

## Shortage of faculty in medical schools in Tanzania: A case study at the Catholic University of Health and Allied Health Sciences

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**Background.** The number of medical schools in Tanzania, and their respective student enrolments, has tripled in the last decade in response to the growing population and healthcare needs. There has, however, not been a corresponding increase in the number of faculty, resulting in a critical shortage of teachers.

**Objective.** To determine the extent of the faculty shortage at the School of Medicine, Catholic University of Health and Allied Sciences (CUHAS), Bugando, Tanzania.

**Methods.** A cross-sectional descriptive survey was conducted of all heads of departments and their staff to determine the number of available and required faculty. Postgraduate trainees were also interviewed about their role in undergraduate teaching activities.

**Results.** At the time of the study, the School of Medicine had a total of 83 faculty and about 700 undergraduate students and residents. Of the entire faculty, 32 (38.6%) worked as full-time employees and 51 (61.4%) as part-time employees. The Department of Surgery had the greatest number of faculty while Psychiatry and Ophthalmology had the smallest staff complement. Over 50% of departments reported faculty shortages of 30% or more. Postgraduate trainees confirmed that they were regularly called upon to teach medical students.

**Conclusion.** The critical shortage of faculty at CUHAS is likely to compromise the quality of education offered and, as a consequence, the competence of healthcare professionals being trained in Tanzania. Interventions that may improve the situation include the establishment of a residents-as-teachers training programme, and a faculty development programme to groom junior faculty to take on leadership roles and develop strategies to improve the quality of health professions education in Tanzania.

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In the past 20 years, the number of medical schools, as well as their respective student enrolments, has increased substantially in sub-Saharan Africa (SSA).<sup>[1]</sup> Unfortunately, these increases have not been matched by a parallel increase in the number of medical school faculty. As a consequence, faculty shortages in SSA medical schools are described as endemic, problematic and aggravated by the large-scale migration of healthcare workers seeking better remuneration and working conditions.<sup>[2]</sup>

In Tanzania, there is only 1 medical doctor for every 30 000 people, and 1 dentist for every 300 000.<sup>[3]</sup> These figures are well below the World Health Organization (WHO) recommendation of 1 doctor for every 1 000 inhabitants.<sup>[4]</sup> In an effort to address the shortage of doctors and other health workers in the country, the number of medical schools has been increased from 1 to 8 in the last decade. The employment of university faculty has, however, not kept pace with the larger number of medical schools and students, resulting in a critical shortage of teachers. Heavy teaching loads, stringent recruitment and promotion criteria, lack of clear faculty development programmes, and poor remuneration are among the factors that have made recruitment and retention of faculty more difficult, further exacerbating the faculty shortage.<sup>[2]</sup> This issue may be compromising the training of future healthcare professionals and, ultimately, the healthcare systems of SSA.

The Catholic University of Health and Allied Sciences (CUHAS) was established in Bugando, Tanzania, in 2003. Initially, the university offered

only a single degree programme (doctor of medicine (MD)) with an intake of 10 students per year. Over a period of 10 years, there has been a tremendous increase in student enrolment as well as the development of new health-related courses at degree and diploma level. Currently, the university has approximately 700 students enrolled in the MD degree and other postgraduate and paramedical programmes. Over the corresponding period, the increase in programmes and student enrolments has not been matched by an increase in teaching faculty and there is, therefore, an urgent need to initiate reforms and address the critical faculty shortage. The present study was conducted to determine the extent and nature of the faculty shortage at CUHAS. Results from this study will aid in planning future interventions to address the shortage of faculty at CUHAS and possibly also other medical schools facing similar challenges.

### Methods

A cross-sectional descriptive survey approach was used. A self-administered questionnaire was used to collect information from deans, department heads and university records (prospectus, personnel manuals, etc.) about the number of faculty in different departments at CUHAS. In the absence of policies specifying faculty quotas for individual departments, the head of each department was asked to estimate the number of additional faculty needed to sustain the curricular activities within the department. This

approach was used because the World Federation for Medical Education (WFME) recommends that teacher-student ratios should be self-determined by academic departments implementing medical curricula.<sup>[5]</sup> Department heads were also asked if they involved postgraduate trainees (registrars, residents) in undergraduate teaching activities. Residents were also interviewed about their role in teaching medical students and what they thought would improve the teaching.

The Ethics Research Committee of CUHAS approved the study, and informed written consent was obtained from all participants. Data were entered onto a spreadsheet and analysed using SPSS Version 11.

