, giving birthing assistance consideration, anticipation and administration of irresistible illnesses and judgment and treatment. Three context oriented help components (positive approaches and practices, an instituted administrative structure and an empowering instructive framework) were likewise distinguished.

Key words: Africa, midwives, nurses, empowering instructive framework, Sub-Saharan.

INTRODUCTION

Nursing has numerous similitudes over the world focused around the social desires appended to the calling. Nonetheless, Squires (2004) focuses out that the part of medical caretakers tasked with intense consideration differs fundamentally from nation to nation, on account of diverse social expectations in regards to the parts which attendants play in patient consideration. "These social desires are impacted by historical connections in the middle of medical caretakers and doctors, the wellbeing framework, the level of nation improvement, and people in general picture of attendants, to name a couple of" (Squires, 2004). The parts of attendants are additionally molded by expert contemplations, human asset issues, patient requests and expense suggestions as opined by Srivastava et al. (2008). Nurse's roles change over time and in some countries such

as the United States of America, task analyses are done regularly to inform educational decisions. Such role formulations underpin the regulation of nurses/ midwives, in terms of both scope of practice and educational standards.

For nursing care to be relevant and nursing education to be appropriate, the needs of the sub-Saharan African population and health services should play a major role in defining nursing.

The human health resource challenges of Africa are enormous and shortage of nurses is acute in many countries, with little hope of a sudden alleviation of the situation. Therefore, it is essential that these scarce health care professionals may not only be appropriately trained, but also be creatively deployed. To achieve these objectives, the first step would be to understand exactly what

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the job demands are for nurses.

Since regional bodies such as the African Union and the world health organisation (WHO) African Regions play such a strategic role in driving change in health systems, it is important to improve the understanding of nursing and midwifery across the region. This may allow for the harmonisation of human resource strategies and promote regional collaboration to improve quality of education and service.

BACKGROUND TO THE PROBLEM

Internationally accepted descriptions of the roles and functions of nurses, delineations which inform definitions of, as well as textbooks and curricula on nursing, are almost exclusively based on the current experience of nursing in developed countries. This is because there are no known documentations on the roles that nurses undertake within the health systems in Africa. The views and flow of information from the developed countries have therefore strongly influenced sub-Saharan Africa nursing, but the reality of health and illness, as well as health care in sub-Saharan Africa, differs profoundly from that in developed countries. It is also pertinent to mention that an appreciable number of educators in sub-Saharan Africa obtained their education in developed countries.

In the most affected regions of Sub-Saharan Africa and South-East Asia, the responsibilities of nurses have increased in line with expanding health services to meet local, national and global health targets, including the United Nations Millennium Development Goals (Nga'ang'a and Bryne, 2012).

In a variety of ways, the burden of diseases, the health care delivery system, family involvement in care, staff shortages, issues of task shifting/sharing all contribute to the reality of the unique nature of the health systems and the enormity of efforts required to make a change. The nurses' roles in the health systems would need to be reviewed delineated and recognized for better impact and optimum contribution to positive health outcomes.

Burden of disease

One of the differences is that the morbidity and mortality statistics in Africa are very different from those of developed countries. The greatest burden has always involved infectious diseases and now, over the last 20 years, with the addition of HIV/AIDS and drug-resistant infections, an even more complicated pattern has developed (WHO, 2004).

Health system structure

Another difference is that in most developed countries, the organization of health services differs greatly from that in Sub-Saharan Africa. Similarly, the financing of health care is also radically divergent and this has a profound influence on the care given by nurses and midwives (WHO, 2009). The entire Sub-Saharan African countries in this study utilize the primary health care approach, and all have services at primary, secondary and tertiary level (Table1).

Although not all the countries use the same terms for subdivisions, most have minimum of two levels of division, with a wide variation in numbers. Types of services, such as health posts, clinics, district hospitals and referral hospitals, are between five and seven, with about two levels of primary health care services and three hospital levels.

The role of the family in hospital care

Although it is recognized that the family plays a role in the care of ill family members around the world, this role is more extensive and institutionalized in some countries. In many low-resourced Sub-Saharan African countries, care in hospitals, including food and medication, is supplied by the family and a family member stays with the patient most of the time. Managing medication, a typical nursing role, is also ascribed to the relatives who buy prescribed medication and administer it to the patient. This may be by default rather than design, but nevertheless, it reflects the reality for many nurses in Sub-Saharan Africa. The nurses actually oversee any aspect of care contribution by the family.

Personnel shortages

Another disparity is that the professional educational background, skills and availability of various health professionals in Sub-Saharan Africa is vastly different from that of developed countries (Aiken et al., 2008; Simoens et al., 2005; Cho et al., 2003; Needleman et al., 2001). The difference in availability of health care teams in high and low income countries profoundly influence the health care tasks and roles demanded from nurses. In the absence of a comprehensive range of health professionals, the normal, legitimate role of the nurse is part of what would be considered the advanced practice role in some developed countries. The nurse within a primary health care system could function as a doctor, nurse, a pharmacist, laboratory scientist as from assessment of the client, and/or diagnosis and prescription (where applicable), the nurse not only dispenses medications, but conducts simple tests as deemed possible and as a first measure of care before appropriate referral, transfer or continuity of care based on the client situation.

Legal and regulatory framework

Furthermore, some of the countries in Sub-Saharan Africa lack the regulatory frameworks to monitor the

Table 1. Summary of the structure of health services.

Country	No. of regions	No. of districts	No. of Ministries	No. of service types	Beds/10000 of people
Botswana	9	28	2	7	24
Cameroon	10	-	1	5	11
DRC	11*	2 levels	1	5	11
Kenya	8	47	1	6	14
Niger	8	42	1	5	?
Nigeria	36	774	1	5	5
Senegal	14	69	1	5	1
Tanzania	26	127	2	6	11
Zambia	9	74	1	5	22

*Due to change to 24 in new constitution.

Table 2. The nursing workforce categories and duration of training.

Country	Category 1 (year)	Category 2 (year)	Category 3 (year)	Midwives (year)
Botswana	3/4*	-	-	+ 1-2
Cameroon	3/4	2	1	+ 1-2
DRC	3/4	2	-	3
Kenya	3/4	2.5	1	+ 1
Niger	3	3	2	3
Nigeria	3/5	2	1	+ 1
Senegal	3 years after	2	1	3 **
Tanzania	3/4	2	-	2 ***
Zambia	3	2	-	2

*3 years by diploma and 4 years by BSN. **1 year for nurse training and 2 years of specialization. ***Enrolled Midwife only.

the regulations and standards pertaining to nursing education and practice (Frenk et al., 2010). Regulation is the key to professional practice, protection and safety of consumers of nursing and midwifery care and services. Although this is being addressed by a range of initiatives in Anglophone countries, like the work of the Nurse Education Partnership Initiative (NEPI, www.icap.columbia.edu); the issue of regulation is getting little/very slow attention in Francophone countries, but hopefully may be overcome with the multiple approaches being used to encourage maintenance of standards in service delivery.

