# Skills Gap among Sexual and Reproductive Healthcare Professionals in Cameroon

**Michael N. Nkwenti**
https://orcid.org/0000-0002-6095-5074
University of Yaoundé, Cameroon
nkwentimichael@gmail.com

**Ishan Sudeera Abeywardena**
https://orcid.org/0000-0002-5042-670X
Commonwealth of Learning, Canada
iabeywardena@col.org

## Abstract

Over the last 10 years, the state of sexual and reproductive health in Cameroon has been challenging with rising levels of sexually transmitted diseases, the high fertility rate, and high infant and maternal mortality rates. Some researchers attributed these challenges to the limited number and quality of sexual and reproductive health personnel working in health facilities across the country. The North West Region of Cameroon was taken as a unit of study to probe into the skills gap among sexual and reproductive health practitioners. A total of n = 302 participants at a confidence interval of 95 per cent were selected using a stratified random sampling technique to take part in the study. The results indicated that a good number of them have no prior experience in the field of sexual and reproductive health. On the other hand, most of the practitioners' skills level is situated between intermediate and competent with very few of them being at the expert skills level. It was therefore recommended that most of the participants need improvement in (i) computer or information technology skills; (ii) research skills; and (iii) leadership development of the specialty. These areas need to be dealt with, as a matter of priority, through training and professional development to enable these professionals to deliver better service in the sexual and reproductive healthcare sector. It was also recommended that, in line with the critical role that sexual and reproductive health practitioners play in Cameroon's health system, the Ministry of Public Health and other role players in the health sector make sufficient investments in the improvement of the health workforce's accessibility to information and communication technology.

**Keywords:** sexual and reproductive healthcare; sexual and reproductive healthcare professionals; skills gap; health facilities; Cameroon

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## Introduction

As society evolves, new health challenges emerge necessitating sexual and reproductive healthcare professionals to upskill themselves (Karimian et al. 2018). According to the World Health Organization (2015), the world had 1.2 billion adolescents in 2016, with 110 million in West and Central Africa. The United Nations (2017) observed that sub-Saharan Africa is the region where adolescents make up the greatest proportion of the population, with 23 per cent of the region's population aged 10–19 years. Adolescence is regarded as a time of transition from childhood to adulthood when various biological, psychological and social transitions take place (Fatusi and Hindin 2010). A person's sexual and reproductive health plays an integral role during this period and can be very challenging (World Health Organization 2004). The biological transition is reflected in adolescents' appearances, voice changes and sexual activeness, whereas the psychological transition is reflected in the social transition towards their human rights (World Health Organization 2004).

The challenges encountered by adolescents around the world are enormous. Young female adolescents face a higher risk of complications and death as a result of pregnancy than other women (World Health Organization 2014). Every day, approximately 830 women die from preventable causes related to pregnancy and childbirth with 99 per cent of all maternal deaths occurring in developing countries (World Health Organization 2016). Additionally, an estimated 3 million girls aged 15–19 undergo unsafe abortions every year (World Health Organization 2015). Another deadly disease referred to as the human papillomavirus (HPV), primarily acquired during adolescence, can lead to cervical cancer (World Health Organization 2018). In 2017, there were 2.1 million adolescents worldwide living with the human immunodeficiency virus (HIV) (UNAIDS 2017). Adolescent sexual and reproductive health can also affect their mental health and other health domains, have long-term effects on education, employment potential, economic well-being and their overall ability to reach their full potential (Chandra-Mouli, Lane, and Wong 2015).

According to the United Nations' World Population Prospectus (2017), the Republic of Cameroon is an African country located in the western part of Central Africa, with an area of 475 440 square kilometres. The country has an estimated population of about 24 320 621 people as of December 2017, which is equivalent to 0.32 per cent of the world's total population. The country is bordered by Nigeria in the north-west, Chad in the north-east, the Gulf of Guinea in the south-west, the Central African Republic in the east, Chad in the north and Congo-Brazzaville, Gabon, and Equatorial Guinea in the south (World Population Review 2018). Cameroon has 10 regions, 360 districts, 360 municipalities and 14 urban communities with English and French being the two official languages (Engen 2013; Ngah et al. 2013; Sawe 2017). Out of the country's 10 regions, the North West and South West Regions are predominantly English-speaking, while the other 8 regions are predominantly French-speaking (Engen 2013; Ngah et al. 2013; Sawe 2017). Additionally, the more than 250 ethnic groups in

Cameroon fall under the Bantu, Semitic or Nilotic language groupings (Engen 2013; Ngah et al. 2013; Sawe 2017).

