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RESEARCH ARTICLE

General Obstetrics

Obstetric capacity strengthening in Ghana results in wide geographic distribution and retention of certified Obstetrician/Gynaecologists: A quantitative analysis

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Abstract

Objectives: To determine the cumulative retention of Obstetricians/Gynaecologists (Ob/Gyns) since the inception of the Ghana postgraduate Ob/Gyn programmes, to determine the demographic and practice characteristics of all Ob/Gyns who have been trained, and to compare the geographic distribution of Ob/Gyns throughout Ghana between 2010, when a previous study was conducted, and the current practice locations of all graduates in 2017.

Design: Cross-sectional, quantitative investigation.

Setting: Fieldwork for this study was conducted in Ghana between 21 June 2017 and 20 August 2017.

Methods: A roster of certified Ob/Gyns, year certified and email contact information was obtained from the Ghana College of Physicians and Surgeons, a roster of practice locations was obtained from Ghana Medical Board.

Main outcome measures: Retention of Ob/Gyns, geographic distribution of providers and comparison of geographic spread between 2010 and 2017 practice locations.

Results: Significant geographic spread and increase in in-country medical programmes have occurred over the 7-year period. In recent years, Ob/Gyn certifications through the Ghana College of Physicians and Surgeons have significantly increased.

Conclusion: The establishment of the Ghana College of Physicians and Surgeons created a national certification opportunity that made Ob/Gyn certification more accessible. This provides a cadre of certified Ob/Gyns that can be trained and retained in low-income settings, and allows for long-term commitment in multiple relevant sectors that may serve to establish a comprehensive obstetric and gynaecology capacity beyond urban centres.

1 | INTRODUCTION

Eliminating preventable maternal and early neonatal mortality will only occur when all countries can train and retain health professionals that can comprehensively address the obstetric issues of the mother and fetus in the antenatal period, in addition to the many complications of labour and delivery and the postpartum period. Most well-resourced settings have the capacity to train and certify physicians to provide modern, comprehensive, evidence-based obstetric and gynaecological care.

[†]Died April 10, 2020 (Jacob Plange-Rhule); October 2, 2020 (Cornelius Turpin).

In contrast, low-resource settings are less likely to have developed a healthcare system to comprehensively address obstetric care; they often rely more on vertical problem-based interventions instead of horizontal programming. Vertical programmes focus on interventions targeting a single obstetric complication (i.e. heat-stable oxytocin for postpartum haemorrhage), or task-shifting of surgical or other specific procedures to non-physicians (i.e. caesarean sections).[1] These interventions are filling gaps that exist because of the lack of professional capacity. In this paper, we examine an approach that provides a compelling development model for long-term capacity strengthening.

West Africa is unique in that the West African College of Surgeons (WACS), established in Nigeria, provides a 5-year regional certification for physicians who have completed prescribed course work, obtained relevant training experiences, obtained requisite recommendations and passed both written and oral examinations offered in limited sub-region locations to be certified as a Fellow of WACS. In 2003, the Ghana College of Physicians and Surgeons (GCPS) developed a national (Ghanaian) certification programme alternative. Through GCPS, medical graduates have the option to either pursue a 3-year membership option to be a generalist Obstetrician/Gynaecologist (Ob/Gyn) or a 5-year fellowship option with advanced subspecialty training and dissertation requirement for academic career preparation. Fellowship is required to attain faculty appointment with Ghanaian universities. Both GCPS and WACS were established based on international standards and provided an opportunity to reverse the 'brain drain' of physicians who pursued postgraduate training abroad and seldom returned.[2]

A previous study examining the postgraduate training programme from 1989 to 1990 demonstrated that 84 of 85 physicians trained, certified as Ob/Gyns, and remained in Ghana to practice.[3] An examination of retention factors suggested that the presence of a viable training programme in-country, the economic viability of staying in the country, the lack of travel costs, and the desire to maintain current social and familial contacts were primary contributors.[4,5] This study also demonstrates that graduates participate and have competency in a wide range of clinical procedures including caesarean section, hysterectomy, tubal ligation, intrauterine device placement, fistula surgery, laparoscopic surgery and myomectomy, among other obstetric and gynaecological skills.[3]

