The impact of COSECSA in developing the surgical workforce in East Central and Southern Africa

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ABSTRACT

Background: The Association of Surgeons of East Africa (ASEA) was formed in 1952. In 1996 a Steering Committee was formed to transform ASEA into a surgical college. The College of Surgeons of East Central and Southern Africa was officially launched in December 1999 in Nairobi, Kenya. Today the College consists of 14 constituent member countries but trains in 20 countries in Sub-Saharan Africa.

Programmes: COSECSA runs a 5 year training programme in all the surgical specialties. In the first 2 years trainees do the Membership (MCS) programme. This is followed by 3 years of the Fellowship (FCS) programme. More recently the College has started a 2 year sub-specialty Fellowship in paediatric orthopaedics.

Graduates: The main aim of the College was to expand and improve surgical training in the COSECSA region. This goal was partially realised in December 2020 when the total number of surgeons produced by the College from inception reached 557.

Retention: Another key success story of COSECSA is that the majority of graduates have remained in the region leading to a high retention rate of 88.3%.

Women In Surgery Africa (WISA): Since the formation of WISA in 2015 the College has witnessed an increase in the number of female trainees. Currently only 9% of surgeons in the region are women.

Conclusion: In its current Strategic Plan (2021–2025) COSECSA aims not only to increase the surgical workforce in the region but also to modernise its training programmes and strengthen its governance structures.

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A brief history of COSECSA

The College of Surgeons of East, Central and Southern Africa (COSECSA) which was formed in 1999 is the youngest of the three major surgical colleges in Africa. The Colleges of Medicine of South Africa (CMSA) was established in 1954 and the West African College of Surgeons (WACS) was established in 1960.

COSECSA was the brainchild of the Association of Surgeons of East Africa (ASEA). One of the early objectives of the Association was to consider surgical training. For more than fifty years, before the conception of COSECSA, the region was served by surgeons trained abroad (mainly from the United Kingdom with qualifications from the Royal Colleges) and by graduates from the University MMed (Master of Medicine) programmes which had been established in the region. From 1970, the time of the first cohort of graduate surgeons from Makerere University, to 1997, approximately 362 surgeons were trained in the University MMed programmes in the region.[1]

As the new millennium approached it was clear that training institutions abroad could not meet the growing needs for surgeons in Africa and, as the regional MMed programmes did not have spare capacity, the time was ripe for a regional college of surgeons.[1]

Although the College started in 1999, the first official reference to a Surgical College in the region dates back to the early years of ASEA. Bill Kirkaldy-Willis, the first Secretary of ASEA, wrote a memorandum on higher surgical training, quoted in the Historical Notes in the first issue (1978) of the Proceedings of the Association of Surgeons of East Africa. Kirkaldy-Willis said,[2]

> "*If, as would seem to be the case, both Directors of Medical Services and Surgeons are agreed that Higher Surgical Training is highly desirable, then we should go forward together into the future in mutual trust and confidence, in the faith that together we can achieve something that is infinitely worthwhile for medicine in East Africa, in the building of a great tradition here*".

Yusuf Kodwavwala, in the ASEA President's address delivered in Lusaka, Zambia on 3rd December 1986 mentioned the College

> "*l can visualize a College of Surgeons arising out of our Association,*".

Concrete steps to set up the College were taken at the 25th Regional Health Ministers Conference held in Mauritius in November 1996 when the following resolution was passed.[3]

> *Resolution 10:- The Conference urges the Secretariat to extend to all the other Health Professionals the support it had given to the Nursing and Midwifery profession which had enabled it to organise and manage the East Central and Southern Africa College of Nurses (ECSACON). The need to establish a Regional Academy of Medicine with a College of Surgeons as one of its Chapters was agreed at this meeting.*

As a result of this resolution, the 46th AGM of ASEA held in Harare, Zimbabwe in December 1996 approved the establishment of the College of Surgeons of East Central and Southern Africa. The following year in 1997, the Ministers of Health of the East Central and Southern Africa (ECSA) countries, the Deans of Medical Colleges and the Commonwealth Regional Health Community Secretariat approved the College. The same year, the Royal College of Surgeons of Edinburgh agreed to assist the new College in setting up the training programmes and the examinations. According to the 1st Minutes and 2nd Minutes of the College held on 7th December 2000 and 20th September 2001 respectively, the name of the College was recorded as College of Surgeons of East and Central Africa. Subsequently the Council changed the name to COSECSA (College of Surgeons of East Central and Southern Africa) as minuted in the 3rd Minutes held on 4th December 2001. This ensured the countries in Southern Africa were covered.