Cameroon is a member of the Economic Community of Central African States (ECCAS), the Economic and Monetary Community of Central Africa (CEMAC), the Council for Peace and Security in Central Africa (COPAX), the African Union (AU), the Commonwealth of Nations, and the Organisation Internationale de la Francophonie (OIF) (Engen 2013; Ngah et al. 2013; Sawe 2017). In 2016, the World Bank classified Cameroon as a lower middle-income country, with a GDP of US$32.22 billion (World Bank 2016). Despite its economic growth, close to 40 per cent of the population still live below the poverty line with 33 per cent living on less than US$1 per day (World Bank 2016). The poorest regions are the North and Far North, where the poverty rate is more than 60 per cent, while in Yaoundé and Douala poverty rates are below 6 per cent (National Institute for Statistics 2012). This economic inequality ranks the country 153 out of 188 countries on the Human Poverty Index (World Bank 2015). The life expectancy at birth has increased from 51 years in 2000 to 57.3 years in 2015 (Cameroon Ministry of Public Health 2016b). The country faces the double burden of communicable and non-communicable diseases (Cameroon Ministry of Public Health 2016a).

In recent years, the state of sexual and reproductive health in Cameroon has been challenging with rising levels of sexually transmitted diseases, the high fertility rate and high maternal mortality rate (Foumane et al. 2013; Tebeu et al. 2015). The National Health Development Plan 2016–2020 (Cameroon Ministry of Public Health 2016a) and the Sectoral Health Strategy 2016–2027 (Cameroon Ministry of Public Health 2016b) observed that infant and child mortality decreased between 2011 and 2014. This decrease is significant among children under 5 years old, which dropped from 122 deaths to 103 deaths per 1 000 live births (Cameroon Ministry of Public Health 2016a).

The government's stated goal was to reduce infant mortality rates from 103 per cent to 76 per cent and child mortality rates from 66 per cent to 39 per cent in 2015 (Cameroon Ministry of Public Health 2016a). Despite the improvements, the targets were not met (Cameroon Ministry of Public Health 2016a). Also, these strategy documents observed that maternal mortality has been aggravated over time, from 430 in 1998 to 669 in 2004 and then to 782 maternal deaths per 100 000 live births in 2011 (Cameroon Ministry of Public Health 2016a). Further, the rates of deliveries attended by trained or skilled care providers decreased notably in the West (93.30% to 92.30%) and the littoral (without Douala) regions (93.80% to 88.50%) (Cameroon Ministry of Public Health 2011; 2016a). In major cities like Douala, it dropped from 97.10 per cent to 95.20 per cent and in Yaoundé from 94.20 per cent to 90.50 per cent (Cameroon Ministry of Public Health 2011; 2016a). The strategy documents further observed that there is a need to improve the quality of reception and care for pregnant women in hospitals (Cameroon Ministry of Public Health 2016a).

To remedy some of these challenges, the 2016–2020 strategy framework (Cameroon Ministry of Public Health 2016a) states that the HIV/AIDS mortality rate will be reduced by 75 per cent; the health of mothers, newborns, children, adolescence and the youth will be improved by 50 per cent; the maternal mortality rate will be reduced by 30 per cent; and sexual and reproductive health for adolescents, the youth and women will be significantly improved (Cameroon Ministry of Public Health 2016a). As measures envisaged, the two strategy documents stressed the need for the state to partner with local communities to promote the health of vulnerable and underprivileged groups, especially women (Cameroon Ministry of Public Health 2016a; 2016b).

The Sectoral Health Strategy 2016–2027 document observed that the problem of quality is a major issue plaguing the training of medical personnel (Cameroon Ministry of Public Health 2016b). In 2013, the Cameroon Medical Council assessed the training strength of the private faculties of medicine in Cameroon. The outcome revealed that, apart from the four state faculties of medicines, only two of the six private institutes of medicine met the minimum required standards of medical training (Ngah et al. 2013). To remedy this situation, the state has resorted to giving subsidies to these training faculties to step up their quality of training. With this effort, the subsidy given by the state accounts for just about 1 per cent of the amount needed to train these medical doctors. Regarding the continuous professional development (CPD), the Health Sector 2016–2027 strategy paper remarked that in-service training is largely insufficient for all categories of health personnel (Cameroon Ministry of Public Health 2016b). Since the year 2015, only 0.1 per cent of the Ministry's budget is allocated for in-service training annually.

