

WORKLOAD-BASED INDICATORS OF STAFFING NEED (WISN) FOR HEALTH TUTORS IN TWO PUBLIC HEALTH TRAINING INSTITUTIONS IN UGANDA

*Kitanda Jonathan, Administrator, Gulu School of Clinical Officers,
P. O. Box 994 Gulu, Uganda. E-mail: jonathankitanda@yahoo.com*

Abstract

Ugandan public Schools of Clinical Officers (SOCOs) face a serious problem of understaffing with qualified tutors, despite there being sufficient numbers in the country. Poor staffing of training institutions affects the quality of the graduates produced by the schools and eventually dictates poor quality provided by the health workers. This study set out to determine the workload-based staffing needs for two schools, determine the effects of understaffing and coping mechanisms adopted by the schools and the students. It was a descriptive cross-sectional study using the Workload Indicators of Staffing Need (WISN) methodology developed by the WHO, conducted in June 2006 in Mbale and Gulu SOCOs.

Respondents were 150 students (75 per school), tutors and officials at the Ministries of Health and that of Education and Sports. The study identified severe tutor staffing in both schools (22 calculated against 8 present in Gulu and 24 against 12 present in Mbale). Both schools depend heavily on part-time tutors and their substitute Clinical Instructors, as well as other coping mechanisms such as out-of-hours and holiday teaching. The quality of teaching has suffered, with syllabi not completed and some key subjects not taught. The major cause of understaffing was non-appointment of tutors due to slow bureaucratic decision-making and other poor working conditions in the Education sector, compounded by poor school administration. Students cope by photocopying notes from previous students and sister schools or by privately hiring tutors in their free time.

The paper recommends urgent appointment of tutors, improved funding for the schools, improved terms of service for tutors and improved school administration practices.

Introduction

In many countries in the world, the health sector experiences multiple pressures including increasing popular demand for better health services to an ever-increasing population against declining resources for health. This combination demands that health managers must improve on the efficiency with which services are delivered. This, in turn, dictates effective deployment of resources according to demand and economy of operation (Shipp, 1998). Human resources are one crucial resource that must be deployed effectively in order to achieve the objectives of efficiency and effectiveness.

The number of trained health workers in Africa is inadequate and many countries suffer from serious scarcities of all cadres. This is, among others, due to

economic and fiscal difficulties and incomplete civil service reforms. Health personnel to population ratios in Africa lag behind the rest of the world. In 1980s, one doctor catered to 10,800 persons in Sub-Saharan Africa compared to 1,400 in all developing countries and 300 in industrial countries. In the same period, one nurse catered to 2,100 persons in Africa compared to 1,700 persons in all developing countries and 170 in industrial countries (USAID, 2003).

The human resource crisis in Africa is mainly due to poor national economic performance. Whereas most training of human resources for health is publicly provided, budgetary stringency reduces African governments' ability to train adequate numbers of health workers, attract them into service, retain, and maintain their morale. Government treasuries are

unable to upgrade salaries and improve their working conditions. This double pressure on the production and retention of health workers has created shortages of key cadres such as doctors, clinical officers, nurses, and laboratory technicians. The situation of some other cadres like pharmacists, tutors, dispensers and anaesthetists is insufficiently documented. Though budgetary difficulty is a prominent proximate determinant of the human resource crisis in Africa, other important underlying causes include poor policies toward public sector employment that African countries have adopted since independence (USAID, 2003).

The government of Uganda has, since 1992, implemented reforms aimed at enhancing efficiency and effectiveness in the delivery of services. Some of the key reform measures undertaken include the rationalization and streamlining of functions, structures, and staff establishments of various government ministries, departments and offices. This was done within the overall objectives of the public service reform programme. Some of the major public service reform objectives included strengthening the management capacity of the public service through human resource development, development of management information systems, time management and organizational discipline; improvement of employee morale for good governance, and introduction of private sector-like initiatives for the enhancement of efficiency and effectiveness in service delivery (MOPS, 2003).

In an effort to streamline and rationalize the functions, the training function and all (previously departmental) training institutions were transferred to the Ministry of Education and Sports (MOES). The departmental institutions transferred included all Health Training Institutions (HTIs) of the Ministry of Health (MOH) such as nurse training schools (NTS) and paramedical training schools (PMTS) including Schools of Clinical Officers (SOCOs). Others were those from the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) like Veterinary Training Institutes (VTIs), Fisheries Training Institutes (FITIs) and Agricultural Training Institutes. They also included Forestry Training Institutes and Colleges of Commerce as well as Vocational and Industrial Training Institutes from the Ministry of Labour and other ministries. A new department called the Business, Technical, Vocational and Educational Training (BTJET) Department, was created within the Ministry of Education and Sports to handle this training. The transfer was to bring the training institutions into the scope of new education policies and demands as it was considered that departmental training was no longer in line with current national education trends, policies, and objectives.

This transfer, coupled with policy, legal and operational changes, prompted a review and restructuring of these institutions. The exercise was intended to re-align each institution's mandate, vision, mission, strategic objectives and management system with those of their new line ministry (MOPS, 2003).

The above transformations complied with a constitutional provision, the Universities and Other Tertiary Institutions Act of 2001. The Act requires the establishment and development of a system of governing the higher education institutions in order to equate qualifications of the same or similar courses offered by different institutions and widening their accessibility to students, while at the same time respecting their autonomy (GOU, 2001). Prior to the reforms all students in those schools were full-time residents and government-sponsored. However, a 1992 government White Paper on the Education Policy Review Commission had recommended an increase in intake into tertiary institutions and to cater for day, privately-sponsored and part-time students. This aimed at democratising access for all those who qualify and can afford (GOU, 1992).

In 2003, the Ministry of Public Service (MOPS) undertook a survey and eventually came up with new organisational structures for the training institutions. It developed appropriate staff establishments for them. Uganda has three regionally-located public SOCOs (Gulu in the north, Mbale in the east and Fort Portal in the west). According to the MOPS recommendations, each SOCO was, on the basis of existing facilities, expected to have a minimum of 20 tutors, basing on the 20 major subjects taught on their 3-year course. However, for purposes of feasibility, the MOES subsequently proposed a downward revision of this number to 13 tutors per school (MOES, 2005). All the same, this required an appointment of a total of 18 new tutors for the three SOCOs. However, since then, only two new tutors have been appointed, one for Gulu and one for Fort Portal.