COSECSA was formally inaugurated at the historic meeting of the 50th Anniversary of ASEA in Nairobi on 1st December 1999.

The aim of the College was to expand and improve surgical training in the region of East, Central and Southern Africa and to raise the standards of surgery by organising training programmes in Basic Surgical Training leading to the Membership (MCS-ECSA) and Higher Surgical Training leading to the Fellowship (FCS-ECSA).

This objective was achieved and COSECSA has become the largest surgical training institution in Africa. The College itself now has 14 constituent member countries but trains in 20 countries in Sub-Saharan Africa (Fig. 1).

Collaboration between COSECSA and RCSI

In July 2007, the Royal College of Surgeons in Ireland (RCSI) & COSECSA signed a Memorandum of Understanding to "improve the standards of surgical care, education, training and examinations in the East, Central and Southern Africa Region" and commenced the implementation of its collaboration programme in April 2008. This was a result of discussions with the then COSECSA President (K. Erzingatsian, an RCSI graduate & Fellow) and RCSI President (G C O'Sullivan). Irish Aid was approached by RCSI and agreed initial support. It approved a substantial grant to fund the first years of the Programme to June 2009 and a similar grant from June 2009 to December 2010. A 3 year programme proposal was submitted to Irish Aid in November 2010 to cover essential programme costs for the period 2011–2013. The proposal was approved. In addition to covering essential programme costs the funding enabled RCSI and COSECSA to employ the collaboration project Director. Irish Aid support through the collaboration with RCSI has continued and has contributed very significantly to the many achievements of COSECSA.

Surgical capacity

From the time the College was inaugurated to the time the College graduated its first cohort of surgeons in 2004, there were very few surgeons practising in the region and most of them had become Foundation Fellows of the College. Jimmy James – the first Secretary General of the College-reported in 2006 that at that time approximately 500 surgeons in the ECSA

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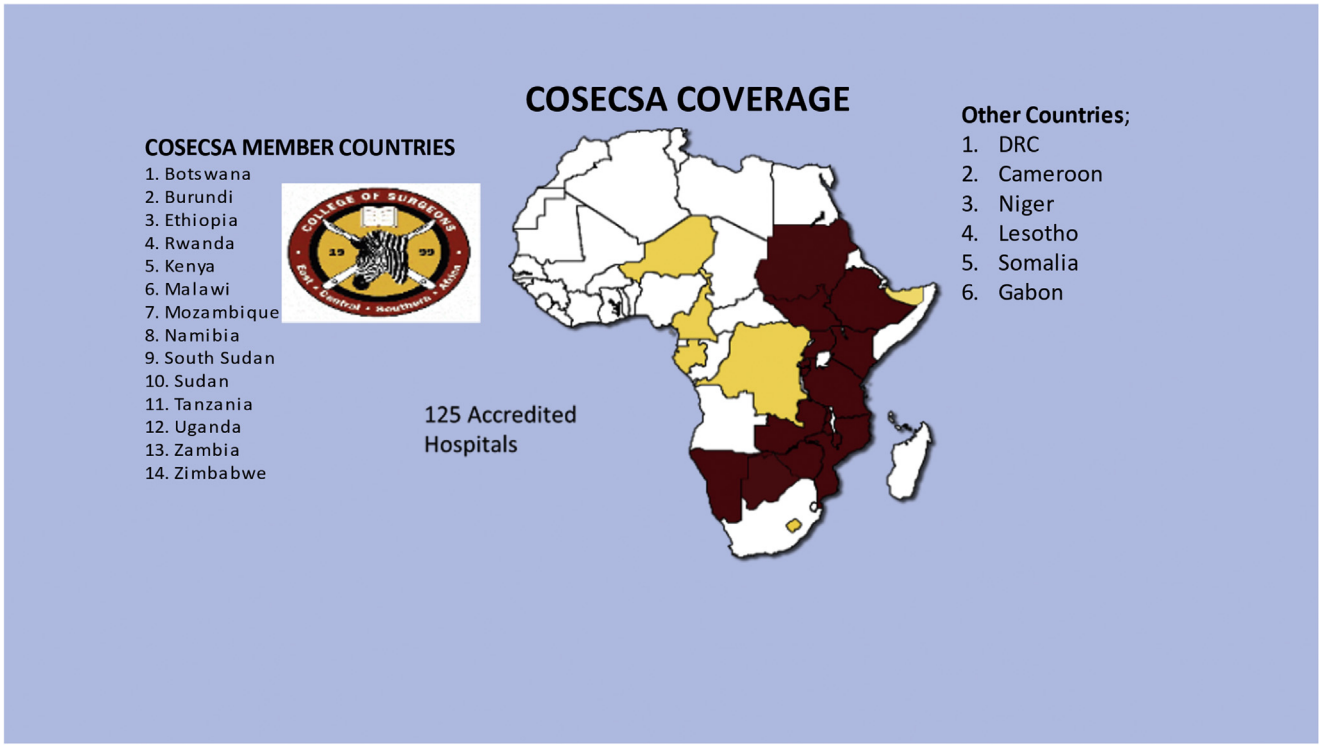