In this report, we revisit the Ob/Gyn postgraduate training programme in Ghana in order to pursue the following specific aims: (1) to determine the cumulative retention of Ob/Gyns since the inception of the programme, (2) to determine the demographic and practice characteristics of all Ob/Gyns who have been trained by the Ghana postgraduate Ob/Gyn programmes, and (3) to compare the distribution of Ob/Gyns throughout Ghana between 2010, when a previous study was conducted, and the current practice locations of all graduates in 2017.[3]

2 | METHODS

All physicians who had completed certification in obstetrics and gynaecology through either WACS or GCPS before August 2017 were considered in order to meet the specific aims. A roster of certified Ob/Gyns, year certified and email contact information was obtained from the GCPS. These included WACS certifications as well. A roster of practice locations was obtained from Ghana Medical Board. An administrative review at the obstetrics and gynaecology departments at both Komfo Anoyke Teaching Hospital (Kumasi) and Korle Bu Teaching Hospital (Accra) was conducted to verify practice location, current demographic information and practice type. Any discrepancies or missing information were clarified through the chairs of the obstetrics and gynaecology departments at the Komfo Anoyke Teaching Hospital and the Korle Bu Teaching Hospital by either directly contacting the physician or contracting their current practice location. Hospital websites were used to identify practice type (public, private or mission). Only a graduate's primary certification was used for this study because several graduates had multiple certifications. Graduates who received honorary WACS certification or who were deceased at the time of data collection were included. Graduates who had their practice in Ghana but were deceased at the time of data collection were still identified and included as 'retained'.

The original location data points for each graduate's primary practice location in 2010 were available from the previous study.[1] Worksite GPS coordinates for each graduate's primary practice location were reviewed in 2017 and were found through Google Maps. GPS coordinates were verified by comparison with previous device coordinate information (Garmin E-Trex Legend GPS, Garmin International, Olathe, KS) when available from the 2010 study. Maps for both time periods were created using ArcGIS software.[1]

3 | RESULTS

A total of 245 medical school graduates have been trained and certified as Ob/Gyns by either WACS or GCPS between the initiation of the programme in 1989 and August 2017. A total of 240 were trained and retained in Ghana. Three graduates left Ghana to practice in the Gambia, one left to practice in Liberia, and one moved to the USA. As of August 2017, 29% of graduates were working in the public sector, 18.4% were working in mission hospitals, 36% were working in teaching hospitals and 10.2% were working solely in the private sector. Of the graduates, 91% were male and 9% were female (Table 1).

With the establishment of the GCPS certification, the cumulative number of Ob/Gyns and certifications per year began to increase in 2008 as the first participants of GCPS achieved certification (Figure 1). Particularly in more recent years, there were significantly more primary GCPS certifications than there were WACS certifications awarded. GCPS certifications sharply increased in 2016. It should be noted that data for 2017 certifications only included 8 month of follow up.

The practice locations and geographic distribution for graduates grew between 2010 and 2017 (Figure 2). As demonstrated by both maps, graduates cluster in the main urban areas of Accra and Kumasi. However, the 2017 map

TABLE 1 Demographic information of Obstetrics/Gynaecology graduates, as of August 2017