The proposed increased intake of students was also to address the government's commitment to achieving the Millennium Development Goals (MDGs), which showed extensive overlap with Uganda's Poverty Reduction Strategy Paper (PRSP), the Poverty Eradication Action Plan (PEAP). In Uganda, successive Participatory Poverty Assessment Project reports identified ill health as a leading cause of poverty. As a result, health has continued to be an important element of the Human Development pillar of the PEAP.

The 2001 Population and Housing Census in Uganda showed a high population growth rate of 3.4% per

annum, thus reflecting a widely growing demand for health care. A series of public policies further increased the demand for qualified health care providers. The abolition of user fees in public health facilities in 2001 removed a significant barrier for the majority poor and flooded the health units with patients, thus requiring more providers. The government policy of constructing a level II health centre (HC II) in each of Uganda's about 5,000 localities (parishes) has shot up the demand for nurses to manage them and provide care. The policy of setting up level III health centres (HC IIIs) in each one of Uganda's about 1,000 sub-counties to be headed by Clinical Officers has also increased the demand for that cadre, hence justifying increased intake in trainees into all the HTIs (MOH, 2005a). However, with an increase in students, there is need for an increase in tutors and facilities, in order to guarantee the quality of training and, subsequently, the quality of care the trainees offer to the population.

Whereas the MOPS report cited above recommends that all tutors should have a basic university degree in addition to specialised tutorship qualifications, most tutors on the ground are still diploma holders. The report recommends to MOES to lay strategies for further education for health tutors (MOPS, 2003). However, the MOES does not offer sponsorship for upgrading courses lasting more than 9 months. The salary scale of a tutor with the MOPS-recommended qualifications is supposed to be U4, but since no such appointment has been effected despite a number of tutors having acquired the required qualifications, incumbent health tutors still get lower salaries (scale U5, for holders of one diploma. Note that most health tutors possess a basic clinical diploma and a diploma in tutorship). Thus, in practice, their additional diploma in tutorship and any extra qualifications are not compensated. Due to these issues of non-appointment, low salary, increased workload and lack of sponsorship for further training, the attraction and retention of health tutors is in jeopardy. Many health tutors, who were initially MOH staff before the reforms and are usually MOH staff before qualifying as tutors, have declined to stay in their MOES institutions of appointment and trickled back to the MOH where staff salaries are regularly revised upwards and where there is a higher chance of scholarship for further studies.

Clinical Officer and Tutor Training in Uganda

The three public SOCOs in Uganda train students on a 3-year course leading to a Diploma in Clinical Medicine and Community Health. The course is divided into three academic years of two semesters each. The semesters last 20 weeks interspersed with holidays of 4 weeks. Training covers theoretical and

practical aspects of clinical medicine and community health. The candidates are attached to a hospital and lower levels of health units for their practical training. The Clinical Officer cadre (formerly the Medical Assistants) forms the frontline health care providers and managers especially in rural communities (Matsiko and Kiwanuka, 2003). They provide primary care services, between the level of a nurse and a general practitioner, including minor surgery.

Apart from Mbale, there has not been any major infrastructural expansion of the SOCOs in a long time. Before the transfer, each school had, on average, a capacity of 120 students i.e. 40 students per class in each of the three years I to III. Due to the policy on expansion, it was estimated before the study that, on average, each class would have about 80 students, thus giving a total of about 240 students per school (MOPS, 2003). There are two channels of student intake i.e. Government-sponsored (or Window 1, approx. 40%) and Privately-sponsored (or Window 2, approx. 60%). Funding to the schools is from three sources i.e. Delegated Funds from the central government, students' fees and donor support. Currently, the main donors are African Medical Research Foundation (AMREF) and Ireland Aid (AMREF, 2000; MOH, 1997). In general, it is acknowledged that the funding for the schools is inadequate (USAID, 2003). The subjects in SOCOs are taught on a continuous (non-modular) basis, with each unit covering the whole academic year, thus requiring full-time tutors for the entire period. Essential subjects like Primary Health Care are spread throughout the three years (MOH, 1997).

Health Tutors are the key resource personnel in the training of clinical officers. They too hold a diploma like the Clinical Officers but after some working experience, undergo a 2-year training in teaching skills at the single Health Tutors' College in Kampala, leading to an additional Diploma in Health Tutorship. A few tutors obtain scholarships to undergo their training in other places like Arusha in Tanzania. Since 1998, over 160 tutors have qualified from the Health Tutors College in Kampala alone. However due to poor incentives in HTIs, they trickle back to the Ministry of Health (Mulago Health Tutors' College, 2006). Presently there are only 12 tutors in full-time service in Uganda's public SOCOs (3 in Mbale, 3 in Fort Portal and 6 in Gulu).

The problem with Clinical Officer Training

The three-year diploma course for Clinical Officers in Uganda is a labour-intensive practical course. Clinical officers, who are the frontline health care

providers and managers of the health system in Uganda, must be competent on qualification because, often, they will not have adequate support supervision at work. Quality training for Clinical Officers requires total commitment from the tutors in order to manage the workload. However, basing on previous recommendations for appropriate staffing, Ugandan public SOCOs are seriously understaffed. Previous recommendations for staffing were based on the existing facilities rather than the workload. Yet, the workload for the tutors has increased dramatically with the increase in student intake. Tutors are demoralised by the excessive workload, unclear career plans, poor remuneration, poor management and lack of opportunities for further training. There is high attrition of newly appointed tutors while others flatly refuse full-time appointment in the SOCOs (MOH, 2005b).

Understaffing with tutors constrains the schools which have to pay highly in terms of teaching allowances to part-time instructors. It compromises the quality of education as the curriculum may not be covered fully or satisfactorily. The clinical officers trained thus, eventually provide poor quality health services to the community. School managers are unable to plan and manage school programmes efficiently without proper tutor staffing standards as reference points for their decisions.