Fig. 1 – COSECSA region.

region were Fellows or Members of the College and they represented the majority of surgeons practising in the region, which had a population of 230 million.[4] Since then, two studies have been done to assess the surgical capacity and training in the region. Kakande et al.[5] in 2011 reported that trained surgeons currently registered and practising in COSECSA countries (excluding expatriate/foreign doctors) were 1390. O'Flynn et al.[6] in 2016 reported that a total of 1690 practising surgeons were identified in the region representing a ratio of 0.53 surgeons per 100,000 population; moreover, in his report O'Flynn stated that more than half of the surgeons (53%) practicing in the region were General Surgeons. In subsequent years COSECSA among others started Training Programmes in Neurosurgery, Plastic Surgery and Paediatric Surgery. The first candidate in Cardiothoracic surgery graduated in 2020. Through COSECSA, other specialties that in some countries never trained before like Neurosurgery, Plastic and Reconstructive Surgery and Cardiothoracic Surgery have started training. Henderson et al.[7] reported that the COSECSA model has succeeded in several countries to graduate qualified Neurosurgeons. The number of paediatric surgical units which have started training Paediatric Surgeons has increased – a specialty that did not exist before the establishment of COSECSA.[8].

Surgical training

Currently surgical training is carried out under COSECSA in 125 accredited hospitals. Each hospital has a Program Director.

To enrol in a COSECSA Programme, a candidate must have an undergraduate medical degree and full medical registration with the regulatory body in their country.

The Membership Examination is designed to assess the basic principles of surgery and a broad knowledge of surgery in general. Membership of the College (MCS) does not confer specialist status but signifies that the member is ready to pursue higher surgical training in a particular specialty. The two years of training comprise at least six months of general surgery including emergencies and at least six months of orthopaedics including trauma.

The candidates are expected to do three mandatory courses namely the Basic Sciences course, Basic Surgical Skills course, and an acute care or trauma course. They are also required to keep an electronic logbook. Basic sciences education at the MCS level is guided by an online standardised modular curriculum. It is a context specific, flipped classroom curriculum.

The Fellowship of the College of Surgeons (FCS) is now offered in eight specialties including General Surgery, Orthopaedics, Urology, Otorhinolaryngology, Cardiothoracic surgery, Neurosurgery, Plastic and Reconstructive Surgery and Paediatric Surgery. Fellowship training takes 3 years after MCS except for Neurosurgery which takes 4 years. Each specialty board is headed by a Panel Head who is a member of the court of examiners and who reports to the Chairman of the Examinations and Credentials Committee. The Panel Head is responsible for setting the examinations. Currently the College is considering introducing Maxillofacial Surgery training; the syllabus has been prepared.

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COSECSA graduates

The first four trainees – 1 Orthopaedics and 3 in General Surgery who graduated in December 2004 were from Malawi and Zimbabwe.