Task shifting

Nurses taking on the tasks of doctors or pharmacists, and/or nurses shifting/sharing some of their tasks with other health workers, has also had an effect on the roles of nurses and midwives in Sub-Saharan Africa. Nurses have expanded their roles in areas such as surgical procedures (Chu et al., 2011) and anti-retroviral treatment (Shumbusho et al., 2009), while delegating

their basic care roles to less qualified health workers (Munga et al., 2012). In some of the countries in Sub-Saharan Africa, the distribution of health workers and nurses at the various health levels and subdivisions reveal a shortage, and poor coverage for the services being provided. In order to ensure that care and services are still covered commendably, nurses take on extra tasks to theirs, and also facilitate delegation of tasks to other available staff according to their category and training.

Categories of nurses

All but one of the countries in the study have more than one category of nurses with the highest category demanding 12 years of school for entry, category 2, between 10 and 12 years of school and category 3, between 6 and 12 years. In most countries, midwifery is an additional qualification to the nursing qualification (Table 2) so that many nurses are also midwives.

Descriptions of the roles of nurses in Africa have usually been based on the opinions of expert groups such

as East, Central and Southern African College of Nursing (ECSACON) who stipulated that nurses' and midwives' roles fall under three broad areas; namely, provider and collaborator, professional role and advocacy role (ECSACON, 2001).

CONCEPTUAL FRAMEWORK AND DEFINITION OF TERMS

According to Lynch (2007), traditional role theory is based on either a functional or an interactionist perspective. The functional perspective sees roles as normative, created by society, and relatively inflexible. The interactive perspective sees roles as more changeable, continually being negotiated between the individual and social structures. More recent approaches to role theory focuses strongly on the role transitions of individuals (Neale and Griffin, 2006) and the continuous movement between roles and even enactment of different roles at the same time (Lynch, 2007).

The functional approach was chosen for this study, because the focus is on the more long-term, socially sanctioned roles of the nurse, which are given expression in scope of practice regulations developed by national regulatory bodies and which underlie the educational programmes of nurses. This approach is also appropriate to the idea of a social contract on which the establishment of a profession is based, that nursing was established to serve a specific need in society. The expectations attached to the role of nurses are based on the health needs of the population (the focus of component 1 of this study).

A role is an organized collection of behavioural expectations (Neale and Griffin, 2006). A role consists of specific tasks, responsibilities and traits essential to its performance (Dierdorff and Morgeson, 2007). Biddle and Thomas (1966) identify seven ways of describing roles, two of which will be used in this study; namely, overt prescriptive and overt descriptive roles. In this study, overt prescriptive roles are those tasks that are directly given to a set of people, e.g. nurses (the focus of component 2 of the study), while overt descriptive roles are the tasks that are observably performed by the group (the focus of component 3 of the study). The aggregate overt roles of nurses, rather than individual nurses and covert aspects of roles, such as motives and values, are addressed in this study. Similarly, the more long-term roles which are captured in regulations and laws are addressed, rather than the continually changing role enactment of individuals with multiple other roles as well.

Objectives of the study

The objectives of this study were to develop descriptions of nursing roles in Sub-Saharan Africa that is based on the current roles of nurse/midwives in Sub-Saharan Africa health services, and the role expectations of stakeholders for nurses in Sub-Saharan Africa; the health, illness and care needs of the Sub-Saharan Africa population in the light of the type of health workers and their availability (skills mix) in the health team, with special reference to nurses.

The study focuses on all categories of nurses, and not exclusively on registered nurses. It also focuses on the clinical roles of nurses, and not on management, education or research.

LITERATURE REVIEW

In the USA, the National Council of State Boards of Nursing (NCSBN) does a periodic practice or job analysis in order to ensure that the licensure examinations are valid measures of the actual current practice of nurses in the country. Using questionnaires distributed throughout the country and developed by experts, they obtained data from approximately 20,000 nurses regarding the frequency with which they engaged in some 153 nursing activities. This well-developed methodology provides a valid description of general nursing practice in the USA.

A more specialised study was done by Abdallah et al. (2005) using a tool, the EverCare Nurse Practitioner Role and Activity Scale (ENPRAS), with six subscale roles and describing the practice of nurses in five sites. EverCare is a management care model which has been implemented in the USA and the UK for the care of institutionalized elderly patients. Both of these studies were based in the USA.

In Sub-Saharan Africa, in a study in South Africa for a job analysis of health workers in a district health system (Uys et al., 2003; Mbambo et al., 2003), an instrument was used. The instrument was developed based on the Primary Health Care Package of South Africa and included 141 tasks. Nurses responded to the four point scale questionnaire as they performed each task (four-point scale from "less than once per week" to "over ten times per week") and how important they thought each task was (two-point scale being "could sometimes be omitted" or "could never be omitted"). Two samples were used and a mail survey including 42 nurses working in district hospitals and 61 nurses working in primary health care clinics, representing 19 and 22% of the randomly sampled nurses, respectively. In this study, observation was also done to identify environmental factors influencing the task performance. The same list of tasks were used, but observers also made notes on physical and social environments, interruptions, control over speed of task performance and task demands. This was useful in validating the data from the questionnaires as well as providing additional information.

Another study in Mozambique identified the knowledge and skills necessary for all categories of nurses in that

country Ministry of Health (MOH, Mozambique, 2010). The researchers developed a tool based on the International Council of Nurses (ICN) Framework of Competencies, and a number of WHO AFRO documents. The final instrument contained 233 items organized into 9 domains and addressed both frequency and importance. Data was collected through interviews with 1,295 individuals representing all regions of the country. Based on their results, they made recommendations about the curricula of different categories of nurses, identifying both the unique and common roles.

Parent et al. (2006) did a study to describe the competencies of different categories of nurses in the Democratic Republic of the Congo. They studied nursing curricula and then observed nurses in health settings to compare what they did with their knowledge. Based on this study, they identified four essential components for the development of the profession-analysing problems, implementing plans, managing resources and communi-cation skills which were used to develop curriculum guidelines.

The WHO AFRO developed an "action framework" for the strengthening of nursing and midwifery in 2007. In the document they produced, the roles of the nurses and midwives in Africa was summarized as follows by the WHO AFRO: "the care they provide includes, inter alia health promotion, prevention measures, the detection of abnormal conditions within the family and the community, the procurement of medical assistance and the execution of emergency measures in the absence of medical help. In this regard, the work of nurses and midwives also extend to issues such as gynaecology, family planning and childcare. They are expected to do basic diagnostics, and must be able to confidently provide counselling on a variety of ailments especially those pertaining to the mother and child. In addition, the nurse and midwife should be able to manage a basic health facility within a community, generate and interpret health statistics and submit appropriate reports as required" (WHO AFRO, 2007). The ECSACON with Nursing and Midwifery Professional Framework (2001) stipulate that nurses and midwives' roles fall under the three broad areas of provider and collaborator, professional role and advocacy role. The interventions should focus on promotive, cu-rative, preventive, rehabilitative and palliative care within the primary health care framework. Both the WHO AFRO frame work and the ECSACON roles appear complementary to each other, and are all relevant in the Sub-Saharan Africa.