In Uganda, there has not been any study to determine the tutor requirements in schools based on the actual workload. Workload-based staffing levels are the most reliable means to ensure quality of education for the clinical officers and eventually quality of care offered by the graduates of the SOCOs. However, determining the right staffing need is a major challenge to institutional managers. The Workload Indicators of Staffing Need (WISN) methodology has been used in Uganda recently, mainly to determine the need for clinical staff. We applied it to determine other types of staff and to see whether it can, in future, be a useful planning tool for training schools as well.

Objectives

The aim of the study was to provide information on the actual workload of health tutors in SOCOs, which could be used to determine the appropriate staffing levels for such schools in Uganda, in order to improve the quality of education, staff morale and ultimately, the quality of care provided by the clinical officer graduates. The study had four objectives i.e. to determine the workload-based staffing requirements for tutors in two Ugandan SOCOs, to document the factors leading to understaffing with tutors, to determine the effects of understaffing on the schools

and the training programmes and, finally, to determine the coping mechanisms adopted by the schools, the staff and the students in the face of such understaffing. It was considered that once the above are determined, the information provided could be used by policy-makers to plan for appropriate staffing.

Literature Review

Methods of determining staffing levels

Whereas in the past many approaches have been used to determine staffing levels, there is a general feeling that most of them are not appropriate. They largely depend upon the size of the facility in which the staff is to work, than the amount of work they have to do there. Quite often, large un-productive units are heavily staffed at the expense of small productive units. Such is the case with many public health units compared small private-not-for-profit health units in many countries, including Uganda. There is increased effort to ensure that staff is fully utilized by introduction of a new orientation to setting staffing standards for individual institutions (Ozcan and Hornby, 1999).

The use of workload measures to determine staffing levels is being increasingly applied in the health sector. In this method staffing requirements are expressed in terms of some measure of patient load and a minimum number of staff. Usually a well-staffed facility is used to express staffing levels in terms of workload; a "workload indicator" can then be used to determine the requirements at other facilities in relation to their existing patient load (Hanson and Gilson, 1996). Estimating time required for each type of consultation and total time available have also been used to estimate the numbers of consultations that can be handled by each person in one year. Staffing at the unit must be matched with the patients' needs because inappropriate staffing can result in adverse consequences for patients and staff themselves.

The health worker-to-population ratio method, in which staff needs are determined basing on the population served and the needs expressed as the number of staff required per 1000 population, is used in many countries to determine staffing levels. However, this methodology only assesses the overall staffing requirements and training needs in the country but does not give the detailed staffing level and skills mix for the individual health units. In order to overcome this problem, standard staffing schedules were developed basing on the size of the health unit. Here, fixed patterns of staffing levels and skills mix are given for health facilities of the same size. This method is still being used in many countries including

Uganda. Its main limitation is that the workloads faced by different units, even those of the same level and size, are not the same. Moreover, the distribution of the health units countrywide is not equitable. Therefore in areas where units are few, the staff is overworked (Shipp, 1998). In addition, these two methods do not take into account the wide local variations that are found within every country. These variations include the morbidity patterns in the different locations, the ease of both geographical and financial accessibility to the different health units and the patient's perception of quality in the different health units. All these factors affect demand for services at individual health units and hence the workload experienced in these facilities. The workload in the different facilities subsequently affects the number and mix of the staff needed to meet this workload in the facilities hence the need for workload based staffing requirements (Shipp, 1998).

In addition to above limitations of the previous methods for determining staffing requirements, there was the emergence of health sector reforms calling for cost containment and quality improvements (Buchan, 2000). This increasing pressure for better quality of health care and efficient use of the human resources pressurized health managers to identify ways in which to use the available staff more efficiently. The WISN method is such a method that will produce all these types of results (Shipp, 1998).

The WISN Method

Staffing levels and skills mix differ from setting to setting or from country to country making it difficult to prescribe in detail a universal ideal mix or level of health personnel. When assessing staffing levels, resource availability, regulatory environment, culture, custom and practice in a particular health system must be considered (Buchan and Dal Poz, 2002). The WISN method was developed by the WHO and has been field tested in various countries. It uses the workload experienced at each individual health unit to determine the staffing needs for that unit. It takes note of the fact that each workload requires the use of a specific worker's time and skill.

In the WISN method, the staffing requirements are cognised to be a function of the workload and obtained by dividing the Total Facility Workload by the Standard workload per staff (Shipp (1998). The workload in the facility is obtained from the annual statistics. The standard workload per staff is the amount of work that can be accomplished by one staff in a year working to acceptable professional standards. It is obtained by dividing the Available working time (AWT) by the Activity Time (AT). The AWT is the time that a

health worker spends at work in a year, obtained after deducting the time spent on vacation, public holidays, training and sick leave from all the days of the year (Shipp 1998). AT is the unit time spent on each component of the workload by one staff working to acceptable professional standards. This AT is set for each staff category by a group of knowledgeable and experienced staff managers in the work area (Buchan et al, 2000).

In the calculations, the same activity time is used for health facilities of the same level. This means that the calculated staff numbers in each health facility are based on the same medical standards. The activity standards/time set should not be too high from the current average conditions towards the ideal otherwise the results would be unrealistic and unachievable in the near future and therefore not practical. The target, therefore, should be to achieve these ideal desirable staffing levels and health care quality standards in the long run. This implies therefore that the staffing requirements are not fixed. They keep changing with changing needs, quality and technology (Shipp, 1998).

Each method, clearly, has its own strengths and weaknesses, which relate to its precision, cost and time to complete (Ozcan and Horny, 1999). Unlike other methods that rely on theoretical assumptions, the WISN is practical using actual workloads experienced in the health facilities and setting activity standards that are achievable. Therefore the results offer practical targets for budgeting and resource allocation (Shipp, 1998). To be useful to decision makers the calculated staffing requirements are compared with the actual staffing level in the facility. These comparisons generate two main categories of information i.e. differences and ratios.

The difference between the present staffing level and the calculated staffing numbers shows the level of shortage or surplus in the staffing. Using this difference, managers are able to identify where the staff shortages and surplus are and how big they are by staff category in each health facility or department in the same facility. In cases where there is a calculated shortage of staff, it means that the staffs in that facility are working under some degree of pressure and are not able to achieve the set professional standards.