The quality of training could account for the reasons why there are high infant and maternal mortality rates (Alongifor 2016; Asamoah et al. 2011). Similarly, little attention accorded to training of health professionals can have an impact on the quality of services provided by the personnel (Ngah et al. 2013). This might be one of the reasons why the strategy papers further state that health services will be provided by skilled, confident and suitably equipped staff. As part of the action plan to achieve the envisaged goals, the document states that "for a better performance of the health sector, it will be necessary to reinforce the capacity of stakeholders to promote all aspects of health" (Cameroon Ministry of Public Health 2016, 69). Given these targets, this study aimed to identify the skills gap among sexual and reproductive healthcare professionals in Cameroon with a focus on skills, knowledge, attitudes and values underpinning effective performance.

Many researchers have clearly demonstrated that nurses and midwives provide outstanding contributions to health improvements of patients, such as satisfaction, a decrease in patient morbidity and mortality, stabilisation of financial systems through decreased hospital readmissions, the length of stay, and other hospital-acquired infections and conditions (Kendall-Gallagher et al. 2011; Pintar 2013). Studies also show that midwifery, including family planning and interventions for maternal and

newborn health, could avert a total of 83 per cent of all maternal deaths, stillbirths, and neonatal deaths (Patel et al. 2013). Recent studies indicate that midwives can provide 87 per cent of the needed essential care for women and newborns, when educated and regulated in accordance with international standards (Smith et al. 2014). Substantial reductions in child deaths are possible, only if intensified efforts to achieve intervention coverage are implemented successfully (Davis et al. 2012). Midwives must be leaders in the design, implementation, and evaluation of the ongoing change in their care environments. Furthermore, midwives must take leadership roles in building professional and inter-professional partnerships, developing leadership skills and competencies, and working in mutually respectful teams to enhance the quality of the care services (Walker et al. 2013). On the basis of these assertions, a requirement by nurses and midwives for the efficient delivery of sexual and reproductive health services was access to knowledge using proven models. Competencies are knowledge, skills and attitudes required by the nurses and midwives to effectively carry out their jobs.

## Theoretical Framework for the Analysis of Health Practitioners' Skills

### Miller's Model of Competence

To identify the competences required by nurses and paramedics in the effective execution of their daily tasks, the Pyramid of Clinical Competence developed by Miller (1990) served as the theoretical framework. Miller (1990) upholds that nurses and paramedics must go through four sequential training steps before performing duties on real-life patients. This model was developed to test the competencies of health personnel in the exercise of their duties. These four sequential stages are as presented in Figure 1.

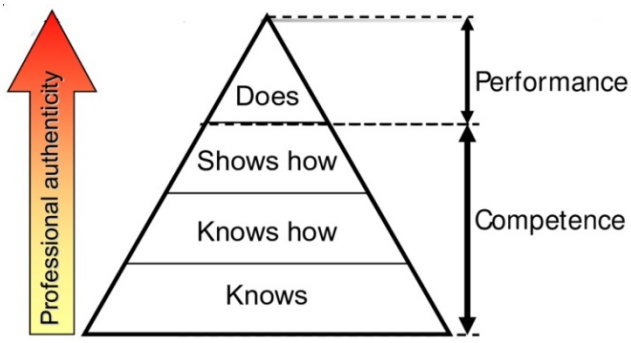


**Figure 1:** Pyramid of clinical competence (adapted from Miller 1990)

The "knows" stage is a stage where health students are expected to master the different lessons taught in class by their trainers (Miller 1990). At this stage the students are expected to learn the different functions of the human system, to know how they function, and to be able to explain this knowledge to a third a party.

The “knows-how” stage is the step where the trainees know how to carry out various tasks related to their area of study (Miller 1990). However, the fact that trainees know how to perform a task does not mean that they will be able to do it in real-life situations (Mehay and Sackin 2010). It is for this reason that a researcher intimates that at the level of know-how, the trainees should be able to learn related skills and how knowledge is employed (Stalburg 2002).

“Shows how” is the stage where the trainees should show friends and mates what they are able to do (Miller 1990). Therefore, at this level, the trainees are expected to move out from cognition and thinking to behaviour and practice (Statman 2013). Thus, the trainees should be able to correctly perform medical functions with the use of models and other multimedia.

The “does” stage requires the medical personnel to carry out health operations independently (Miller 1990). This stage marks the disappearance of all assistance and media to move to hands-on practice.