WHO AFRO (2008) conducted a survey of education programmes in nursing and midwifery in Francophone African countries, because of "perceived gaps in meeting the health needs of the community and inadequate capa-city of health care providers". They found that "neither nursing nor midwifery has clearly defined competencies that students should exhibit on graduation" and also a lack of regular/systematic evaluation of nursing and

midwifery programmes. One of the recommendations of this study was to develop competency-based curriculum framework to provide guidance to these countries. It would be essential to base such competency frameworks on empirical evidence of the current health care and health service needs. The World Health Assembly (WHA) resolution 62.12 urges member states to provide universal access to comprehensive public health centre (PHC) services. This calls for adoption of appropriate delivery models which are people centred and promote participation, ensure appropriate skill mix of workers in a multidisciplinary context.

Very few studies seem to have been undertaken to describe and analyse the tasks and roles of nurses in Sub-Saharan Africa (MOH, Mozambique, 2010; Parent et al., 2006) and the change in roles with time (Natan and Meir, 2011; Wendt and Eich, 2007).

MATERIALS AND METHODS

The model is derived from a mixed-method involving an explanatory, comparative country-wide case study of the role of nurses in the Sub-Saharan Africa region (Yin, 2009). Each case study therefore included three components: (1) a document review to establish the health and illness needs and describe the health services, (2) a qualitative study to establish the expectations of stakeholders (Seboni et al., 2013), and (3) a quantitative survey to describe the current practice of nurses (Uys et al., 2013).

Each of the three components of the study used a different data collection methodology and was described in separate articles, as reflected earlier.

The study involved eight African countries as set out in Table 3. It was assumed that countries with the same national language (e.g. English or French) would share similar nursing histories, have similar health care systems and nurses would assume similar roles. An effort was made to include at least four Anglophone and four Francophone countries, because each country has its own history that was moulded by colonialism that also impacts on health and illness. Since it was also possible that health services and health/illness patterns differed by region, all four regions of Africa were included in the sample.

In each country sampled, a nurse with at least a Bachelor's quali-fication was invited to participate in the study as a co-investigator through a local university. This country investigator then assembled a country team who included opinion leaders in nursing and midwifery from the regulatory body, the nursing organization, nursing management and nursing education who advised on different aspects of the study.

All the instruments were translated into French by two independent translators, and a third independent linguist compared the two translations, and in consultation with the research team, decided on the most appropriate translation (Swaine-Verdier et al., 2004). Translations of different sentences or items are usually very similar, but in some cases, one is clearly more appropriate for conveying the meaning of the original. In such cases, this version was accepted. Consultation with the translators and the research team only took place when the third translator could not decide which of the translations was most appropriate. Translation of focus groups data were done by the researcher and reviewed by the co-presenter of the groups.

The study protocol was approved by the Ethics Committees of the Universities of the four principal investigators. Participation of all nurses and others was voluntary, and they were fully informed

Table 3. Sample of countries.

Region	Francophone	Anglophone	Total
West	2 (Niger and Senegal)	1 (Nigeria)	3
Central	2 (Cameroon and DRC)	-	2
East	-	2 (Kenya and Tanzania)	2
South	-	1 (Botswana)	1
Total	4 (50%)	4 (50%)	8

about the study.

Component one: Health, illness and care needs

The data was derived from a document review based on the following case protocol, according to which each country was described: health system components at all levels of service; health statistics; mortality rates; health services coverage; health system resources; health workforce.

In order to obtain comparable descriptions, a model country description was developed addressing the case protocol headings and the country teams were then asked to populate the description with country data.

Document sampling

In each country, the country team had to identify and find the most recent and reliable data addressing each of the case protocol categories. This usually included reports from governments and non-governmental organizations, data bases to which they had access. The health care needs of the population were described based on a range of indicators from the World Health Organization website (WHOSIS, www.who.int/whosis/en/index.html) and the WHO Global Burden of Disease (GBD) website (www.who.int/healthinfo/global_burden_diseases/2004_report_update/).

Data analysis

Having completed a case study for each of the eight countries, a cross-case analysis was conducted using a nominal group. A nominal group technique was used to identify the implications of the cross-case analysis for the role of the nurse. A group of 17 nurse and midwifery leaders from 13 Sub-Saharan Africa countries were brought together for the nominal case analysis, after having been requested to read the cross-case description. The purposively selected group included academics, health service managers, consultants and clinicians to represent the main sectors in nursing and both Anglophone and Francophone countries in Africa.

The nominal group was asked to list the implications for the role of nurse of each of the four sections of the case description outlined earlier. The themes that emerged from the discussions were discussed, and statements for which role implications were not identified were deleted. Finally, the group formulated the refined implications that adequately captured their perspective of the implications for the role of the nurse.

Component two: Role expectations of stakeholders

The role expectations of selected stakeholders with regard to

nurses were studied using a qualitative method involving focus group discussions with the following stakeholder groups in each country: patients, their families, community members/leaders, other health workers and professionals, nurses and health service managers (Seboni et al., 2013). Other health professionals were included since the roles of nurses include interacting with them, patients, their families and community members since they are the consumers of care by nurses. Health service managers were in-cluded since they understand the human resource and cost factors which impact on the roles and senior nurse, especially from the regulatory bodies, were included to reflect the professional's views.

The focus group discussions dealt with the following questions: (1) What do you think are the most important roles or functions of the nurse in (country name)? (2) What should they be doing that they are not doing? (3) What are they doing that they should not be doing?

The focus group discussions were facilitated by the national investigator from each country with a co-facilitator who was not a nurse. All sessions were tape-recorded and transcribed. Consent was obtained from all the participants as explained in the earlier paragraph.

Focus group samples

The focus groups participants were purposively selected by the country research advisory group as a credible group of opinion leaders from the identified groups. They included professional asso-ciation members, representatives of regulatory body (in countries that have regulatory bodies), educators, health service managers, patients and care givers, community members and other health professionals (pharmacists, doctors, and others). They were chosen and invited according to their ability to articulate the expectations of a particular group and their knowledge of the health care system of the country, and in relation to the role of nurses in that system. In some cases, invitees brought additional members of their group to these meetings and such people were included in the focus groups.

Data analysis

A content analysis was conducted, based on role statements identified in the transcripts. Each statement that alluded to what nurses should do or are doing was classified as a role statement and the support or lack of support for such a role was noted. No particular role template was used. Role statements from different groups and countries were then compared and both role consensus and lack of agreement described. Furthermore, concerns around consensus roles were identified and described.