Over the years the number of graduates from the various COSECSA programmes has steadily increased. At the closing of 2019/2020 registration window, we saw an increment of 4.7% of the number of registered trainees compared to 2018/2019 intake. This has led to a cumulative number of the total enrolled trainees onto COSECSA training programmes from 683 (2019) to 741 (2020). The majority of the trainees sitting the COSECSA examinations are coming through the collegiate training programme (n = 612) and a smaller number is taking the College examinations after completing the University based MMed programmes in the region (n = 129) (Fig. 2).

SPECIALITY	NUMBER OF TRAINEES	MMED Trainees
MCS	366	-
FCS GENERAL SURGERY	102	35
FCS ORTHOPAEDIC SURGERY	62	49
FCS NEUROSURGERY	22	7
FCS PAEDIATRIC SURGERY	21	16
FCS PAEDIATRIC ORTHOPAEDIC SURGERY	6	1
FCS PLASTIC SURGERY	14	9
FCS CARDIOTHORACIC SURGERY	8	1
FCS OTORHINOLARYNGOLOGY	1	3
FCS UROLOGY	10	8
SUB TOTAL	**612**	**129**
GRAND TOTAL		**741**

Fig. 2 – 2020 trainees by Speciality.

Candidates who come through the MMed programmes have to enrol for 1 year on the College FCS programme before they can sit the final FCS examinations. Candidates who hold other postgraduate surgical qualifications that have been evaluated and recognised by COSECSA have to register for the FCS examinations in the same manner as the MMed graduates.

Figure 3 shows the trends in enrolment to the various COSECSA programmes since 2004. It is clear from the figure that the beginning was slow but there was an exponential increase in enrolment from about 2013. As can be seen in Fig. 4 it was not until 2018 that the College started to witness a significant increase in the enrolment of female trainees onto the various COSECSA programmes.

One of the main goals of COSECSA in the first 20 years was to produce more than 500 surgeons. This goal was realised in December 2020 when the total number of surgeons produced by the College from inception reached 557. In the 2021 to 2025 Strategic Plan the College aims to have produced more than 1000 surgeons by 2025. Figure 5 shows the distribution by country of surgeons produced by the College in the first 20 years.

Retention of COSECSA graduates

The Lancet Commission on Global Surgery identified that five billion people lack access to safe surgical care worldwide.[9] The greatest burden of unmet surgical need lies in Africa. Retention of surgeons trained in Africa within Africa is one strategy that will address this unmet need. Another key success story of COSECSA is that 85.1% of COSECSA graduates were retained in the country of training and that the majority of the