Miller’s (1990) model has guided the development of competency frameworks for nurses and paramedics in many countries and organisations. To select the choice of competency standard to guide the assessment of nurses and paramedics skills gap in Cameroon, some competency frameworks were reviewed as seen in Table 1.

**Table 1:** Competency framework for the assessment of nurses and paramedics' skills gap

| *The SSHA Competency Framework for Sexual Health Advisers (SSHA 2013)* | *The State of South Carolina Competency Assessment for Tier 1 Public Health Professionals (2014)* | *World Health Organization Sexual and Reproductive Health Competencies in Primary Care (2011)* | *Australasian Competency Standards for Sexual and Reproductive Health and HIV Nurses (2011)* |
|---|---|---|---|
| *4 Domains* | *8 Domains* | *4 Domains* | *7 Domains* |
| • Professional, ethical and legal practice<br>• Assessment, planning and delivery of care<br>• Public health role and responsibilities<br>• Personal and professional development | • Analytical or assessment skills<br>• Policy development or programme planning skills<br>• Communication skills<br>• Cultural competency skills<br>• Community dimensions of practice skills<br>• Public health sciences skills<br>• Financial planning and management skills<br>• Leadership and systems thinking skills | • Attitudes to providing high-quality sexual and reproductive healthcare<br>• Leadership and management<br>• General sexual and reproductive health competencies for health providers<br>• Specific clinical competencies | • Effective communication<br>• Assessment, care planning and clinical management<br>• Health promotion and patient education<br>• Research<br>• Legal and ethical nursing practice<br>• Collaborative care and partnerships<br>• Leadership and development of the speciality |
| *Limited and not easy adaptable to Cameroon sexual and reproductive health needs* | *Limited mostly to primary healthcare practitioners with very little covered in the area of sexual and reproductive healthcare* | *Limited more to sexual and reproductive healthcare with very limited coverage on contextual issues* | *Deals with health-related factors and issues of sexual, reproductive health and HIV/AIDs. Designed to target similar practitioners in the Cameroon sexual and reproductive healthcare chain* |

Table 1 indicates the individual competency frameworks reviewed in this study to identify the most appropriate framework required by nurses and paramedics in Cameroon to implement the national multisectoral programme to combat maternal and child mortality. The Australasian Competency Standards for Sexual and Reproductive Health and HIV Nurses (2011) were found to be closely related to the needs of Cameroon. It should be noted that the country has not yet developed competency standards for nurses and paramedics.

**Australasian Competency Standards for Sexual and Reproductive Health and HIV Nurses**

The 2011 Australasian Sexual and Reproductive Health Association (ASHHNA) Competency Standards were developed specifically for registered nurses working in sexual health, sexual and reproductive health and HIV outpatient, community and ambulatory care settings. These categories of personnel are also found in the Cameroon health system. ASHHNA postulates that the competency standards and performance criteria may be used to

- assist with training and development of nurses new to the speciality,
- provide guidelines of best practice for registered nurses employed in specialised sexual and reproductive health and/or HIV services,
- provide a mechanism for the recording of individual performance and assessments,
- assist in identifying areas of practice where further training and ongoing professional development are required,
- assist in the documentation of professional development achievements and plans to guide peer reviews, and
- guide the development of postgraduate scholarship and clinic-based training programmes for the specialities.

For this study the competency frameworks were modified and used to assess nurses and paramedics' skills gap**.** The competencies that are divided into seven domains are a combination of skills, knowledge, attitudes and values that underpin effective nursing or midwifery performance in the individual area and context of practice (Australasian Sexual Health and HIV Nurses Association Incorporated 2011). The domains are:

- effective communication;
- assessment, care planning and clinical management;

- health promotion and patient education;
- research;
- legal and ethical nursing practice;
- collaborative care and partnerships; and
- leadership and development of the speciality.

The domains are made up of a series of sub-competencies that nurses and paramedics should demonstrate in order to perform effectively in their jobs. Since the publication of this framework, many researchers have adapted it when mapping out nurses and paramedical practitioners' skills prior to a capacity building programme both for initial and professional development (Fronek et al. 2011; Higgins et al. 2013).

## Methodology

A survey-based research design was adopted for the study to probe the skills gap and preferred training modes of sexual and reproductive healthcare professionals, such as midwifes, nurses and paramedics. Since the study was survey-based, there were no ethical concerns associated with the study. Only participants who had voluntarily signed the consent form were surveyed. Confidentiality of participants was maintained via the anonymous nature of the survey questionnaire, and processing of the data adhered to the declaration of Helsinki (Declaration of Helsinki 2013). No personal information was collected during the study.