Component three: Task analysis

The current roles of nurse/midwives were described using a

quantitative task analysis survey of nurses in each of the countries, describing the frequency and importance of tasks performed by nurses according to their own perspective (Uys et al., 2013).

The instrument was based on a primary health care questionnaire developed by Mbambo et al. (2003) which had an overall Cronbach's Alpha of 0.990 and 0.98 for the frequency variable and 0.988 for the importance variable. Section one has five demographic questions (gender, age, professional rank, nurse type and service setting). Section two consists of a list of 156 tasks that describes the nursing practice in a particular setting, covering the following seven roles: general care and treatment, general assessment, health education, planning and management, mother and child health, mental health and rehabilitation. For each task, three questions are asked: whether the task applies to the setting; how frequently it is performed (less than once per week, 1 to 5 times per week, 6 to 10 times per week, more than 10 times per week); and lastly how important the task is (whether it can sometimes be omitted or should never be omitted).

Sample

A stratified convenient sample of nurses was used for the task analysis survey with nurses from targeted health services were approached by the country principal investigator on a certain day and asked to participate. No power analysis was done due to limited funding being available. A total of 927 nurses were included in the sample, with samples ranging from 79 to 122 per country. The samples in each country were stratified for levels of health setting, with more than one service level included.

Data analysis

For each task, a score was calculated taking into account both frequency and importance (task index) (Uys et al., 2013). A standard score was calculated for each role based on the mean task-index scores of the sum of the tasks assigned to each role.

RESULTS

Triangulation of the data

The results of the three component studies were synthesized using an adaptation of the thematic synthesis approach recommended by Thomas and Harden (2008) for the synthesis of qualitative research in systematic reviews to augment the cross-case synthesis suggested by Yin (2009). The nine roles identified by the stakeholders (component 2) were taken as the analytic themes for the synthesis, since it was the most comprehensive. The role implications identified through the document review (component 1) and the findings of the qualitative survey (component 3) was coded according to these themes (roles). Each role was then defined and described, and descriptors provided for the role from one or more of the components of the study (Table 3). Two additional themes were identified: a role that addresses infectious diseases and the contextual factors influencing the role of the nurse/midwife.

Identified roles: Description and supportive evidence

The role descriptions or aspects of the role that describes

its essence are summarized in Table 4. The evidence for each role from each of the study components is reflected as the following.

Provide physical and psycho-social care for patients in hospitals in an ethical and professional manner (taking care of patients)

Role expectations: Basic nursing care is the component of care that deals with the assistance in self-care that constitutes the activities of daily life performed by persons who are either physically or mentally compromised. Providing care in an ethical manner means that it is offered according to the values of the profession, including aspects such as confidentiality, treating all people as equal, respecting the privacy and choice of persons. Providing care in a professional manner means that it is provided according to the standards of evidence-based care, timely care, efficient use of resources and continuous monitoring and improvement. Based on the role of nurses at all levels of the health service, the need to prepare the nurse for this role in all settings, and not only in hospitals, was emphasized as shown in the following statement by a patient:

"To me a nurse, just from the word itself "nurse" makes you expect that she will take care of you. When you get to the health facility, you expect a warm welcome from your nurse, such that even if you are in pains you feel well from the reception. So we expect humbleness, humility, and for the nurse to provide counseling and that you do not feel rushed. You hope to be cared for towards recovery".

Health, illness and care needs: The disease burden in the countries studied indicates that nurses/midwives need to be competent in communicable, chronic and emergency conditions, and aware that the particular disease burden in each country might be slightly different. For instance, in some of the countries, the tropical cluster diseases (Trypanosomiasis, Chagas disease, Schistosomiasis, Leishmaniasis, Lymphatic filariasis, Onchocerciasis) are in the top ten diseases impacting the disability adjusted life-years (DALYs) in children, but it does not feature in others. The other important factor is the high proportion of young people in Sub-Saharan Africa, with 43% of the population being under the age of15 years. The high percentage of children suggests an important need for nurses to focus on child health care and the promotion of child health.

Task analysis: From the survey of the current roles practiced both in hospital and ambulatory settings, the general assessment (57.4 and 53.3%, respectively) and general treatment and care (58.9 and 55.8%, respectively) roles were the most common, and was significantly higher in frequency and importance than some of the other roles.

Table 4. Roles and role descriptors.

S/N	Role descriptors	Role
1	Provide physical and psycho-social care for patients in hospitals in an ethical and professional manner (taking care of patients)	Ensure and/or provide basic nursing care to patients (SH*); Ensuring a clean and hygienic care environment (SH);
		Giving emotional support through talking and listening to patient concerns (SH); Treating all patients and families with respect and kindness (SH);
		Assist with self-care of physically and mentally compromised patients (SH); Being available and close to the patient and family (SH);
		Doing home visits to provide continuity of care (SH);
		Provide necessary and correct treatment for illness as prescribed (SH); Providing community-based mental health care (HN);
		Manage old and emerging chronic illnesses at PHC level (HN);
		Structure and develop the management of communicable diseases (HN);
		Provide care to children and young people according to their particular health needs (HN).
2	Provide health education to communities, care providers, clients and patients	Providing information to communities about how to protect themselves from illness (SH, HN); Educate patients and their caregivers about the illness, treatment and self-management/care (SH, HN);
		Teach other caregivers on proper care approaches (SH);
		Inform patients, clients, families and communities about available services and programmes (SH).
3	Manage the care environment of patients and clients to optimize care delivery	Provide a welcoming and supportive care environment (SH);
		Ensure the availability of supplies and equipment to enable good care (SH);
		Promote the economical use of resources (SH);
		Manage the care giving routines well and efficiently (SH);
		Provide supervision of other categories of health workers, e.g., community health workers.
4	Advocate on behalf of patients to ensure that health needs are addressed appropriately	Talk on behalf of patients and clients who cannot do this for themselves due to some incapacity (SH); Advocate for adequate resources for care, including promoting appropriate policies (SH and HN);
		Advocate for an adequate mix of health professionals in adequate numbers to ensure successful health outcomes (HN); Advocate for access to appropriate and timely care (SH);
		Blow the whistle on practices that exploit patients, clients and their families (SH).
5	Provide emergency care	Provide timely emergency care in health care settings to handle medical, surgical and mental emergencies (SH); Provide timely emergency care in community and home settings before referral, where necessary (SH).
6	Collaborate with the community, the family, the individual, other health workers and sectors as well as other nursing colleagues to enhance health and health care	Collaborate with the nursing and multi-professional team to ensure that patients and clients access the appropriate care (SH); Ensure good collaboration with health service managers to promote continuing care, resources and support (SH);
		Collaborate with family and other informal care providers to limit the use of professional resources for basic care while promoting good quality care (SH);
		Intervene when care by other providers is not being provided as expected (SH);
		Work with other sectors in the promotion of health, prevention of illness and provision of health care (HN).

Table 4. Contd.