The level of pressure under which the staff is working is given by the ratio of actual staffing / calculated staffing. This ratio is the workload indicator of staffing need (WISN). If the WISN ratio is 1 (that is, actual staff = calculated staff requirement), then the current

staff is just sufficient to meet the workload according to the professional standards which have been set. If it is less than 1 (that is, the present staff numbers are less than the calculated needs), it means that the staff is working under pressure to accomplish the present workload. Work pressure increases as the WISN ratio tends to zero. In cases where the ratio is less than 1, it follows that in addition to the staff working under pressure, such staff are not sufficient to meet professional standards, (Shipp, 1998).

In the same health system or facility, the WISN ratio shows the health unit or the department in which the workload pressure is greatest and where it is least. It may, therefore, be used to identify which facilities or departments should have priority when considering staffing changes (whether increases, reductions or redistribution).

WISN results depend heavily on the accuracy and completeness of the annual workload statistics. Incomplete annual statistics are a problem in most school facilities and hence a major limitation of this methodology. However, the WISN method challenges institutions to improve their annual statistics with time in terms of accuracy and completeness after acknowledging their importance in determining staffing requirements. In so doing, however, there is a potential danger of their abuse by over recording so as to increase staff numbers.

Staff requirements determined by the WISN depend on the workload and are therefore not fixed. They change with changing workload and therefore need to be revised at agreed intervals to reflect the change in workload (Kolehmainen, 1998). Moreover, they depend on past statistics, which lead to the production of retrospectively valid estimates of staffing need. A major assumption in the use of the method is, therefore, that although there is seasonal variation in workload within the same year, annual workload does not vary very significantly from year to year.

Health worker motivation

Many health workers are ill-motivated because they are poorly paid, poorly equipped, infrequently supervised and informed, and have limited career opportunities within the civil service. Within comparable tasks and positions, civil service salaries are generally lower than their private sector counterparts. In Zimbabwe in 1998, a nurse could expect a 40% increase in salary if she left government service to join the private health sector. Not only are salaries low but they may also be given late. In Uganda, frontline workers were not paid salaries for many months in late 1990s and the salary arrears

accumulated to such a magnitude that the government had to ask some donors for support in settling the problem (USAID, 2003).

A study of Life Abundant Programme (LAP) a church sponsored primary healthcare project in rural Cameroon, found out that factors contributing to sustainability of a programme were: annual continuing education for all health workers, adequate staffing, clinical expertise of health workers, close working relationship with government health authorities, and the biblical philosophies of love, compassion and integrity (Eliason, 1999).

Effects of understaffing

In the context of the millennium development goals, human resources represent the most critical constraints in achieving the targets. It is important, therefore for health planners and decision-makers to identify the human resources required to meet these targets. These include tutors in this.

Planning the human resources for health is a complex process. It needs to consider both the technical aspects related to estimating the numbers, skills, and distribution of health personnel for meeting population health needs, and the political implications, values and choices that health policy and decision makers need to make within given resources limitations (Buchan, 2000).

Given the current and forecast burden from AIDS and other epidemics, it is important that countries consider adopting human resource policies to produce enough competent health workers so that the workforce slack can be reasonably filled (USAID, 2003).

Capacity building, therefore, is the objective of many developing country programs. Emphasizing systemic capacity building improves the diagnosis of sectoral shortcomings in specific locations, programme design and monitoring, and leads to more effective use of resources (Patter and Brough, 2004). The impact of funding and structure of healthcare on professional behaviour and working conditions need to be widely studied. Greater factors such as decision-making, job satisfaction and personnel well being determine the degree of performance of health personnel (Forsberg, 2003).

Attrition of civil servants has reached critical rates due to the combined effects of accelerated retrenchment, voluntary retirement, and departure for 'greener pastures' locally and abroad, sickness and eventual death primarily from AIDS. Enforced early

retirement, voluntary departure, and retirement are also key features of civil service reforms in Africa.

In many contexts in which health workers provide care, patients are more gravely sick than they have ever been and the care they require is more complex. There are demands for sophisticated decision-making evidence-based approaches to care, adaptation to new models of care and innovative practices, accountability for practice, and the capacity to function in a turbulent environment. This calls for the need of well coordinated training of health workers and proper staffing levels in schools (Mattke, 2001).

As multidisciplinary teams with overlapping skills become more common, managers need to determine what is being done, and by whom, at any one time. In an organized category of people, preparation of suitable duty rosters is the most effective and efficient way to plan for use of human resources. When rosters are well designed to match peaks and troughs in work, staff fatigue is reduced, sickness absenteeism is reduced, quality of care is enhanced, and time wastage is minimized, leading to significant cost savings to the organization. Rosters can, therefore, be powerful tools when they are appropriately developed and managed. Creative and innovative rostering practices have been implemented in some organizations and have successfully achieved the goals of improved quality care and efficiency (Lowe, 2001). However, a suitable minimum of staff needs to be in place even for a duty roster to be effective.

Several factors influence the productivity of workers for example patient's numbers and characteristics, intensity of the unit and care, the context and expertise. In recent research findings optimal workload for a nurse was found to be four inpatients. Increasing the workload resulted in increase in the number of the patients who die within days of admission. Thus, the higher the workload, the higher the mortality rate. It was also noted that higher staffing levels led to reduced numbers of hospital-acquired infections and needle injuries incurred by nurses (International Council for Nurses, 2003).

Coping mechanisms

Where the human resource crisis has been most severe, adaptive and counter productive behaviour of health workers has also been more noticeable. Different coping mechanisms including absenteeism, salary augmenting activities, pilferage of public property, strikes have all been noticed. Health workers strikes have been held in Kenya, Uganda, Malawi, Zimbabwe and elsewhere mainly to demand higher salaries and

better working conditions. Salary-augmenting activities takes many forms including taking two jobs, taking in-post consultancy assignments, straddling two positions, over training and attendance in as many workshops as possible (USAID, 2003)

Methodology

The study, conducted between June and September 2006, covered 2 clinical officers' schools namely Mbale and Gulu. A third school, Fort Portal, was left out of the study to avoid conflict of interest, being the workstation of the author. It was a descriptive, cross-sectional study and collected both quantitative and qualitative data. We used the WISN as described by Peter J. Shipp (Shipp, 1998). The workload statistics used were those indicated in the curriculum, examination invigilation and marking records. Other work undertaken by staff but not registered was not considered. The study unit comprised an individual SOCO and the respondents were health tutors and students in these schools. Four key informants were also purposively selected at MOES level and interviewed to obtain information on national training policies. Those selected were: Registrar of the Allied Health Professionals Council, the Commissioner for Clinical Services at the MOH, the Assistant Commissioner for BTVET at the MOES and the Chairperson of the Education Service Commission.

