



DETERMINING STAFFING LEVELS AND MIX OF UCMB AFFILIATED HOSPITALS

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Abstract

Uganda Catholic Medical Bureau (UCMB) affiliated hospitals, like many other health institutions, are stressed by limited resources and increasing costs. This calls for a need to finance the increasing costs through efficiency gains on fixed inputs. Determining optimal staffing levels and skill mix would ensure efficiency gains on personnel whose costs account for 31-65% of UCMB's total recurrent expenditure. It would also match the staffing to the workload. A descriptive cross sectional study was carried out in four UCMB hospitals with the main objective of setting standard workloads for each staff category. The set standards would then be the basis for setting staffing norms. Results indicated a marked shortage of nursing aides, doctors and dispensers, but minimal shortage of nurses. The shortage of nursing aides resulted in both inappropriate use and increased work pressure on the nurses. Standard workloads per staff cadre per year were set as follows: 9,000 out patients to be seen by a clinician that is 37 patients per day and a dispenser to serve 10,667 out patients. On the wards, the standards were set at 8,000 inpatient days for a medical officer, 2,530 inpatient days for a nurse, 1,808 and 3,639 inpatient days for a midwife and nursing aide respectively.

Introduction

All over the world, the cost of health care delivery is increasing. This has resulted into health sector reforms calling for cost containment and quality improvements (Buchan, 2000). Healthcare delivery is unique in that it is labor intensive with expenditure on human resources accounting for 60-80% of the total recurrent costs (Shipp, 1998). The levels and skill mix of the staff employed that is, the numbers and combination staff cadres, therefore, is a major determinant of the cost and quality of services. This makes it a potential area for efficiency gains and quality improvements. Determining the right staffing level and skill mix is hence a critical component of successful and efficient health care delivery (Buchan, 2000).

Other than for cost containment, a right staffing level and skills mix may be used to improve management of personnel by solving problems like skill shortages, inappropriate use of skills, understaffing and staffing inequalities; develop core standards or skill competencies; maintain and ensure quality improvements; establishing a new service or changing case mix (Buchan, 1999).

UCMB affiliated hospitals are private not for profit hospitals (PNFP). They were founded by various religious congregations with the mission of promoting life to the full and to heal. The services are committed to a holistic approach in healing by treating and preventing diseases with preferential option to the less privileged (UCMB, 2003c).

UCMB affiliated hospitals, like all other health care institutions, are faced with the problem of rising costs of service delivery. This was made worse with the withdrawal of both the staff and financial support of the founding congregations in the late eighties. As a result, user fees were increased. This resulted into reduced utilization which in turn further reduced the income and subsequently contributed to the worsening of the quality of services rendered. A vicious cycle was thus created which threatened the very existence of these hospitals (Beekes, 2003).

In 1996, the PNFP health sector declared this crisis to the Government of Uganda which in 1997, responded by extending subsidies to this sub sector. The subsidies have been increasing overtime and have contributed to the hospitals being able to overcome the crisis and increase outputs (UCMB, 2003a). The subsidies have also enabled many of these hospitals to reduce user fees and embark on flattening them. This has improved financial accessibility to PNFP hospitals and increased utilization (UCMB, 2003a).

Increased utilization however poses two major challenges to the hospitals. These are, coping with both the increased workloads and variable costs. These challenges are to be faced without jeopardizing the quality of services and within the available resources. One way of coping could be through efficient utilization of personnel who are big consumers of recurrent budgets accounting for 31-65% of the total recurrent expenditure in these hospitals.

For efficient utilization of the personnel input, there is need to know the appropriate staffing levels and skill mix needed. UCMB however lacks guidelines on determining appropriate staffing levels and skill mix for the hospitals. On the other hand, the staffing norms set by the Ministry of Health (MoH) are inappropriate. This is because, unlike government hospitals, UCMB hospitals are highly variable in size and level of activity. And although the report on the MOH standards was made in 1995, the data used in their determination were those of 1992. These staffing norms are, therefore, inappropriate for use in 2004 because they have been overcome by events like changing morbidity patterns, quality demands and technology changes.

Literature review

Many health systems around the world are coming under scrutiny for cost containment and quality improvements. This has resulted in an increasing need for health organizations to identify the most appropriate staffing levels and skill mix (Buchan, 1999). This is because health care is labor intensive and the level and mix of staff employed is a major determinant of the cost and quality of care.

In staffing levels and skills mix studies, it is crucial to assess the quality of services offered. This is done in order to state the level of quality of services that the set staffing needs can achieve. It also helps in assessing the impact of implementing the calculated staffing needs and hence works towards continuous improvements in quality. (Buchan, 1999; Buchan et al., 2000).