	Frequency	%
Gender		
Women	22	9
Men	223	91
Total	245	100
Type of hospital		
Public/ Unspecified	27	11
Public/ District	19	7.8
Public/ Regional	25	10.2
Mission	45	18.4
N/A – Not a hospital	6	1.6
N/A – Deceased	4	2
N/A – Moved	4	2
Non-Public/Privately owned	12	4.9
Private practice	13	5.3
Teaching	90	36.7
Total	245	100
Primary certification type		
Fellow of West African College of Surgeons	77	31.4
Ghana College Fellow	2	0.8
Ghana College Member	166	67.8
Total	245	100

indicates an increasing number of graduates with a primary practice in a more rural area. Significant geographic spread has also occurred over the 7-year period. The number of medical schools in Ghana has increased. Between 2010 and 2017 five new medical schools were established. This includes three new public medical schools: University for Development Studies School of Medicine in Tamale, University of Cape Coast School of Medical Sciences and the University of Health and Allied Sciences in Ho, Volta Region. Two private medical schools were also opened during this time period, the Family Health Medical School in Accra and the Accra College of Medicine. Graduates of the training programme serve as faculty in all of these new medical schools.

4 | DISCUSSION

4.1 | Main findings and interpretations

A programme to increase the cadre of certified Ob/Gyns in Ghana has been successful in supplying the country with 245 specialists to care for the most complicated obstetric and gynaecological cases. A total of 240 have been retained in Ghana. This accomplishment is the result of a policy initiative and complex intervention that has the potential to create a maternal care environment where significant decreases in maternal mortality can be sustained. The high retention of certified obstetricians has been studied previously, but the current study confirms the continued retention and growth of highly trained physicians.[2]

4.1.1 | Geographic spread to Peri-Urban and rural areas

Geographic imbalance of health personnel is a long-standing serious problem faced by all countries worldwide and a large contributing factor to health disparities. Urban areas are more attractive to health professionals for the social, cultural and professional advantages – including better access to amenities and educational opportunities for providers and their families.[5] The 2017 geographic distribution contradicts the notion and fear that most of the graduates would move into the private sector or remain solely in Accra and Kumasi. Eighteen percent of graduates work in a public, regional or district hospital and 11% work in some other public sector capacity. Only 5.3% of the graduates practice primarily in a private practice setting. One of these graduates opened a private hospital, with an associated nursing school and medical school. Another graduate, who obtained specialisation in reproductive endocrinology, has opened a centre for in vitro fertilisation and also operates a 24-hour, 7-day emergency room for the community. A significant number of graduates are working in peri-urban and rural areas as well.

4.1.2 | Creation of new medical schools

The number of medical schools in Ghana increased from two to seven during this 7-year period. The sustained training of Ob/Gyns provides a source of faculty for the new medical schools and creators of new obstetrics and gynaecology departments and residency programmes. As more medical schools and residency programmes open in rural and peri-urban areas more distant from the urban centres, graduates are able to find sustainable and rewarding work. Graduates of this programme fill many academic and leadership roles. Several graduates are now professors and tenured faculty. Graduates also hold significant administrative leadership roles, such as being Deans of medical schools, founders of new medical schools and hospital medical directors.[2] The initiation of medical schools in peri-urban and rural areas is a significant factor for geographic distribution and reducing unmet need as physicians. The location, structure, recruitment methods and criteria of medical schools have been shown to be contributing factors to specialty and location of practice choices.[5,6] Graduates are more likely to work in areas where they were trained. Therefore, the development of newer medical schools, particularly in areas of peri-urban and rural areas, will contribute to the recruitment and retention of Ob/Gyn graduates in areas of unmet need.