Basing on an estimated capacity of 240 students per school, an estimated understaffing of 50% and a tolerable margin of error of 10% at the 95% confidence level, the calculated sample size was 69 students per school, calculated using Statcalc in Epi-Info programme. However, 75 students were interviewed per school to cater for possible invalid questionnaires. There are three classes per school and each class was estimated to have 80 students. It was therefore decided to spread the respondents equally throughout the years i.e. 25 respondents per year. A sampling fraction of 3 was determined and by systematic sampling of every 3rd student on the alphabetically arranged class list, 25 students were selected from each class. All the appointed tutors present at each school were interviewed. A total of 8 tutors were found on duty at the two schools.

Data sources, definition and operationalisation of variables

In order to conduct the study and to be consistent, we defined key variables. *Staffing requirement* was taken as the minimum number of tutors who can deliver the school's services to acceptable professional standards. This was obtained after analysis of the actual workload required as per standards for full-

time equivalent (FTE) tutors. The FTE tutors were obtained by dividing the school's total annual expenditure on teaching allowances by the amount paid per hour of each lesson taught. This gave the total number of hours taught in a year. The result was then divided by the available working time to get the full time staff equivalent. The activities carried out by a tutor were identified in Focus Group Discussions (FGDs) with the tutors as the subject matter experts (SMEs). *Activity Standards*, the average time taken by a well-motivated staff to perform an activity working to acceptable professional standards, were set by the tutors in accordance with the school curriculum during the FGDs. The standards set by the tutors in the two schools were not different.

Individual and *Category Allowance Standards* were also set during tutors' FGDs. Individual Allowance Standards are the standard times it takes to do activities done by one or a specific number of staff, while *Category Allowance Standards* are the times it takes to do activities done by all staff at once, for example general school assemblies. The *Available Working Time (AWT)*, the amount of time available in a year per staff for delivering school services, was obtained through FGDs with tutors. The days of absence from duty were determined as the public and school holidays, official and sick leave, and rest days off duty. The total number of these days (in hours) was subtracted from the normal working hours in a year and the remaining AWT in hours was computed. The *Standard Workload*, which is the amount of work that can be done by one person in a year, making allowance for absence from duty, was obtained by dividing the AWT by the Activity Standard. The *Annual Workload*, the amount of each type of work done in the school

was compiled from the school curriculum. A *Basic Staff Requirement* for each school was obtained by dividing the Annual Workload by the Standard Workload. However, this does not take care of activities conducted by all staff or staff groups. In order to cater for this, the basic staff requirement result was multiplied by a *Category Allowance Factor*, obtained as 1/1-Total percentage of all category allowance standards. The result was then added to the total of the Individual Allowance Standards to get the staff requirement. Eventually, the *WISN Ratio*, which actually shows the pressure under which the tutors are working, was obtained by dividing the *Actual Staffing* by the *Calculated Staffing requirements*. In addition, the difference of the actual staffing level less the calculated staffing level was also determined. The difference indicates whether a unit either experiences a surplus or shortage of staff at the present staffing level. The reasons for and effects of understaffing with tutors and the coping mechanisms of the students and the schools were explored through interviews, self-administered questionnaires and focus group discussions after verbal consent. In the final analysis, we analysed findings from 8 tutors, 150 students and 4 key informants.

Findings

Staffing requirement

According to the standard curriculum, the classroom instruction and the clinical instruction for the three years were set at 3,102 hours and 3,694 hours respectively by the Ministry of Education and Sports. The other standards (activity standards, allowance standards and available working time) were set locally as shown below.

Table 1: Activity and Allowance Standards set for Gulu and Mbale SOCOs

Activity	Set activity time (hrs)		Frequency		Total		Annual workload		Staff
	Gulu	Mbale	Gulu	Mbale	Gulu	Mbale	Gulu	Mbale	Both schools
Exam invigilation/supervision Paper 1	3	3	9 exams/yr	6 exams/yr	17 subjects	17 subjects	153	102	1 tutor
Exam invigilation/supervision Paper 2	2	2	9 exams/yr	6 exams/yr	17 subjects	17 subjects	153	102	1 tutor
Marking exam scripts	0.75	0.75	9/yr	6/yr	See below*	See below**	10530	13440	1 tutor
Oralexam	0.67	1.8	4 exams/yr	3 exams/yr	198 students	249 students	198	249	1 tutor
Research supervision	2.5	2	Once a wk x 4 months	once a wk x 4 months	40 sessions	32 sessions	40	32	1 tutor
*Total frequency for Gulu: {(75 students x 5 exams x 6 subjects)+ (58 students x 5 exams x 6 subjects)+ (51 students x 5 exams x 5 subjects)} x 2									
**Total frequency for Mbale: {(88 students x 5 exams x 6 subjects)+ (81 students x 5 exams x 6 subjects)+ (66 students x 5 exams x 5 subjects)} x 2									

Table 2: Category Allowances for Gulu and Mbale SOCOs

Activity	Set activity time (hrs)		Frequency		Total		Annual workload		Staff
	<i>Gulu</i>	<i>Mbale</i>	<i>Gulu</i>	<i>Mbale</i>	<i>Gulu</i>	<i>Mbale</i>	<i>Gulu</i>	<i>Mbale</i>	
<i>School</i>									<i>Both schools</i>
Grand round	3	2	once/ week	once/ week	42 grand rounds	42 grand rounds	42	42	All tutors
School assemblies	4	3	3/semester	1/semester	6 assemblies	2 assemblies	6	2	All tutors
General staff meeting	2	2	Once/month	Once/month	12	12	12	12	All tutors
Making scheme of work of work	160	56	twice a yr year	twice a yr year	3 subjects	3 subjects	6	6	All tutors
IMCI training	40	88	once a yr	once a yr	1 per year	1 training/yr	1	1	All tutors
Field supervision	8	60	daily x 2mths	3 times/yr	3 per year	3 per year	3	3	All tutors
Discussion of results	2	3	4 times/yr	3 times/yr	4 discussions	3 discussions	4	3	All tutors