The main limitation of staffing level and skill mix studies is that they are true for the time, place and context from which they are derived. It is not possible to generalize indicators or lessons from the results obtained to other areas. Staffing levels and skill mix are not static, with improvements in quality and changes in workloads and needs, these staffing levels and skill mix have to be changed (Buchan, 1998). It is therefore not possible to prescribe in detail a universal ideal level and skill mix of health personnel. (Buchan et al., 2002).

Increasing workloads and diminishing nurse / patients ratios puts patients and health workers at risk. Recently conducted large scale researches found that increasing workload per nurse resulted in patients being more likely to die (The International Council of Nurses, 2004). Patients mortality increased by 7% for every additional patient in the average nurse work load in the hospital (Aiken et al., 1987). Substantial decreases in mortality rates were observed by increasing the registered nurse staffing especially for patients who develop complications (Aiken et al., 1987).

Higher nurse staffing levels resulted in reduced numbers of nosocomial infections like urinary tract infections and pneumonia. Low registered nurse staffing levels and poor organizational climate were also found to put nurses at greater risk of needle stick injuries (The International Council of Nurses, 2004). Therefore, there are minimum staffing levels below which quality of care is compromised (Biles et al., 2003). This calls for a need to determine minimum staffing levels below which the established staffing norms should not go.

Methodology

This was a descriptive cross sectional study. It adopted the Workload Indicator for Staffing Needs (WISN) method of calculating staffing requirements developed by Peter Shipp (Shipp, 1998). The staffing requirements in the WISN are calculated basing on the actual workload experienced by the hospital.

The study was carried out in four UCMB affiliated hospitals which were chosen purposively. The hospitals studied were those with bed capacities ranging from 100 - 200 beds, with demonstrated efficiency, sound management, good record keeping and acceptable quality standards. The hospitals selected were Nkozi, Kamuli, Ibanda and Villa Maria. The main objectives of the study were to: assess the quality of services delivered in accordance to the available standards; compute staffing requirements for the hospitals and set standard workloads for each type of staff cadre

Standard workload is the amount of work in delivering health services which can be accomplished during the course of the year by one staff working to acceptable professional standards.

Data was obtained by reviewing records which included the hospital annual statistics, treatment charts, staff nominal rolls and medical forms, interviewing both patients and key informants. The key informants included the hospital administrator, senior nursing officer and heads of departments. Observations and Focus Group Discussions (FGDs) with health professionals were also used in data collection.

The quality of services was assessed using some of the quality standards from the National Treatment Guidelines, the International and National Rational Drug Use Indicators and the Yellow Star Program. This assessment included an assessment of the infrastructure and equipment, infection control, client services, adherence to the clinical guidelines and rational use of drugs.

The Yellow Star Program is a program developed by the Ugandan MOH, together with United States Agency for International development (USAID) and the District Improved Services for Health (DISH) II project in 2000. It is a comprehensive quality of care program in which a facility is awarded a Yellow Star from the MOH if it successfully reaches and maintains a set of 35 basic standards of care. These standards are organized into categories such as clinical skills and client services. This accreditation practice is used to reinforce the supervision system and improve quality of care within health facilities.

The required staff numbers by category were then computed from the following formula by Shipp (1998).

Staffing needs = annual workload

Standard workload per staff cadre (SWL)

The annual workloads per department for the individual activities were obtained from the annual statistics. Standard workloads per activity were obtained from the following formula by Shipp (Shipp 1998).

SWL = Available time for work in a year (AWT)

Activity Time (AT)

Available time for work in a year is the actual time spent per staff category at work. It was obtained after taking into consideration the fact that each staff is supposed to work for at least 45 hours per week and after accounting for annual leave and off days.

The activity time (AT) for an activity is time it would take a well trained and well motivated member of a particular staff category to perform an activity to acceptable professional standards. It was set during the study through both observations and professional group discussions. The AT used in the calculations was from the hospital with the best quality of service. The aim was for such a hospital to serve as a standard and hence encourage quality improvements.

For one week in each department, the staffs were observed by category as they worked to determine which staff category does what activity and the duration of each activity. This was done with the help of a pre-determined comprehensive checklist of possible activities. At least ten observations per activity were made before computing the average observed AT.

Two FGDs, one with the departmental heads and the other with the clinicians were then held. These discussions were aimed at using the professional judgment and experience of these managers to make adjustments in the average observed AT. The underlying goal of the discussion was to ensure appropriate and effective use of staff and performance within acceptable quality. Where it was found necessary, adjustments were made in the observed AT and/or staff duty allocations. The activity standards thus set were used to calculate the staffing needs of the hospitals.

The results of the study heavily depended on the accuracy of the workload records. Hospitals with good record keeping were chosen to overcome this obstacle. Record keeping remained a problem with cases of missing data and lack of detail. For example, in some hospitals the ward of origin of patients operated was not recorded. In such instances assumptions had to be made.