The study was completed in two stages. The first stage was the review of previous research work and reports detailing training or capacity building for sexual and reproductive healthcare professionals in Cameroon. Through the literature review, evidence of local needs analyses and training initiatives was identified. The second stage consisted of the survey study of professionals working in sexual and reproductive health. This stage investigated the skills gap among these staff members in eight domains and their preferred mode of learning. A questionnaire was administered among healthcare professionals working in public, private and faith-based health posts, health centres and clinics located in urban, semi-urban and rural areas.

## The Sample

The participants of the study were nurses, midwifes, community health workers and paramedics working in the maternity units in public, private and faith-based health institutions in some divisions of the North West Region of Cameroon. Based on public health statistics for 2011, there were 1 590 nurses, 47 community health workers and 377 paramedics making a total of 2 014 staff working in the North West Region of Cameroon (Cameroon Ministry of Public Health 2011). Assuming that this number had

witnessed an estimated growth of 10 per cent, we estimated the total population to be 2 215 staff working in this Region by 2017. Considering a confidence level of 95 per cent, we estimated that a sample size of 333 would adequately represent the population. This population was selected through the stratified random technique. The questionnaire was administered to this number and 302 responses were received at a rate of 90.69 per cent.

## Survey Instruments

The questionnaire for the study was a combination of closed-ended and open-ended questions adapted from the competency framework instruments by the Australasian Sexual Health and HIV Nurses Association Incorporated (2011). Competencies are probed in eight domains which are a combination of skills, knowledge, attitudes and values that underpin effective nursing or midwifery performance in the individuals' area and context of practice. The domains probed are: (i) effective communication (14 test items); (ii) assessment, care planning and clinical management (16 test items); (iii) health promotion and patient education (8 test items); (iv) research (4 test items); (v) legal and ethical nursing practice (4 test items); (vi) collaborative care and partnerships (12 test items); (vii) leadership and development of the specialty (7 test items); and (viii) computer or information technology skills (5 test items). A five-point Likert scale was used to represent the skills level ranging from (i) no prior experience; (ii) beginner skills; (iii) intermediate skills; (iv) competent skills; and (v) expert skills. Additionally, details on computer or smartphone ownership and use (five test items); and preferred training mode (four test items) were probed. The quantitative data collected through the survey questionnaire were analysed using the SPSS Version 20.0 statistical package concentrating on frequency count, mean and standard deviation (STD). Missing data were computed using the conditional mean imputation techniques (Briggs et al. 2003; Graham 2009).

Validity was established through content and construct evidence (Fraenkel and Wallen 2006). Content-related validity in this study was based on ensuring the adequacy with which the test items adequately and representatively sample the content area to be measured. On the other hand, the researchers ensured that construct-related validity was maintained by accurately measuring the theoretical, non-observable construct (Fraenkel and Wallen 2006; Lodico, Spaulding, and Voegtle 2006). Regarding reliability, the test instruments used for the study were adapted from similar studies. Reliability was further obtained by piloting the instruments. The scores obtained from the returned pilot questionnaires were assessed using Cronbach's alpha. Cronbach's alpha is a standard and one of the most widely used reliability estimation indices (Hogan, Benjamin, and Brezinski 2000). The closer alpha is to 1.0, the more internally consistent the construct.

## Fieldwork

The interviewers were carefully screened to be culturally sensitive, to be knowledgeable about the environment and to have experience in surveys or work related to human

resources for health. They consisted of secondary school teachers, primary healthcare practitioners and healthcare facility coordinators. Local authorities were contacted for approval to conduct the survey. Visits were made to the relevant health facility manager within the public, private and faith-based facilities. During the visits, the purpose and procedures of the survey were explained to them. Some accepted and some refused because the team did not have prior written approval from the Cameroon Ministry of Public Health although the sub-director for in-service training and continuous development had been briefed about the study. For the survey, each targeted facility was visited and the questionnaire was administered to a sample of eligible participants. In the cases where some practitioners were not represented or the desired numbers were not met, more representatives were sought in other facilities.

## Results

A total of 302 participants (n = 302) took part in the study. Within this sample, 70.2 per cent were females. The majority of the participants (83.6%) fell within the 26–35 years age range. This indicates that the respondents were relatively mature and could confidently express their views. Table 2 indicates the professional category, qualifications and the level of experience of the participants. The data indicate that the majority of participants have some working experience in their areas of specialisation and could effectively assess their abilities in each of the domains surveyed.