Table 3: Individual Allowance Standards for Gulu and Mbale SOCOs

Activity	Set activity time (hrs)		Frequency		Total		Annual workload		Staff
	<i>Gulu</i>	<i>Mbale</i>	<i>Gulu</i>	<i>Mbale</i>	<i>Gulu</i>	<i>Mbale</i>	<i>Gulu</i>	<i>Mbale</i>	
<i>School</i>									<i>Both schools</i>
Setting exams	1	1	9/year	6/year	9 exams set x 17 subjects	6 exams set x 17 subjects	153	102	1 tutor
Modulation of exams	0.5	0.5	9/yr	6/yr	9 exams set x 17 subjects	6 exams set x 17 subjects	153	102	1 tutor
School budgeting	30	30	once a yr	once a yr	30 hrs	30 hrs	30	30	1 tutor
Administration (Principal tutor)	5	5	daily	daily	5 hrs x 107 days	5 hrs x 107 days	535	535	Principal tutor
Administration (tutor)	2	3	daily	Daily	2 hrs x 107 days	3 hrs x 107 days	214	321	1 tutor
Release of exam	2	2	4 times/yr	3 times/yr	4 exam results releases	3 exam results releases	4	3	1 tutor
Games/Sports	80	1	once/ yr	daily	80 hrs	1 hr x 210 days	80	210	2 tutors
Admission of students	80	80	once/ year	once/ year	1 per year	80 hrs	80	80	2 tutors
Departmental meetings	2	2	twice a year	Once/ month	2 meetings	12 meetings	2	12	1 tutor
Registration of students	80	80	once a year	once a year	80 hrs	80 hrs	80	80	1 tutor
School inspection	2	2	once a week	once a week	21 inspections	21 inspections	52	52	1 tutor
Time table making	1	1.5	3 times/ year	3 times/ year	3 time tables	3 time tables	3	3	1 tutor
Record keeping	0.5	1	once a month	once/ week	12 per yr	52 per yr	12	52	1 tutor
Report writing	4	2	per year	4 times/ year	4 reports	4 reports	4	4	1 tutor

Table 4: Available Working Time for Tutors in Ugandan Schools of Clinical Officers

Days Off work	
Public holidays	12 days
Official leave	30 days
CME (Workshops)	10 days
Sick leave	3 days
Off duty	98 days
TOTAL TIME UNAVAILABLE	153 DAYS
Total weeks available per year	21.4 weeks
Total available working days per year	107 days
Total available working hours per year	856 hours

Table 5: Annual Workload for Tutors in Ugandan Schools of Clinical Officers

Subject	Duration (in hours)		Total Duration
	Theory	Practical	
Anatomy and Physiology	140	160	300
Social Psychology	60	20	80
Nursing 115	115	230	
First Aid 40	60	100	
PHC ie			
• Concepts, Pillars, Elements & principles	50	100	150
• Nutrition	50	100	150
• Environmental health	84	72	156
• Health education	42	58	100
• MCH/Rep.health	85	90	175
• Management	44	16	60
• Epidemiology & Research	82	68	150
MICROBIOLOGY	62	60	122
Pharmacology & Therapeutics	80	96	176
Ophthalmology	68	90	158
Dental Health	30	45	75
Medicine/Psychiatry	191	214	405
Paediatrics	120	135	255
Surgery 136	206	342	
Obs/Gyn 72	142	214	
Total Contact Hours	1551	1847	3398
Plus: • Exam Invigilation.			
• Marking Exam Scripts.			
• Oral examination			
• Research Supervision			

Table 6: Workload-based Tutor Requirements for Gulu and Mbale SOCOs

Step 1

Activity	Average time/ activity (hrs)		AWT	No of required staff	
	Gulu	Mbale		Gulu	Mbale
<i>School</i>			<i>Both Schools</i>		
Classroom instruction	3102	3102	856	3.6238318	3.62383178
Clinical instruction	3694	3694	856	4.3154206	4.31542056
Total (a)				7.9392523	7.93925234

Step 2

Activity	Activity standard (hrs)		AWT		Standard workload		Annual workload		Basic staff req.	
	<i>Gulu</i>	<i>Mbale</i>	<i>Gulu</i>	<i>Mbale</i>	<i>Gulu</i>	<i>Mbale</i>	<i>Gulu</i>	<i>Mbale</i>	<i>Gulu</i>	<i>Mbale</i>
Exam invigilation/ supervision Paper 1	3	3	856		285.33333	285.333333	153	102	0.53621	0.3575
Exam invigilation/ supervision Paper 2	2	2	856		428	428	153	102	0.35748	0.2383
Marking exam scripts	0.75	0.75	856		1141.3333	1141.33333	10530	13440	9.22605	11.776
Oralexam	0.67	1.8	856		1277.6119	475.555556	198	249	0.15498	0.5236
Research supervision	2.5	2	856		342.4	428	40	32	0.11682	0.0748
Sum (b)					10.3915	12.97				
Sum (a+b)									18.330794	20.90911

Step 3

Category allowance standards	Average time/ activity (hrs)		Frequency		Annual Workload (AWL)	
	<i>Gulu</i>	<i>Mbale</i>	<i>Gulu</i>	<i>Mbale</i>	<i>Gulu</i>	<i>Mbale</i>
<i>School</i>						
Grand round	3	2	once/week	once/week	42	42
School assemblies	4	3	3/semester	once/semester	6	2
General staff meeting	1	2	Once/month	once/month	12	2
Making scheme of work	160	56	twice/ year	twice/yr	6	6
IMCI training	40	88	Once/ year	once/yr	1	1
Field supervision	8	60	Daily x 2 months	3 times/yr	3	3
Discussion of results	2	3	4 times/yr	3 times/yr	4	3
Sum			74	59		
Staff req. (AWL/AWT)					0.0864486	0.06892523
Multiple factor					1.09463	1.0740276
Corrected staff requirement					20.065422	22.45696