7	Provide midwifery care to women and infants up to the postnatal period..	Care of the pregnant woman and the family (SH, HN); Provide delivery and post-natal care (SH, HN);
8	Making a diagnosis and prescribing and giving treatment in an ethical and professional manner.	Take a thorough and appropriate history and do a appropriate physical examination (SH); Diagnose what is wrong (SH); Treat the problem or refer if appropriate (SH); Manage chronic illnesses at PHC level through treatment, education and support (HN)
9	Engage in strategies to prevent and/or manage communicable diseases	Implement individualized strategies to prevent infection (HN); Educate individuals, families and communities to prevent infection by diseases prevalent in the community (SH, HN); Manage community-based campaigns or programmes to prevent or manage infections (HN)

*The reference source of each aspect of a role is indicated by initials: SH for stakeholders, HN for health needs and CR for the current roles.

Mental health care was found to be one of the least prevalent roles used in either the hospital or ambulatory settings (49.5 and 45.1, respectively). Performing the tasks in the mental health care role seems to be more prevalent in Anglophone countries, with three of the four Anglophone countries revealing significantly higher incidences of these tasks than their Francophone counter-parts (Anglophone 56.2% and Francophone 34.8%).

Provide health education to communities, care providers, clients and patients

Role expectations: Although nurses are responsible to give services to patients but also they are required to provide health education to the communities. They can educate community on how to protect themselves against diseases such as, educating community on importance of using boiled water to avoid cholera and other diseases.

Health, illness and care needs: What is known about the burden of each disease should play a major role in the content of health education. Prevention, early detection and treatment, long-term management and rehabilitation are all dependent on an adequate knowledge and understanding by the general and affected populations.

Task analysis: According to the practice survey on current roles, out of seven, health education is the fourth most common role (hospital 51.7% and ambulatory 52.8%). No significant difference was found between hospital and ambulatory settings in this role presentation. The need for health literacy in order to empower communities, families and individuals to prevent illness and self-manage their own care, demands a level of health education, techniques of behaviour change and interactive teaching from the nurse that may not be part of current education and practice. This role again points to the need to train and educate nurses, not only in ambulatory and hospital settings, but also to work directly in the community.

Manage the care environment of patients and clients to optimize care delivery

Role expectations: Nursing care is provided or within an environment to which the patient, client family come for assistance. The service environment is the first aspect of care experienced by the patient or client, and may determine their response to intervention. In most cases, the nurse is the line manager in charge of the health service environment and is the only health worker who can ensure that the physical and emotional environments are up to standard and promote good quality care.

They do not play their role as supervisor, controller health. The functions of these providers revolve around the administration and manage-ment of care appropriate to the level described.

Health, illness and care needs: Focus group participants were very conscious of the limited resources available for health care in their own countries. The case studies indicated that much of the health care was currently paid for by con-sumers (58%), mainly in the form of out-of-pocket

payments (80%). The role of the nurse in ensuring that care is planned and executed as efficiently as possible to limit costs is therefore an important one for consumers. It is one, however, that will require development.

Task analysis: This role was the fourth or fifth most common role in hospital and ambulatory settings (51.8 and 47.8%, respectively) and is commonly associated with nurses.

Advocate on behalf of patients to ensure that health needs are addressed appropriately

Role expectations: Since nurses are often the only health workers in rural areas and rural services, their intervention is essential on behalf of such populations. The nurses, however, must raise this issue or at least participate, enlightening, because they have a duty to inspire public policies in their field.

Health, illness and care needs: Since financial investments of governments to the promised level is essential for the health of the people, the nurse/midwife has to play an active role in advocating for increased investment in countries where the promised level has not been reached. In 2001, the
Heads of States made a promise to allocate 15% of their annual budgets to health care. This has been called the "Abuja Target", but in 2009 it was recognized that very few countries had achieved this target (African Union, 2009).

Task analysis: This role was not addressed in the task analysis.

Provide emergency care

Role expectations: Stakeholders see the provision of emergency care as the responsibility of nurses. A nurse still needs to attend to emergencies at home so that they can rush a patient to a doctor if that is needed, the health education officer may have difficulty in making such decisions.

Health, illness and care needs: Intentional and unintentional injuries are among the 10 most common conditions in the nine countries studied, both in adults and children. This means that there is a need for health professionals working in these communities to be well prepared to handle emergencies.
   Emergency care might include medical, surgical, psychiatric and obstetric emergencies, as well as the results

of violence and natural disasters. The high levels of intentional violence (one of the top 10 causes of mortality and impact on DALYs in adults) would also benefit from forensic nursing skills and the ability to develop multi-sectoral collaboration with law enforcers and social services.

Task analysis: Two tasks dealt with this role: provide emergency care before referral (task index 6.34, standard deviation (SD)=3.03) and administer cardio-pulmonary resuscitation (task index 5.00 and SD=2.9). Both of these are above the 0.5 level.

Collaborate with the community, the family, the individual, other health workers and sectors as well as other nursing colleagues to enhance health and health care

Role expectations: The nurse collaborates with the community and other care providers to enhance service delivery.
   Some of us ensure close cooperation with head nurses at the regional level for patients who were hospitalized at our services to ensure the continuum of health services, particularly in diseases such as sore pot, hemiplegia, but also the nutritional hygiene and food.

Health, illness and care needs: Since nurses often have to assume the roles of other health professionals due to severe personnel shortages, the range of tasks included in the roles of nurses/midwives is very extensive. This makes it possible to prepare and utilize more than one category of nurse, which allows for their recruitment from a wider pool, thus resulting in a more economical health service. However, this also demands that nurses be able to work closely with colleagues who have different levels of preparation and to optimize their use within safe parameters of care.

Task analysis: The task analysis did not include such tasks.

Provide midwifery care to women and infants up to the postnatal period

Role expectations: The provision of midwifery services is seen as part of the role of nurse and midwives.
   When it comes to women's health, it is the responsibility of the midwife to care for the woman during pregnancy and delivery, to make sure that the pregnancy is safe, and the delivery is also safe to prevent death for the mother and her baby.

Table 5. Health work force per 10 0000 of population (WHOSIT, 2010).

Country	Nurses and midwives	Physicians	Pharmacy personnel	Laboratory technicians	Other
Botswana	27	4	2	2	5
Cameroon	16	2	<1	1	<1
DRC	5	1	<1	<1	<1
Kenya	12	1	1	2	<1
Niger	2	<1	<1	<1	<1
Nigeria	17	3	<1	1	<1
Senegal	3	<1	<1	<1	<1
Tanzania	4	<1	<1	<1	8
Zambia	20	1	1	1	3
Average	12	2	1	1	2

Table 6. Top ten causes of mortality in adults and children per 1000 (WHO, 2004).