**Table 2:** Professional category and qualifications of participants

| *Designation* | *Registered nurse* | *Midwife* | *Nursing aid* | *Community health worker* | *Lab technician* |
|---|---|---|---|---|---|
| n | 104 (34.4%) | 25 (8.3%) | 67 (22.2%) | 39 (12.9%) | 67 (22.2%) |
| *Qualifications* | *Certificate* | *Diploma* | *Higher diploma* | *Degree* | *Other* |
| n | 75 (24.4%) | 106 (35.1%) | 46 (15.2%) | 42 (13.9%) | 33 (11.4%) |
| *Work experience* | *< One year* | *Years* | *6+ Years* | *Missing data* | |
| n | 48 (15.9%) | 93 (30.8%) | 148 (49%) | 13 (4.3%) | |

Out of the seven divisions in the North West Region, only five took part in the study as seen in Table 3. A total of 61.6 per cent of the participants were drawn from the Mezam Division which is the largest in the Region in terms of surface area and population density, hosts the Regional headquarters, has many health facilities, and is very accessible in comparison to other divisions. A total of 51.3 per cent of the participants were drawn from health facilities located in urban areas because of the high population density. Similarly, 48.6 per cent of the participants were drawn from public health facilities because the government is the largest health provider in the Region and the country followed by the private sector and faith-based health facilities.

**Table 3:** Distribution of participants per division and type of health facility

| *Division* | *Mezam* | *Momo* | *Bui* | *Boyo* | *Ngohkentunja* |
|---|---|---|---|---|---|
| n | 186 (61.6%) | 29 (9.6%) | 40 (13.2%) | 20 (6.6%) | 27 (8.9%) |
| *Location* | *Rural* | *Semi-urban* | *Urban* | | |
| n | 91 (33.1%) | 56 (18.5%) | 155 (51.3%) | | |
| *Type of health facility* | *Clinic* | *Health post* | *Health centre* | | |
| n | 18 (6.0%) | 180 (56.9%) | 104 (34.4%) | | |
| *Nature of health facility* | *Public* | *Private* | *Faith-based* | | |
| n | 147 (48.6%) | 117 (38.7%) | 38 (12.6%) | | |

Table 4 summarises the mean skill level of the participants based on the eight domains and Likert scale described in the methodology section. The STD measures how concentrated the data are around the mean; the more concentrated, the smaller the STD. Based on the results, it can be observed that the STD is not too concentrated around the mean score which indicates that most of the participants have some competencies in the different domains.

**Table 4:** Mean skill level of participants based on domain

| *Domain* | *Mean* | *STD* |
|---|---|---|
| Effective communication | 2.86 | 1.53 |
| Assessment, care planning and clinical management | 2.58 | 1.52 |
| Health promotion and patient education | 2.76 | 1.90 |
| Research | 2.40 | 1.70 |
| Legal and ethical nursing practice | 2.91 | 1.62 |
| Collaborative care and partnerships | 2.76 | 1.45 |
| Leadership and development of the specialty | 2.51 | 1.34 |
| Computer or information technology skills | 2.26 | 1.75 |

The mean scores were further expanded to determine the skill levels in each of the domains, as seen in Table 5. These scores were based on the Likert scale: no prior experience (NE), beginner skills (BS), intermediate skills (IS), competent skills (CS), and expert skills (ES).

**Table 5:** Level of skills in each domain

| *Domain* | *Frequency (%)* | | | | |
|---|---|---|---|---|---|
| | *NE* | *BS* | *IS* | *CS* | *ES* |
| Effective communication | 4.13 | 9.55 | 25.65 | 41.60 | 19.07 |
| Assessment, care planning and clinical management | 6.60 | 12.40 | 25.30 | 38.20 | 17.50 |
| Health promotion and patient education | 6.30 | 12.70 | 24.50 | 38.40 | 18.10 |
| Research | 10.46 | 18.56 | 28.16 | 30.16 | 12.66 |
| Legal and ethical nursing practice | 5.94 | 9.64 | 21.94 | 40.44 | 22.04 |
| Collaborative care and partnerships | 6.34 | 9.04 | 24.84 | 38.24 | 21.54 |
| Leadership and development of the specialty | 9.20 | 11.30 | 29.20 | 34.50 | 15.80 |
| Computer or information technology skills | 16.83 | 24.19 | 21.13 | 17.76 | 20.09 |

Details of computer or smartphone ownership and use by the participants are summarised in Table 6, and their preferred modes of training are highlighted in Table 7.