Step 4

Individual allowance standards	Average time/activity (hrs)		Frequency	AWL	
	<i>Gulu</i>	<i>Mbale</i>		<i>Gulu</i>	<i>Mbale</i>
<i>School</i>					
Setting exams	1	1	9/yr	153	102
Modulation of exams	0.5	0.5	9/yr	153	102
School budgeting	30	30	once/year	30	30
Administration (P.tutor)	5	5	daily	535	535
Administration (tutor)	2	3	daily	214	321
Release of exam results	2	2	4 times/yr	4	3
Games/Sports	80	1	once/year	80	210
Admission of students	80	80	once/year	80	80
Departmental meetings	2	2	twice/ year	2	12
Registration of students	80	80	once/year	80	80
School inspection	2	2	once/week	52	52
Time table making	1	1.5	3 times/yr	3	52
Record keeping	0.5	1	once/month	12	52
Report writing	4	2	4 times/yr	4	4
Sum AWL			1402	1635	
Staff req. (AWL/AWT)				1.6378505	1.91004673
Calculated staff requirement				21.7032725	24.36701
Corrected Staff Requirement				22	24

The table below shows the number of tutors per school by appointment status, compared to the calculated staffing levels.

Table 7: Tutor staffing and requirements per school

	Actual	Calculated	Shortage
Mbale	3	24	21
Gulu	6	22	16
Total	9	46	37

Mbale SOCO had the highest need for tutors (24) due to the differences in the total school student enrolment (249 compared to 198). This indicates a very severe shortage of tutors, compared to the actual staffing. However, the schools mainly cope by use of part-time staff, with Mbale having 43 part-time teachers compared to 23 for Gulu. Converting the hours of work of part-time staff into full-time equivalent (FTE) tutors yields some improvement in the actual staffing picture of the SOCOs as shown below:

Table 8: Shortage and work pressure in the two schools

School (A)	Actual (B)	Full time equivalent of Part-time staff (C)	Total (D)	Calculated (E)	Difference (F)	WISN ratio (G)	Pressure (H)
			B+C		D-E	D/E	100%-G
Mbale	3	9	12	24	-12	0.50	50%
Gulu	6	2	8	22	-14	0.36	64%

When the actual staffing level and the fulltime equivalent of the part-time tutors for each of the two schools were added, the shortage in staffing level was found to be 12 tutors for Mbale and 14 for Gulu. The WISN ratio of the two schools was 0.50 for Mbale, and 0.36 for Gulu. The pressure experienced by tutors in Mbale is 50% while those of Gulu experienced a pressure of 64%.

The table below compares the WISN calculated number of tutors required per school to the present staffing level, and the numbers recommended MOPS (20) and MOES (13).

Table 9: Present, calculated and recommended number of tutors

School	Actual + Full time equivalent of Part-Time	Calculated	Recommended by MOPS	Recommended by MOES
Mbale	12	24	20	13
Gulu	8	22	20	13

The number recommended by MOPS is the closest to the workload-based staff requirement.

Factors leading to tutor understaffing

The main causes of understaffing, in order of importance, were non-appointment by government, low salary, poor job security, heavy workload, lack of chances for further training, poor school administration, insecurity, lack of didactic materials and lack of staff accommodation.

Non-appointment was the major reason for understaffing mainly due to slow bureaucratic processes of government. For instance, the Ministries of Finance, of Public Service, of Education and Sports, and finally the Cabinet are yet to come up with an agreed staffing structure in line with the staffing policy before the appointments can be effected. The MOES-proposed structure was submitted to the Cabinet in 2005 but it had not been discussed by the time of the study in mid-2006. Tutors who left teaching and went back to the MOH were promoted to senior clinical positions and their salaries increased accordingly, in recognition

of their added qualifications.

Their colleagues who remained in MOES have not been appointed yet and still get their old salaries as before qualification. In response to policy changes in the MOES, 5 of the 6 tutors at Gulu and 1 of the 3 at Mbale were at university in order to obtain the now mandatory bachelor's degree before re-appointment as tutors.

Local school administrators did not have the means to motivate their staff. Tutors complained of inability to earn extra income to boost their inadequate salaries. Tutors complained of inequitable distribution of income-generating additional responsibilities among staff. Moreover, the heavy school schedule left for the remaining staff without additional responsibility left them no time for any chances of private practice. Schools lack adequate didactic equipment and materials for an effective teaching-learning environment and this also tended to demotivate tutors.

Effects of understaffing

The majority of respondents reported that the major effect of tutor understaffing was a deterioration of school academic standards. Other effects cited included increased expense on part-time teachers, failure to run scheduled programmes, inability to complete the syllabus and inadequate assessment of students.

Another new development reported was the development of poor school-hospital relationship

because the schools cannot pay hospital staff their teaching allowances promptly which, reduces their willingness to supervise students on hospital practical sessions. During FGDs, it was noted that subjects like Anatomy, Physiology and Pharmacology were not being adequately covered because of a lack of input from hospital staff. For the entire 3-year period of their course, one of the schools was not going to be able to teach Medical Ethics to a cohort of third year finalist students of 2006. Due to increased workload, standard teaching practices like preparation of schemes of work and lesson plans had been abandoned for long. However the key informants reported no observable poor performance in schools since their students still passed their final year examinations. However, there were genuine fears of production of clinical officers of sub-optimal quality because of non-completion of the syllabus, and inadequate supervision of research and clinical practice.

During FGDs with both students and tutors it was reported that apart from the community-based PHC activities, tutors rarely followed students to the clinical areas in the hospital. Often, tutors did not supervise the students, or check and sign their training logbooks for practical procedures performed. Students were left to the hospital staff for instruction, yet the latter were already demoralised due to non-payment. There were reported incidences where students had been sent out of clinical practice in the hospital, in addition to being verbally abused or neglected.