## Results

At the time of the study, the School of Medicine had a total of 83 faculty and about 700 undergraduate students and residents. A total of 32 (38.6%) were employed as full-time staff and a further 51 (61.4%) were part-time. Part-time faculty are either employees of Bugando Medical Centre (which is used as the university teaching hospital) or visiting professors from other institutions in the country or outside Tanzania. There are 39 (47%) faculty members teaching biomedical sciences subjects and 44 (53%) clinicians teaching clinical subjects. The Department of Surgery had the

biggest staff complement ( $N=13$ ) while Psychiatry and Ophthalmology had 1 faculty member each. About half of the departments at CUHAS reported a faculty shortage of 30% or more, as estimated by the head of department and the respective members (Table 1).

Teacher:student ratios in different educational settings were reported to be highest in small group activities such as bedside teaching and practical demonstrations. Most of the residents interviewed were aware of their obligation to teach nurses, medical students and other junior colleagues, and indicated that formal training, especially in teaching skills, would improve their ability to do so.

## Discussion

Almost every medical school in SSA has some degree of faculty shortage in the basic and clinical sciences.<sup>[2]</sup> The key findings of this study are consistent with this observation. This reality poses a significant threat to the existing health professions educational infrastructure because it places undue pressure on the small cadre of faculty, further increasing the likelihood of emigration or relocation to private organisations, non-governmental organisations or abroad. This study indicates that, while there was a shortage of faculty in almost all departments at the School of Medicine, shortages were greater in some of

the clinical departments. As indicated by the participants, this was most likely related to the resource-intensive nature of small group bedside or practical teaching.

Determining the optimal number of teaching faculty in a medical school is a difficult task. In the absence of international guidelines, the WFME recommends that teacher-student ratios be self-determined by the staff who deal with the academic demands of the various curricular components being taught by a given department or unit.<sup>[5]</sup> It is reasonable, therefore, to accept the data reported in this study as a reasonable estimate of the preclinical and clinical teaching needs at CUHAS, rather than thinking of it as 'wishful thinking' in a resource-poor environment.

To address the shortage of clinical faculty at CUHAS, postgraduate trainees are used as teachers. Internationally, it is well known that postgraduate trainees, even in well-resourced settings, play a critical role in the education of undergraduate clinical students; they spend about 20% of their time on teaching activities.<sup>[6]</sup> These residents, as elsewhere, indicated a need for training to improve the quality of education they offer.<sup>[7]</sup> Such a strategy would be a most efficient way of increasing the pool of clinical teachers without the need to hire more faculty.

The lack of teachers at CUHAS has resulted in the practice of sharing faculty with other Tanzanian medical schools; this raises concerns about the optimal length and sequencing of courses if visiting faculty are only available at certain times of the year and for limited periods. While this practice is not optimal, it could be significantly improved by explicitly creating teaching schedules that best address the collective educational needs of a cluster of medical schools. Carefully co-ordinated planning could address issues of course duration and sequencing so that the quality of the education is not compromised.

Another strategy that could be used to address the faculty needs at CUHAS is the use of faculty development programmes tailored to suit the needs of the institution and its departments and individuals. This would be an important step towards initiating and implementing reforms in educational capacity building. Such programmes could offer faculty activities aimed at improving teaching effectiveness as well as grooming junior faculty for future leadership roles in the university. Such programmes may also attract new faculty to the university.

The present study has reported on faculty shortages at only 1 of the 8 medical schools in Tanzania. While this is a major limitation, the

**Table 1. Distribution of faculty according to department**

Department	Total number of faculty, <i>n</i>	Number of faculty needed, <i>n</i> *	Estimated faculty shortage (%)
Anatomy	4	7	43
Physiology	5	8	38
Biochemistry	3	6	50
Microbiology	5	8	38
Pathology	3	7	57
Parasitology		6	100
Pharmacology	5	10	50
Community Medicine	6	10	40
Epidemiology	1	4	75
Behavioural Sciences	3	5	40
Internal medicine	10	13	23
Surgery	13	15	13
Ophthalmology	1	4	75
Psychiatry	1	4	75
Anaesthesia	1	4	75
Paediatrics	8	12	33
Obstetrics and Gynaecology	8	12	33
Radiology	2	4	50

\*Estimated by the head of department and staff.

study sheds light on the challenges facing smaller SSA medical schools, about which little has been written, compared with bigger schools in South Africa, Nigeria, Uganda and elsewhere.<sup>[2]</sup> What is reassuring about this study is that the developmental needs of medical schools, whether large or small, are similar; therefore common strategies need to be developed and shared across the African continent.

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