Adults (15-59 years)		Children (0-14 years)	
Condition	Number	Condition	Number
Cardiovascular disease	84	Respiratory infections	91
HIV/AIDS	81	Perinatal conditions*	90
Unintentional injuries	69	Malaria	75
Maternal conditions	65	Diarrhoeal diseases	65
Tuberculosis	64	HIV/AIDS	48
Malignant neoplasm's	35	Unintentional injuries	45
Respiratory infections	28	Childhood cluster diseases**	26
Intentional injuries	25	Congenital anomalies	25
Respiratory diseases	20	Nutritional deficiencies	19
Diarrhoeal diseases	11	Malignant neoplasms	9

*Perinatal conditions include prematurity and low birth weight, birth asphyxia and birth trauma, neonatal infections amongst others. **Childhood cluster diseases include pertusis, poliomyelitis, diphtheria, measles and tetanus.

Health, illness and care needs: The high population growth rate (average 2.4%) in this region points to the need for nurses to play a significant role in the health workforce. It is also significant that how many of the top ten causes of mortality and morbidity involves mothers and babies.

Task analysis: The current role study indicates that this role, though important was the least common amongst the sample of nurse, both in hospital and in ambulatory settings (39.1 and 39.0%, respectively). However, while low, it was more common in Anglophone than Francophone countries (42.1 and 33.9%, respectively).

Making a diagnosis and prescribing and giving treatment in an ethical and professional manner

Role expectations: This role is seen by some health professionals and members of the community as the nurse "poaching on the preserve" of the doctor. Based on the health and health service needs of the countries studied, it seems essential that this role be fully accepted by all stakeholders.

"I know very well that those tasks belong to these other people, but I am saying that the nurse who is placed in these remote areas should not function in the same way as those in the hospitals, they must be trained to do more because we do not have those other people. It should therefore become a part of the nurses' function because of the circumstances. We know that they are capable of doing that. The very ones of consultation, assessment, drawing blood, prescribing and dispensing medicines.

Health, illness and care needs: The severe and widespread shortage of doctors (average 2 per 10000 of population) and pharmacists (average 1 per 10000) reflected in Table 4 makes it imperative that the role of registered nurses and midwives (average 12 per 10000) in this region has to include diagnosis and treatment of all minor and selected common conditions.

Task analysis: Since these tasks are not generally seen as part of the role of the nurse, they were not included in

the practice survey. Nevertheless, one task (Prescribe medication according to the Essential Drug List) was measured and had a task index of more than 0.5 (5.07, SD=3.2).

Engage in strategies to prevent and/or manage communicable diseases

Role expectations: This role was usually described in terms of vaccination and community projects.

A nurse … must also do the preventive and promotive care to the clients and the community at large. They … are supposed to give measures for conditions like diarrhoea, cholera, dysentery to avoid infections.

Health, illness and care needs: Of the top ten causes of mortality in adults, four are infectious diseases, while in children it is five (Table 6). While HIV/AIDS and tuberculosis at the worst problems in adults, the picture looks very different in children. Some of these conditions can be prevented through vaccines, but many are linked to socio-economic conditions and health behavior.

It is therefore essential that the role of preventing and managing outbreaks of these illnesses be part of the role of nurses in African communities.

Task analysis: A few of the tasks refer to this role and only two of them recorded task index above 0.5: administer an immunizing agent (task index 4.64, SD=3.12), counsel re-STDs (task index 5.9, SD=2.97), counsel re-gastro-enteritis (task index 4.93, SD=3.1), measles (task index 4.66, SD=3.12) and tuberculosis (task index 5.57, SD=3.2), attend community meetings (task index 4.01, SD=2.73), and take part in community projects (task index 3.31, SD=2.31).

The identified roles are listed as: provide physical and psycho-social care for patients in hospitals in an ethical and professional manner (taking care of patients) provide health education to communities, care providers, clients and patients; manage the care environment of patients and clients to optimize care delivery; advocate on behalf of patients to ensure that health needs are addressed appropriately; provide emergency care; collaborate with the community, the family, the individual, other health workers and sectors as well as other nursing colleagues to enhance health and health care; provide midwifery care to women and infants up to the postnatal period making a diagnosis and prescribing and giving treatment in an ethical and professional manner; engage in strategies to prevent and/or manage communicable diseases.

As observed in the thematic statements from the focus group discussions, certain issues emerge that indicate

the importance of these roles for the nurse/midwife in different practice settings especially in the community settings for example, role 8: making a diagnosis and prescribing treatment in an ethical and professional manner. It was also clear that these roles cannot be performed in a vacuum and that some conditions as expressed by the focus groups and the case studies were very necessary for optimal performance.

DISCUSSION

The roles of the nurse in Sub-Saharan Africa as identified in this study are based on health and health service needs stakeholders' perceptions and current roles.

The first three roles (providing care, providing health education and managing the care environment) correlates with some of the categories of the USA NCLEX test ("psychosocial integrity" and "physical integrity", "health promotion and maintenance" and "safe and effective care environment") (Wendt et al., 2010), while in the EverCare role description, is represented by the "clinician" role, "coach/educator" and "communicator" roles and "care manager/coordinator" (Abdallah et al., 2005). These roles as identified by the focus group participants and the case studies reflect the reality of practice in the health services as they are roles enacted in the day to day care provision by nurses in all settings. These roles continue to evolve and could be modified, expanded and/or influenced by the needs of the population, staffing situation, available resources to mention a few without any compromise to the quality of care by the nurses (WHOSIT, 2010) (Table 5).

The advocacy role as represented in this study is in line with the roles identified by the ECSACON Group (2001), and which is a role that sees the nurse advocating with decision and policy makers, stakeholders in health and other sectors that could influence health care provision. In the Sub-Saharan Africa, health services often involve reaching out to communities through their means of living e.g. farmers, market women, etc., for sensitization and health promotion.

Role five (emergency care) is important in Sub-Saharan Africa due to the high levels of violence-related mortality and morbidity and the fact that health services are so heavily dependent on nurses. Nurses provide the bulk of health services in the countries represented in this study and often shoulder the responsibility for health care issues in communities. Emergency teams are often not available in hospitals and emergency services in many communities rely on the nurses and midwives who are almost always readily available in ambulatory care clinics.

The role (collaboration with community, family, individual and others to enhance health and health care), was one of the three roles identified by ECSACON (2001) and was also one of the seven roles of EverCare nurses working with the elderly (Abdallah et al., 2005). It is important

to note that collaboration is a key role and even a competency in nursing as obtains in the ICN (2008) framework of competencies.

The International Confederation of Midwives (2011) advocates for the right of all women to have access to midwifery care during pregnancy, childbirth and the perinatal period, which is role seven. In this study, direct entry training as a midwife was available in five of the eight countries, while it is additional to nursing training and such nurse graduate with double qualifications as a nurse and midwife. In many settings therefore, the same individual professional acts as both nurse and midwife, depending on the service needs at the time. Given the high infant mortality rates and the need to work towards achieving Millennium Development Goals (4 and 5), this role implication is that sustained efforts are necessary to ensure that nurses and midwives are adequately prepared to meet these needs.