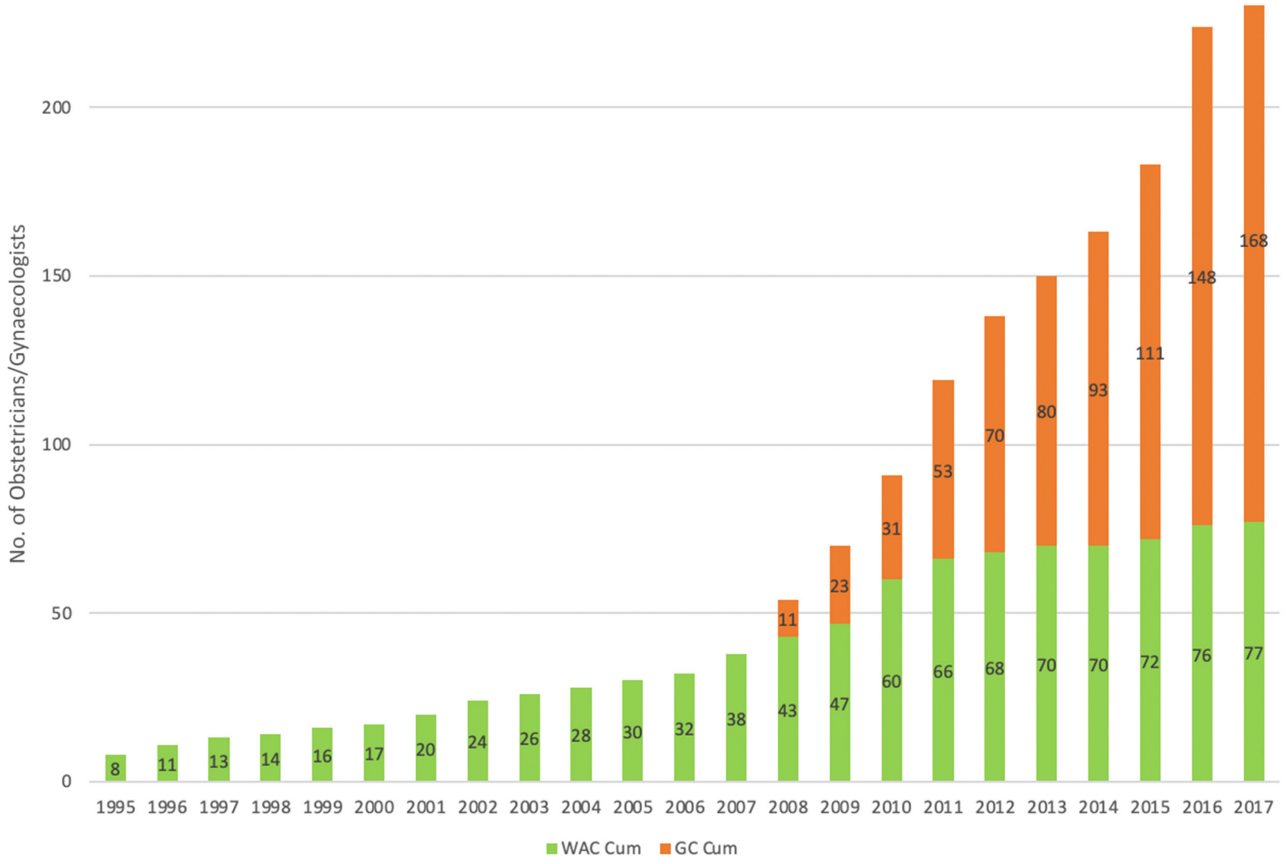

FIGURE 1 Cumulative number of trained and retained Obstetricians/Gynaecologists in Ghana; GC, Ghana College of Surgeons and Physicians; WAC, West African College of Surgeons