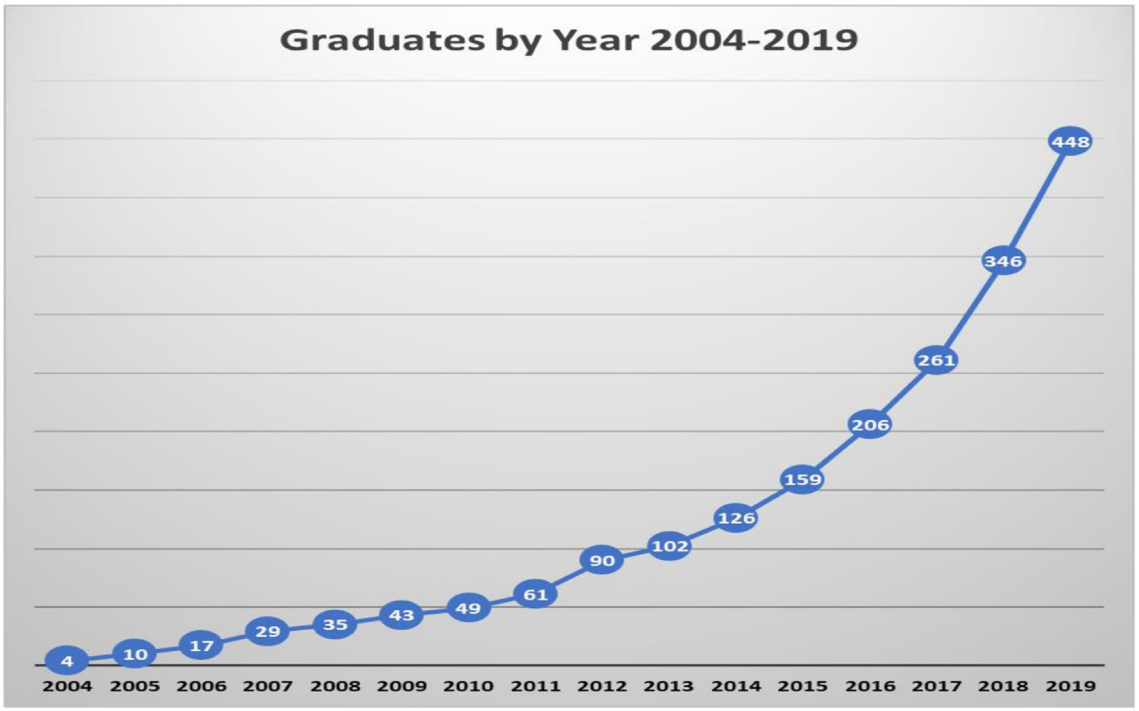

Fig. 3 – COSECSA graduate trends: 2004–2019.

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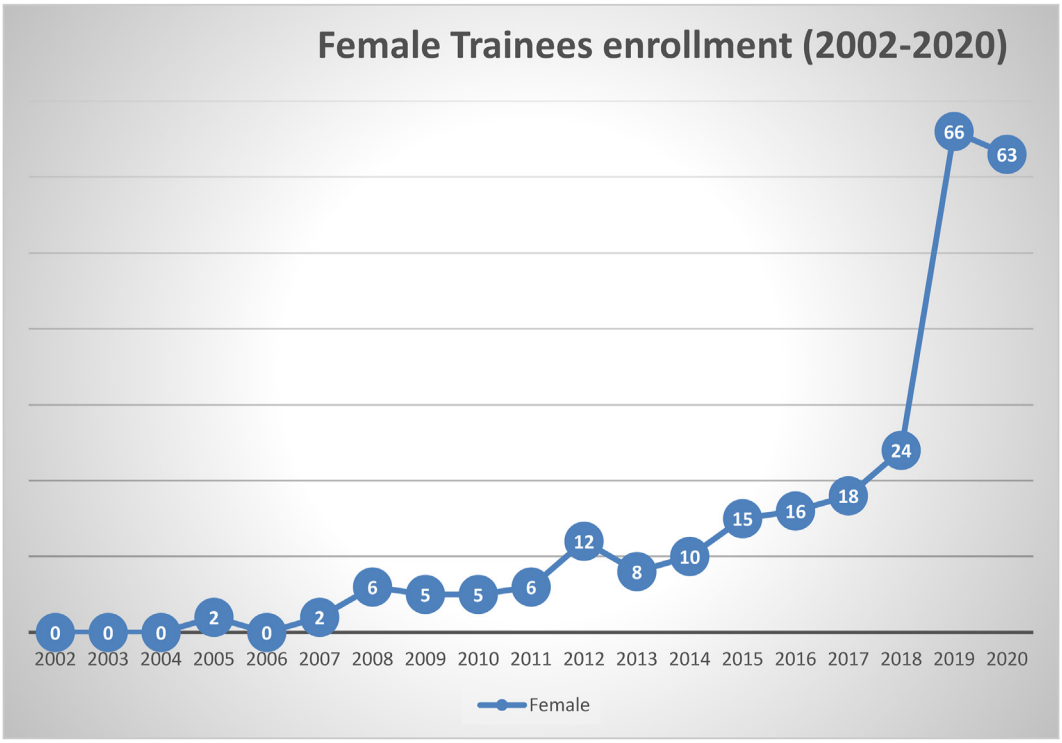

Fig. 4 – Female trainees.