Role eight (Making diagnosis, prescribing and giving treatment in an ethical and professional manner) is the only controversial role. Though most stakeholders in this study recognize the role as crucial, especially where there is no doctor, there is still a lot of argument on the role on the part of doctors mainly. In the USA and Europe, this role is associated with the nurse practitioner/advanced nurse practitioner category usually prepared at Master's degree level (Laurant et al., 2004), but in a review of UK studies, Rashid (2010) found some studies focusing on task shifting to "practice" nurses who were not nurse practitioners. In the countries involved in this study, the role involved nurses with entry level qualifications, though some of them may have other additional qualifications.

Priest et al. (2012) proposed a model for gender role identification which may be useful in the discussion of the different perceptions about whether nurse should take on this role or not. They make a distinction between action rigidity or flexibility and cognitive rigidity or flexibility. It seems that in this debate about the role of the nurse, many respondents articulated a cognitive rigidity, while being willing to live with action flexibility to deal with the health and illness needs on the ground. However, in a survey including 27 countries in Europe, Stamm and Hill (2011) found that 92% of the 479 non-physician health professionals reported performing extended roles. This includes the role of diagnosing and treating illnesses. If this is such a widespread practice in Europe, it may be expected to be common in Africa where shortages of physicians are much more severe. However, task shifting from the doctor to the nurse needs to be carefully planned and implemented, since it takes place in a context of a nurse shortage (Shumbusho et al., 2009) and it may over-burden already stretched nurses.

The nursing and midwifery regulatory bodies in the region by implication on this role should develop the scope of practice statements for nurses which support an extended role as obtains in other countries. In the

guidelines on scope of practice, the NCSBN (2005) makes the point that decisions in this regard should, in the first instance, be made in the interest of the public and not to protect certain professions. They further state that the scope of practice statements should be adapted so that they are aligned with changes in the health system and that overlaps in the scope of practice of different health professions is necessary. These arguments are particularly relevant in the debate on the role of nurses in Africa with regard to diagnosis and treatment.

Role nine is an important one in the context of Africa, which does not seem to be enacted adequately. Although there has been a growing body of knowledge about the spread of resistant organisms (Singh and Padayatchi, 2007), there has been limited publication on the role of nurses in preventing and managing infectious diseases. Every year, there are "Malaria day" (25th April), Tuberculosis day (24th March), HIV/AIDS day (1st December) and Vaccination week (April), but nurse-researchers in Africa have seldom addressed the cost-benefit of such interventions in their own low-resourced environment. The role of the nurse might include enhancing community strategies through their own involvement in schools, clinics and communities, to assess the acceptability and effectiveness of nationally and internationally produced educational materials and to evaluate the impact of national strategies. Since Africa sometimes experiences the outbreaks of serious epidemics, it is also important that nurses are competent in implementing and evaluating community plans to handle such outbreaks. Practice development, research and best practice guidelines in this role are very necessary.

CONCLUSION AND RECOMMENDATIONS

This study on the role of nurses in Sub-Saharan Africa provides a detailed description of what nurses are doing, and/or should be doing in the health services of the region. It identifies nine roles and provides support for each based on the health and health service needs of the population, role expectations and current practice. It also clarifies what policy, regulatory and educational support is necessary in order for the professions to fulfill these roles.

Although it is common for politicians, policy-makers and health administrators to acknowledge that the nursing profession is "the backbone of the health service", they often fail to back up this assertion with supportive policies that allow for maximum performance and output by nur-ses. Not only does the population suffer by not getting the best care, but the lack of enabling work environment and an appropriate reward and progression structure often inhibits development of potential leaders in the profession for the countries. To address this issue, it is recommen-ded that findings and recommendations from this study be used to advocate for instituting the prerequisite conditions

in every country. Advocacy by groups that have a high stake in providing excellent care for the unique needs of each country in Africa such as National Nursing Associations (NNAs), regional organizations and consumer groups are essential for activating the media, educational institutions, and health policy-makers to make the needed changes.

It is further recommended that similar studies be done nationally to serve as a basis for national nursing curriculum prescriptions. The prescribed content of curricula should prepare nurses and midwives for current practice, and should be founded on an evidence-based understanding of such practice, as well as taking into account the burden of disease and the characteristics of the health system. The nine roles described here are recommended as a framework for such studies, because using the more limited role lists probably may not discriminate sufficiently to allow for differentiating the many tasks that comprise a role. An accurate picture of the required functions may therefore not be attained.

Although nurses in African countries are very capable of performing the function of diagnosis and treatment, they need to be more active in their own region, and be involved with their national nursing association in lobbying for adequate recognition in policy, education and rewards for this role. Continuing to see this as a "medical" role in the context of a severe shortage of doctors in the region leads to continued ambiguity and poor service to the community.

The roles in which nurses are not currently fully engaged, such as providing primary mental health care, rehabilitation and midwifery services should be cause for alarm and given attention by nursing/midwifery regulatory bodies, NNAs and nursing education institutions, and of course, health service managers. These are essential components within the PHC approach and for the most part, communities are dependent on nurses to provide such services.

LIMITATIONS

The study has a number of limitations. Problems were experienced with each of the components so that information was not totally consistent across all countries.

In the health, illness and care needs document survey, current information on certain indicators in some of the countries was either difficult to find/unavailable. In the role expectation qualitative study used in one of the countries, only nurses were interviewed. In the task analysis survey, the lack of funding for face-to-face planning and training meetings led to the regional principal investigators contact with the country principal investigators to be restricted to phone or email and these people then instructed field workers. The long chain of instruction led to few misunderstandings which only became apparent once the data was received. Although in one

country data collection was repeated after such an issue arose, this was not possible in all countries. This meant that the hospital sample was much larger than the ambulatory sample. Furthermore, the sampling method was not ideal and no power analysis was done.

REFERENCES

Abdallah LM (2005). EverCare nurse practitioner practice activities: Similarities and differences across five sited. J. Am. Acad. Nurse Pract.17(9):355-362.

Aiken LH, Clarke SP, Sloane DM, Lake ET, Cheney T (2008). Effects of hospital care environment on patient mortality and nurse outcomes. J. Nurs. Adm. 38(5):223-229.

African Union (2009). 4th Session of the Conference of Ministers of Health, 4-8 May, 2009. Available at: Addis Ababa.www.africaunion.org/.../camh-exp-13   a(iv)%20paper%20health%20financing%20in%20africa.doc.

Biddle BJ, Thomas EJ (1966). Role Theory: Concepts and Research. New York: John Wiley & Sons. pp.

Frenk J, Chen L, Bhutta ZA, Cohen J, Crisp N, Evans T, Fineberg H, Garcia P, Ke Y, Kelley P, Kistnasamy B, Meleis A, Naylor D, Pablos-Mendez A, Reddy S, Scrimshaw S, Sepulveda J, Serwadda D, Zurayk H (2010). Health professionals for a new century: transforming education to strengthen health systems in an interdependent world. Lancet 376(9756):1923-1958.