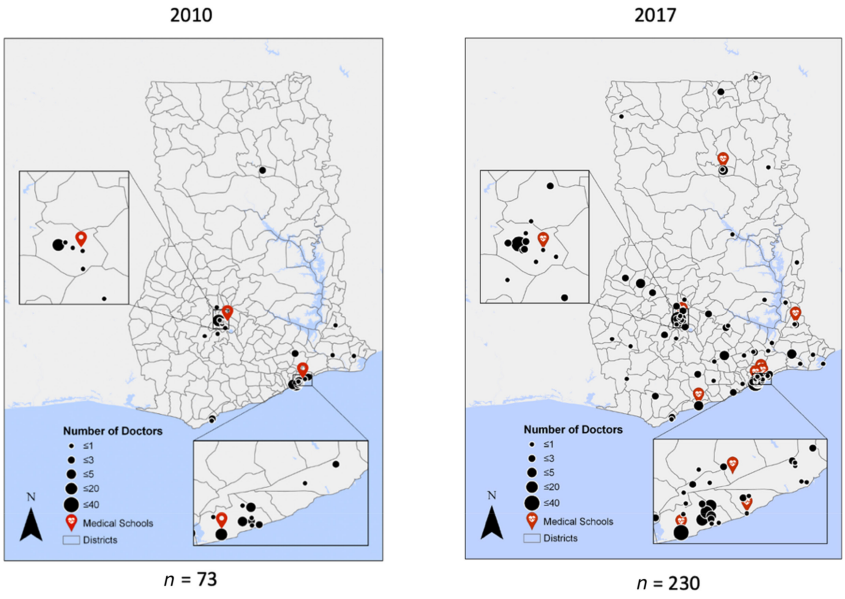

FIGURE 2 Practice locations of graduates in 2010 and 2017

4.1.3 | National versus regional versus university-based certification

The initiation of the GCPS certification process has increased the access for physicians to become certified and retained as Ob/Gyn specialists in Ghana. Ghana's national certification is unique and is in contrast to the regional and university-based certification (i.e. Master of Obstetrics and Gynaecology) options that are often more prevalent in sub-Saharan Africa. As demonstrated by GCPS, a national certification system, fully supported and funded by the government, ensures a national standard and provides a sustainable opportunity to create

ongoing quality assurance. National certification allows for local growth, authority and organisation. This study suggests that a national certification system allows Ob/Gyn certification, training and retention to be more accessible to local physicians.

4.2 | Limitations

The major limitation of this paper is in fully describing the scope of a graduate's practice. Many of the graduates are involved in multiple practice locations. In this study, we identified the primary practice assignment as determined by institutional records. Although their practice settings may vary, it is still clear that the majority of graduates spend most of the time in public sector practice. Moreover, the locations for 11 graduates could not be obtained and they were not included in the 2017 GIS map.

4.3 | Conclusion

Establishing an Ob/Gyn training programme with national certification in a country with high maternal mortality provides the context for medical graduates to be trained and retained to provide obstetric and gynaecological care, education and leadership. This creates a feasible roadmap to the elimination of preventable maternal and early neonatal mortality. The study demonstrates that a long-term commitment to strengthening obstetric capacity yields exponential growth in access to care and supports sustained and growing educational institutions. This long-term commitment to strengthening obstetric capacity yielded a cadre of Ob/Gyns who are participating in national, regional and local needs for obstetrics and gynaecology expertise in clinical, educational, research, outreach and policy spheres. The process requires time, investment and long-term vision and commitment. The elimination of preventable maternal and early neonatal mortality will not occur until every country can comprehensively address the myriad of issues in obstetrics with modern obstetric practice.

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CONFLICT OF INTEREST

All authors declare that they have no competing interests. Completed disclosure of interests form available to view online as supporting information.

AUTHOR CONTRIBUTIONS

All authors have read and approved the manuscript. FA, MK, YB, AS, CT and JP designed the study. MK and YB were the primary data collectors. MK, YB, AS and JP worked to organise and obtain demographic and location information of the graduates. MK and FA conducted the quantitative analysis of demographic and location data. MK created the graphs and tables in the manuscript. MK and FA worked with the department statistician to create ArcGIS mapping of graduate locations. MK and FA wrote the final manuscript. All authors contributed to editing the final manuscript.

ETHICAL APPROVAL

The University of Michigan Institutional Review Board-HSBS determined that this study was exempt from institutional review board oversight (HUM00125496), and the study was approved by the University of Ghana College of Health Sciences Ethical and Protocol Review Committee (CHS-Et/M.9C/2016–2017) and the Kwame Nkrumah University of Science and Technology College of Health Sciences Committee on Human Research, Publication and Ethics (CHRPE/AP/370/17).

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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SUPPORTING INFORMATION

Additional supporting information may be found in the online version of the article at the publisher's website.

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