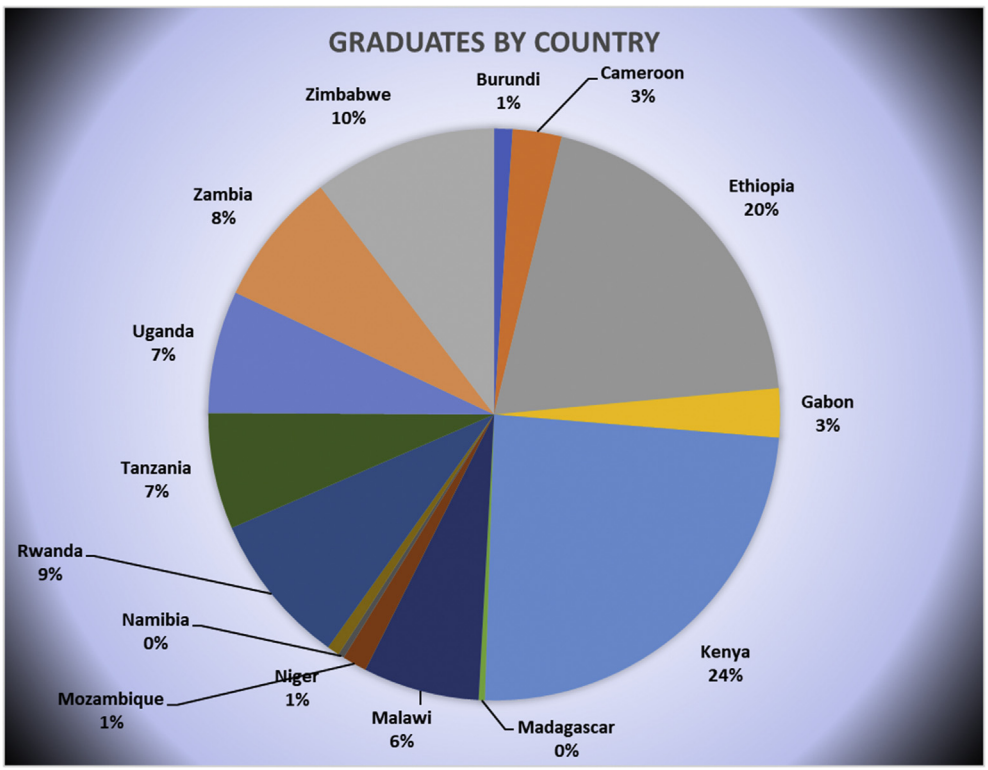

Fig. 5 – Graduates by country in the first 20 years.

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graduates have remained in the region leading to a high retention rate of 88.3%. Ninety-three per cent (93.4%) of COSECSA graduates were retained within Africa.[10]

Research capacity within COSECSA

Despite significant interest in building research skills and partnerships, one big challenge for COSECSA has been poor scientific research outputs.[11,12] One of the reasons for poor research output is lack of access to up to date medical literature and poor capacity of our COSECSA secretariat in Arusha, Tanzania to handle large research grants. The Ptolemy project was developed as a model of electronic access to medical literature for surgeons in developing countries but it is not active at the moment.[13] Currently, through School for Surgeons (SfS) any paid up trainee or Fellow can access medical articles through the RCSI library.

COSECSA has its own Institutional Review Body (IRB). The COSECSA IRB is registered by the United States Department of Health and Human Services (HHS). All members of COSECSA who wish to undertake a research study in the region involving human subjects – a clinical trial or patient related research – and animal studies can apply to the COSECSA IRB for ethical review. However, researchers need to obtain in country approval as required by the local review boards.

COSECSA and other colleges

COSECSA has enjoyed phenomenal growth in the last 20 years partly due to the strong support it has received from the global surgical fraternity. Apart from its special relationship with the Royal College of Surgeons in Ireland COSECSA enjoys good working relationships with other surgical colleges/bodies which include the Royal College of Surgeons of Edinburgh, the Royal College of Surgeons of England, the Royal College of Physicians and Surgeons of Glasgow, the American College of Surgeons, the Royal Australasian College of Surgeons, the West African College of Surgeons, the Colleges of Medicine of South Africa and the Japanese Surgical Society. COSECSA's ability to deliver high quality examinations to large numbers of trainees is supported by the sister colleges and surgical associations who deploy many experienced international examiners who together with the COSECSA court of examiners and Council members, not only examine but also quality control and bench mark the COSECSA examinations process.