Cho SH, Ketefian S, Barkauskas VH, Smith DG (2003). The effects of nurse staffing on adverse outcomes, morbidity, mortality, and medical costs. Nurs. Res. 52 (2):71-9.

Chu KM, Ford NP, Trelles M (2011). Providing surgical care in Somalia: A model of task shifting. Conflict and Health 5:12. www.conflictandhealth.com/content/5/1/12

Dierdorff EC, Morgeson FP (2007). Consensus in work role requirements: the influence of discrete occupational context on role expectations. Appl. Psychol. 92(5):1228-1241.

ECSACON (2001). Nursing and midwifery professional regulatory framework. Arusha: Commonwealth Regional Health Secretariat.

International Confederation of Midwives (2011). Position statement: Appropriate maternity services for normal pregnancy, childbirth and the postnatal period. International Council Meeting Vienna 2002, revised in Durban 2011.

International Council of Nurses, ICN (2008). Framework of nursing competencies. Geneva, ICN.

Laurant M, Reeves D Hermens R, Braspenning J, Grol R, Sibbald B (2004). Substitution of doctors by nurses in primary care. Cochrane Database Systematic Rev. 5:CD 001271.

Lynch KD (2007). Modeling role enactment: Linking role theory and social cognition. J. Theory of Soc. Behav. 37(4):397-399.

Mbambo S, Uys LR, Groenewald B (2003). A job analysis of selected health workers in a district health system in KwaZulu-Natal. Part two: Job analysis of nurses in primary health care settings. Curationis 26(3):42-52.

Ministry of Health of Mozambique (2010). Situation Analysis of the Nursing careers in Mozambique, Technical Report.

Munga MA, Kilima SP, Pius Malemwa P, Kisoka WJ, Malecela MN (2012). Experiences, opportunities and challenges of implementing task shifting in underserved remote settings: the case of Kongwa district, central Tanzania. BMC Int. Health Hum. Rights 12(1):27-38.

Natan MB, Oren M (2011).The Essence of Nursing in the Shifting Reality of Israel Today. Online J. Issues Nurs. 23:16(2):7.

National Council of State Boards of Nursing (NCSBN) (2005). Nursing Regulation and the Interpretation of Nursing Scope of Practice. http://www.ncsbn.org/NursingRegandInterpretation   of   SofP.pdf Accessed 8th October 2012.

Neale M, Griffin MA (2006). A model of self-held work roles and role transitions. Hum. Perform. 19 (1): 23-41.

Needleman J, Bauerhaus P, Potter V, Mattke S, Stewart M, Zelevinsky K (2001). Nurse-staffing levels and patient outcomes in hospitals. Final report for Health Resources and Services Administration. Contract

No. 230-99-0021. Harvard School of Public Health. Boston, MA.

Parent F, Lemenu D, Lejuene C, Komba D, Baulana R, Kahombo G, Coppieters Y (2006). Présentation du referential de compétences infirmier en Republique Democratique du Congo dans le cadre du renforcement des ressources humaines en Sante. Sante Publique 1-12.

Priest JB, Anne B E, Joseph LW, Catherine MG, Rebecca AC, Christine WB (2012). An exploratory evaluation of the Cognitive Gender Role Identification Continuum. Am. J. Fam. Ther. 40:152-168.

Rashid C (2010). Benefits and limitations of nurses in primary care taking on aspects of the clinical role of doctors in primary care: integrative literature review. J. Adv. Nurs. 66(8):1658-1670.

Seboni NM, Magowe M, Uys LR, BiSuh M, Djeko KN, Moumouni H (2013). Shaping the role of Sub-Saharan-African nurses and midwives: Stakeholders' perceptions of the nurses and midwives. Health SA Gesondheid 00(0): 000-000.

Singh JA, Upshur R, Padayatchi N (2007). XDR-TB in South Africa: No Time for Denial or Complacency. PLoS Med. 4(1):e50. doi:10.1371/journal.pmed.0040050

Shumbusho F, van Griensven J, Lowrance D, Turate I, Weaver MA, et al. (2009). Task Shifting for Scale-up of HIV Care: Evaluation of Nurse-Centered Antiretroviral Treatment at Rural Health Centers in Rwanda. PLoS Med 6(10): e1000163. doi:10.1371/journal.pmed.1000163

Simoens S, Villeneuve M, Hurst J (2005). Tackling Nurse Shortages in OECD Countries OECD Health Working Papers, No. 19, OECD Publishing. Doi: 10.1787/172102620474

Squires A (2004). A dimensional analysis of role enactment of acute care nurses. J. Nurs. Scholarsh. 36 (3): 272-278.

Srivastava N, Tucker JS, Draper ES, Milner M (2008). A literature review of principles, policies and practice in extended nursing roles relating to UK intensive care settings. J. Clin. Nurs. 17:2671-2680.

Stamm T, Hill J (2011). Extended roles of non-physician health professionals and innovative models of care within Europe: Results from a web-based survey. Musculoskelet. Care 93-1011.

Swaine-Verdier A, Doward LC, Hagell P, Thorsen H, McKenna SP (2004). Adapting quality of life instruments. Value Health 7:S27-30.

Thomas J, Harden A (2008). Methods for thematic synthesis of qualitative research in systematic reviews. BMC Med. Res. Methodol. 8:45.

Uys LR, Groenewald B, Mbambo S (2003). A job analysis of selected health workers in a district health system in KwaZulu-Natal. Part one: Job analysis of nurses in hospital settings. Curationis 26(3):32-41.

Uys L, Chipps J, Kohi T, Makoka D, Libetwa M (2013). Role analysis of the nurse/midwives in the health services in Sub-Saharan Africa. J. Adv. Nurs. 00(0):000-000. Doi: 10.111/j1n12087.

Wendt A, Eich M (2007). 2006-2007 RN Continuous Practice Analysis.NCSBN Research Brief 34: May 2007. www.ncsbn.org/08-2006- 2007_ RN_ Continuous_Practice_Analysis_Vol 34_FINAL.pdf Accessed 15/07/2009.

Wendt A, Kenny L, Schultz L (2010). 2010 NCLEX-RN Detailed test plan. Available at: https://www.ncsbn.org/2010_NCLEX_RN_Detailed_Test_Plan_Candidate.pdf

WHO AFRO (2008). Evaluation of Nursing and Midwifery Education Programmes in Selected Francophone Countries in the WHO African Region. Brazzaville: WHO Regional Office.

WHO (2004). Global Burden of Disease (GBD)(www.who.int/healthinfo/global_burden_diseases/2004_report_ update/). Accessed 16/07/2009.

WHO (2009). WHO Statistical Information System (WHOSIS). Available at: www.who.int/whosis/en/index.html.

Yin RK (2009). Case Study Research. Design and Methods. 5th Ed, Los Angeles, Sage.