**Table 6:** Computer or smartphone ownership and use

| | | |
|---|---|---|
| Do you own a computer? | Yes | 91 (30.1%) |
| | No | 211 (69.8%) |
| Do you have access to a computer at your work that could be used for learning or training? | Yes | 90 (29.8%) |
| | No | 212 (70.2%) |
| Do you have access to a smart phone that could be used for learning or training? | Yes | 217 (71.9%) |
| | No | 85 (28.1%) |
| How often do you use a computer? | Every day | 40 (13.2%) |
| | Several times per week | 65 (21.5%) |
| | Less than once per week | 73 (24.2%) |
| | Often | 124 (41.1%) |
| Where do you access the Internet? | At home or residence | 65 (21.5%) |
| | At work | 22 (7.3%) |
| | Internet café | 24 (7.9%) |
| | Mobile phone | 180 (59.6%) |
| | Other | 11 (3.6%) |

**Table 7:** Participants' preferred mode of training

| *Mode* | *Yes* | *No* |
|---|---|---|
| I prefer online (e-Learning) training | 93 (30.8%) | 204 (68.3%) |
| I prefer classroom-based training | 215 (71.2%) | 86 (28.4%) |
| I prefer work-based training | 250 (82.8%) | 51 (16.9%) |
| I prefer training through my mobile phone | 118 (39.1%) | 183 (60.6%) |

Figure 2 summarises the skills gaps among these nursing and paramedical professionals in descending order.

Based on Figure 2, we have identified that 50 per cent or more of the participants need improvement in (i) computer or information technology skills; (ii) research skills; and (iii) leadership development of the specialty. As such, we recommend that these areas be dealt with, as a matter of priority, through training and professional development to enable these professionals to deliver better services in the sexual and reproductive healthcare sector.

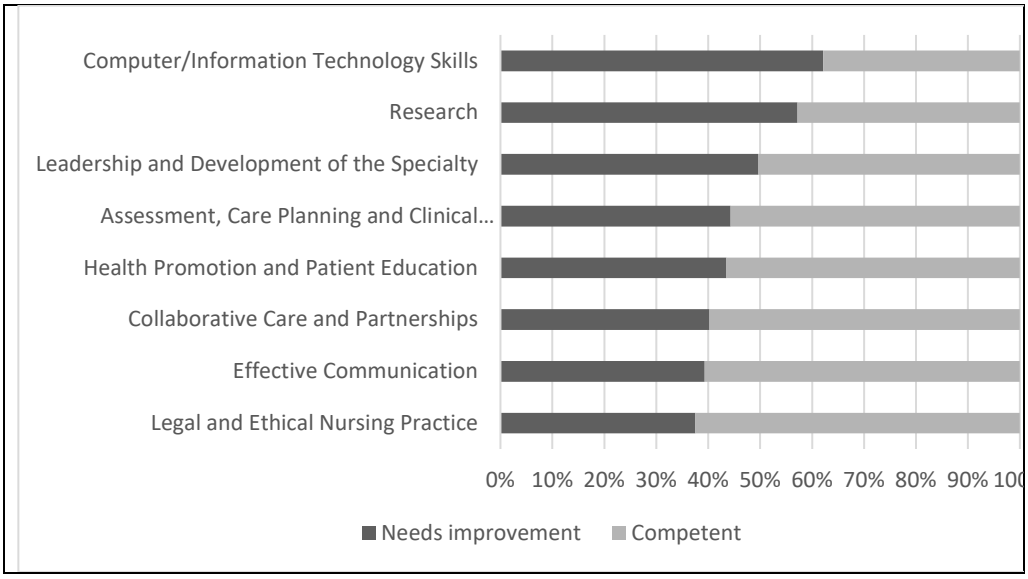


**Figure 2:** Summary of the skills gaps among nursing and paramedical professionals

From the findings in Table 6, we identify that approximately 70 per cent of the respondents lack access to a computer at home or at work which can be used for their CPD. The data further suggest that the use of a computer is very limited. In contrast, 71.9 per cent of the respondents have access to a smartphone which could be used for learning purposes. Further, 81.1 per cent of the respondents have access to the Internet at home or on their smartphone. Based on these results, we recommend that suitable future training and CPS be carried out through mobile-based learning.