COSECSA and other collaborating partners

Collaborating partners have made a big difference in developing some surgical specialties where capacity in terms of trainers is limited. A notable example is Plastic and Reconstructive Surgery; organisations such as 2nd Chance, ReSurge International, Smile Train and Operation Smile have made a big contribution to support local efforts through intensive hands-on workshops, online teaching and scholarships. Over the years the Association of Surgeons of Great Britain and Ireland has made a substantial contribution to training programmes in the COSECSA region by organising anastomosis workshops and emergency management training courses. The COSECSA-Oxford Orthopaedic Link (COOL) Project promoted trauma management and research among trainees in the COSECSA region for several years. Another organisation which has been supporting the training of orthopaedic surgeons is the AO Alliance. In paediatric surgery Kids Operating Room has been active to improve paediatric surgery infrastructure and to support paediatric surgery trainees. The Pan-African Academy of Christian Surgeons (PAACS), a primarily rural-based general surgery training program, has general surgery training programs in eight countries and their residents sit COSECSA exams.

Establishment of WISA in COSECSA

Gender parity in the African surgical workforce is far from being achieved. Women in Surgery Africa (WISA) was established in 2015. WISA is an affiliate of COSECSA and the WISA President has a seat on the COSECSA Council. WISA's aim is to support COSECSA's policy of increasing female surgeons and mentoring of female surgeons.

Only 8–9% of surgeons in the COSECSA region are females.[14] COSECSA has developed a policy of improving the ratio of female surgeons in the region through several initiatives such as establishing the Women in Surgery in Africa (WISA) and by ring fencing some scholarships for female trainees with support from the American College of Surgeons (ACS). The scholarship programme to support women in surgical residency, helps them with the cost of the examinations and training and encourage other women in medicine to consider surgery as a career. Many women do not choose surgery as their lifetime career. They believe that the attitudes of mentors and trainers have to change; in addition they feel there is need for more female role models in Surgery[14]

Establishment of centres of excellence

The College of Surgeons of East Central and Southern Africa is now a well established surgical training institution that offers an internationally recognised qualification. In the last few years the College has been looking at establishing centres of excellence in different specialties. This will reduce the need for young surgeons to seek subspecialty training at centres abroad often at great cost. Pursuant to this objective the Muhimbili Orthopaedic Institute (MOI) in Dar Es Salaam, Tanzania has established a 2 year Paediatric Orthopaedic Surgery Fellowship and Tenwek Hospital in Kenya has been identified as a centre of excellence for Cardiothoracic Surgery. More recently the University of Zimbabwe International Centre for Surgical Simulation was launched via an online symposium. This modern purpose built laboratory is a joint venture with Karl Storz, EndoSkope, Germany. It was designed as a centre of excellence for **minimal access surgery** in the COSECSA region; Sub-Saharan Africa and beyond. In the years ahead COSECSA hopes to establish more centres of excellence in the different surgical specialties.

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Unique aspects of COSECSA

The Secretary of the Commonwealth Regional Health Community Secretariat (CRHCS) in Arusha Tanzania, S Shongwe, in March 2001, proposed that COSECSA be set up and operate within CRHCS under the tutelage of the Conference of Health Ministers of Member Governments. By May 2002, COSECSA headquarters was set up in Arusha with the COSECSA Secretary General moving to Arusha to help establish the new office. Subsequently the name of CRHCS was changed to East, Central and Southern African Health Community (ECSA). The College of Health Sciences (CHS) is a relatively new development to which COSECSA is an integral part and enjoys diplomatic status by virtue of being housed and affiliated to CHS-ECSA. Within Tanzania COSECSA also enjoys Charitable status.

Conclusion

COSECSA has enjoyed phenomenal growth in the first 20 years of its existence. It has produced more surgeons than all the University based MMed programmes in the region produced in more than 20 years. In addition to making a big impact on the surgical workforce in the East Central and Southern Africa region the College has also put in place structures that ensure standards are maintained in all the surgical training programmes. This, together with the generous support from the global surgical community has helped COSECSA establish itself as a credible surgical training institution awarding an internationally recognised surgical qualification (FCS-ECSA) in a relatively short period of time.

In its current Strategic Plan (2021–2025) COSECSA aims not only to increase the surgical workforce in the region but also to modernise its training programmes and strengthen its governance structures. With support from fellows and local institutions in the region and its many collaborating partners COSECSA is poised for growth and success in the years ahead.

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