There was significant delay in releasing results, including those for promotion examinations. In one school, results for promotion examinations done in November/December 2005 for second and third year students were not yet released by June 2006. They were withheld by part-time tutors because the school had not paid their allowances and yet the students were expected to complete the academic year (some, the course) in December 2006. All the above affected students directly through failure to complete syllabi, increased workload as they try to read on their own, poor performance in exams, poor student-tutor relationship, and increased students' expenses on photocopying of out-dated notes from students of previous years, private arrangement of extra lessons and purchase of (and unguided reliance on) personal textbooks.

Coping mechanisms

The major coping mechanism adopted by the schools were hiring of part-time teachers, stocking of the library with textbooks, provision of handouts, last-

minute accelerated increase in contact hours ('crash programmes') to complete the syllabus, regular out-of-hours teaching, encouragement of students to read hard on their own, and increasing reliance on grand rounds to cover the same topic for all the three cohorts of students. For 2005, Gulu SOCO spent 9.5% while Mbale SOCO spent 10.9% of the schools' annual income to pay part-time teachers and this was not even enough to effect immediate payments. It was revealed during FGDs with students that whenever 'crash programmes' took place, there was no explanation of the handouts. Crash programmes often involved teaching from 7.00 a.m. to 6.00 p.m., teaching at night or on weekends. The schools resorted to illegal reduction of the school holidays from one month to two weeks in order to cover the workload. On average, every tutor taught 3 different subjects instead of one. Due to heavy workload, tutors gave several assignments, which were usually not marked. Tutors were frequently exhausted and consequently missed lessons and often absented themselves from school.

The coping mechanisms reported by the students, in order of frequency, were reading on their own, forming private discussion groups, privately requesting hospital staff and tutors to teach them for a fee, photocopying of notes from previous students/sister schools, buying private textbooks, and non-violent sit-down protest strikes. As a result, there was reported a degree of indiscipline in the schools as students tried to draw the attention of the school administrators to their problems. There were cases of abuse of staff by students, lack of respect, and writing of anonymous complaining letters to school authorities. The students reported to have made no headway by trying to address their problems through their guild. Instead, they reported intimidation by school administrators, with threats of being failed in examinations if the students continued demanding for proper attention. Thus the students resorted to keeping quiet for fear of failing their examinations.

Discussion

The study showed that the two schools had significant understaffing with tutors. They all relied on a number of coping mechanisms such as hiring part-time tutors. This understaffing has several consequences, as highlighted in the study. These include excessive work pressure on the staff, with its resultant demotivation. This is clearly manifested by complaints of inequity and staff absenteeism. Other consequences include poor quality of teaching, inability to complete the syllabus, 'crash programme' teaching, and heavy

expenses for the schools and students. Moreover, these breed bad blood between the staff, students and school administration.

Since there seems to be an adequate number of qualified tutors in the country, this understaffing seems to be largely occasioned by slow bureaucratic processes in the main. Non-appointment of tutors due to lack of an approved staff establishment, poor working conditions and inadequate funding seem to be the main root causes. Persistent shortage of tutors eventually affects the quality of care offered by the graduates of the schools. Moreover, a lot of money is still spent on training tutors.

USAID (2003) has reported that, in Africa, tutors in schools had a poor career structure. They were not promoted or selected for further training or conferences opportunities and study leave was not part of their conditions of service. Thus few people were attracted to become tutors. This led to a fall in the standards of training of health workers, leaving students ill-equipped to deliver public health services. Similarly WHO, (2002) reported that health workers in Africa are generally de-motivated and less productive due to inappropriate incentive environment. Unless the working conditions of tutors are improved, even with appointment many may still look for better employment opportunities elsewhere. Good working conditions include a good management system. The study highlights poor administration by the school managers. This, too, needs to be improved if tutors are to be retained and more students are to be attracted. In order to break the cycle of poor standards, limited entrants, and few workers, it is important that labour force supply restrictions, be appropriately adjusted through professional substitution (USAID, 2003). The use of Clinical Instructors needs to be studied vis-à-vis the quality of training they are capable of delivering. In general, the study showed that understaffing in SOCOs is multi-factorial and requires decisive planning to improve the situation for future benefit.

If the passing rate has not dropped yet, at least the study highlights evidence of a fall in the teaching standards in the two schools studied. Deterioration of academic standards is a sure consequence if the syllabus is not completed and tutors do not follow students for practice as required. There are already early signs of poor student-tutor relationship, inadequate student counselling and guidance. Since key subjects in the curriculum like Medical Ethics, Anatomy, Physiology and Pharmacology are not adequately taught during this pre-service training, the graduates will soon come under question.

In addition to this, the schools overspend on part-time teachers and with resultant failure to pay their teaching allowances promptly. This contributes to the schools' debt burden. Yet, this could be addressed through permanent staff since the part-time staff tend to charge per hour and are more expensive.

Delayed payments to part-time teachers resulted into poor relationships between the schools and hospitals of attachment, the tutors and schools, the tutors and the students, the students and hospitals and the students and administrators of the schools. These are already evidenced by sit-down strikes, withholding of results, dismissal from hospital wards, threats of failure and others.

Conclusion

The study revealed critical tutor understaffing in both Mbale and Gulu SOCOs and the few present tutors working under great pressure to cover the workload. Each school should have an average of 23 tutors. Understaffing was mostly due to non-appointment of tutors, compounded by under funding. Poor working environment in the schools since their transfer to the Ministry of Education and Sports caused many tutors to trickle back to their former line Ministry of Health. On the one hand, understaffing is a direct threat to the quality of the training in the schools and thus to the subsequent quality of care. On the other, poor administrative practices threaten the stability of the schools. The schools and students have adopted a multiplicity of coping mechanisms which all seem unsustainable and some even counter-productive.

Recommendations

It was recommended that the Ugandan government expedites the consultation process over the approval of a staff establishment for SOCOs to pave way for the appointment of Tutors. In so doing, we propose that actual workload should be the main initial determinant of staff establishment. Workload-based findings such as the results of this study could be used for the exercise. The government and other stakeholders could, also, take measures to improve the retention of tutors in schools through improvement of their conditions of service especially salary, job security, equipment, and sponsorship for further studies among others. Other areas that need to be investigated as complementary to this study include determination the actual cost of training a Clinical Officer, and the appropriate number of tutors for Nurse Training Schools in Uganda.

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