The results in Table 7 indicate that the majority of the participants prefer classroom-based or work-based training in comparison to online learning or mobile-based learning. From this, we identify that there is a need for advocacy, sensitisation and capacity building among nursing and paramedical professionals in terms of self-directed learning using online or mobile-based platforms. To rectify this gap, we recommend capacity building for sexual and reproductive healthcare professionals on technology enabled learning and self-directed learning.

## Discussion

On the basis of Miller's (1990) framework, nurses and paramedics must go through four sequential training steps before performing duties on real-life patients. Miller (1990) classified the four sequential steps as: know; know how; show how; and does. These were reformulated in this study for the purpose of clarity in the questionnaires: beginner skills; intermediate skills; competent skills and; expert skills. An additional stage, no prior experience, was added to make it five sequential stages because it was noticed that there are some personnel working as nurses and paramedics without prior training. The expert skills level is the most desirable level of competency in any field of work and

most especially in the domain of health. In all eight domains surveyed in this study, the skills level varied from no prior experience to expert skills with much concentration around intermediate and competent skills levels. A good number of the participants in all eight domains reported that they had no prior experience, which is a call for concern. This could be one of the reasons for the high infant and maternal mortality rate (Alongifor 2016; Asamoah et al. 2011). These researchers had raised the issue of the infant and maternal mortality rate remaining high for a long time, which, according to them, might have been as a result of poor and unqualified staffing.

The variation in skills level in each of the domains aligns with the works of Miller (1990). There is a need for CPS at each level of skills development because those at the basic skills level can explain their theoretical knowledge with very limited practical skills (Miller 1990). Those with intermediate skills simply have know-how knowledge (Miller 1990). The nurses and paramedics at this level find it difficult to perform a task in real-life situations (Mehay and Sackin 2010). These categories of practitioners are required to attend more programmes for CPD to learn related skills and how knowledge is employed (Stalburg 2002). Similarly, the practitioners at the competent skills level should be upgraded to move out from cognition and thinking to behaviour and practice (Statman 2013).

## Conclusion and Recommendations

The state of sexual and reproductive health in Cameroon has been challenging with the rising levels of sexually transmitted diseases, the high fertility rate and high maternal mortality rates. This study has identified that the nurses and paramedics working in this domain have varying skills levels in the eight domains of internationally acceptable competencies. The assessment of the practitioners' skills was conducted using the Miller (1990) competency framework for nurses and paramedics. Test items were adapted from the ASHHNA Competency Standards for Sexual and Reproductive Health and HIV Nurses (2011). The analysis of the collected data revealed that the practitioners are at different skills levels with a good number of them having no prior experience in the field of sexual and reproductive health. This category of personnel could be very dangerous in the health sector and this might be one of the reasons for the high infant and maternal mortality rate. However, most of the practitioners' skills levels are between the intermediate and competent skills level with very few of them being at the expert skills level. On the basis of these findings, the following recommendations are made:

- Firstly, it has been identified that most of the participants need improvement in (i) computer or information technology skills; (ii) research skills; and (iii) leadership development of the specialty. These areas need to be dealt with, as a matter of priority, through training and professional development to enable these professionals to deliver better services in the sexual and reproductive healthcare sector.

- Secondly, in line with the critical role that sexual and reproductive health practitioners play in Cameroon's health system, it is imperative that the Ministry of Public Health and other role players in the health sector make sufficient investments in the improvement of the health workforce's accessibility to information and communication technology. This need cannot be overemphasised as evidence abounds about the critical role that information and communication technology now plays in the improvement of learning and access to information.

- Thirdly, a similar assessment with a proportionate sample size allocated to each type of sexual and reproductive health practitioners should be extended to other parts of the country to enable evidence-based formulation of in-service training and CPD curricula across the country. The assessment could include a few objectively structured clinical exam sections to assess and validate selected key competencies against the participants' self-reported level of confidence.

- Fourthly, the survey results indicated that the majority of the participants prefer classroom-based or work-based training in comparison to online learning or mobile-based learning. From this, we identify that there is a need for advocacy, sensitisation and capacity building among nursing and paramedical professionals in terms of self-directed learning using online or mobile-based platforms.

The contribution of this study is that it acts as an input for research initiatives which aim to improve the sexual and reproductive healthcare sector in Cameroon. As future work based on this study, the Commonwealth of Learning aims to collaborate with the Ministry of Public Health in Cameroon to develop skills among the sexual and reproductive healthcare professionals so that they can be skilled, confident and suitably equipped staff.

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