RESULTS

Quality of services

The quality of services in all departments was good and did not vary much between the hospitals. The range between the best and the worst was 9.2 %. Nkozi emerged with the best quality of services while Ibanda had the best OPD quality. Polypharmacy and poor disposal of sharps were a major set back on the quality in all the hospitals. In all the hospitals there is a shortage of all cadres of staff apart from Ibanda hospital with an excess clinical officer. The shortage is marked in the nursing aide cadre. The shortage of nurses/midwives is minimal with Kamuli and Ibanda hospitals having adequate numbers for the present workload.

When the nurse/midwife shortage was analyzed per ward it was observed that there were wards with acute shortage of nurses and wards with excesses. In turn the overall hospital shortage of nurses was minimal. This highlighted the problem of staff in equalities between wards.

Standard workloads

Generally, a dispenser in OPD is able to serve between 9,742 and 10,439 patients in a year. A clinical officer or doctor is able to see between 8,500 - 9000 outpatients in a year. In a day, one clinician can see between 34-37 patients.

On average, a doctor can take care of 8,000 inpatient days in a year. A nursing aide is able to take care of more inpatient days than a nurse who in turn can take care of more inpatient days in a year than a midwife.

(Table 1)

Discussion

The fact that quality of services between the hospitals did not vary much could have been due to the fact that the hospitals were chosen purposively for their perceived good quality. The problem of polypharmacy observed in the hospitals is not new. Previous studies have shown that polypharmacy is one of the commonest problems of irrational use of drugs. In Uganda, Kafuko, et al. in 1993 found the average number of drugs prescribed per prescription to be 2.4 and could be attributed to the treatment guidelines. According to their findings, the problem was more pronounced in PNFP hospitals when compared to government hospitals and it was not influenced by the cadre of staff or patient load (Kafuko et al., 1993).

Looking at figures 1 and 2, Nkozi hospital with the least shortage of staff emerged with the best score for overall hospital quality. Ibanda hospital with an excess clinical officer also emerged with the best OPD quality score. This finding suggests a relationship between the levels of staffing and quality and is not surprising. Similar findings have been documented before. For example, higher nurse hours per patient day were found to be associated with lower nosocomial infection rates (Archibald, et al., 1997); decreased urinary tract infections, (Kovner, et al., 1998); and decreased pressure ulcers, pneumonia and postoperative infection (American Nurse Association, 1997; Lichtig, et al., 1999).

However, several studies have also found no relationship between staffing levels and treatment problems, postoperative complications and unstable conditions at discharge (Wan, et al., 1987).

Apart from Nkozi hospital which has an excess of three nursing aides, the rest of the hospitals have high shortages. Although these hospitals have no nursing aides, they are teaching hospitals and have students who bridge this gap. The pressure is only felt when the students are on holidays, or when the numbers rotating on the wards is less than the required number of nursing aides or when they are in class. In such instances therefore, the nurses and midwives on the wards would have to cope with both their work and that meant for nursing aides. This leads to inappropriate use of the nurse/midwife cadre and is also the reason for the felt pressure among this cadre of staff. The felt pressure is also due to the different work pressures (inequalities) observed between wards.

The shortage of nursing aides also means that the students do all the work meant for nursing aides without close supervision due to insufficient number of nurses to supervise them. This could jeopardize the quality of teaching and health services in the hospitals.

One important aspect to consider is that the recommended staff numbers in this study are what the hospital would require for the total annual workload. It assumes that patient's daily flow into the hospitals is constant and within the average ranges. In reality however, this is not the case, workloads vary a lot with peaks and dips/troughs. This means that in times of peaks, the staff shall still experience some degree of pressure. To overcome this problem, there is need to match staffing with patient needs (Duffield, 2001). One way to match staffing with patient needs is through rostering. Rostering is a process used to plan the utilization of staff in advance (Lowe, 2001). It involves studying the patterns of workloads over time to identify peaks and troughs. This is then used as a basis for formulating duty rosters. If used appropriately, duty rosters ensure effective and efficient use of staff, reduce staff fatigue, sick leave and enhance patient care (Lowe, 2001). Annual leaves for staff would then be in periods when workloads are low.

From the set standards in table 2 it is noted that a doctor or clinical officer in OPD is able to see on average of 37 patients a day. This finding is not different from what was found in Tanzania of 40 patients a day (Shipp, 1998). Dispensers in OPD can serve 9700-10,900 patients in a year. In Tanzania, the standard was set at 10,000 patients per year. This however assumes that the patients are always available and waiting to be seen (Shipp, 1998). In reality however, there are days when patients are available in the hospitals and days when they are not. So in instances when the patients are not available, the staff will do less work than recommended by the set standards and the reverse is true.

On the wards, it was shown that a nursing aide is able to look after more patients than a nurse who in turn is able to take care of more patients than a midwife. This trend is expected and was also observed in Tanzania (Shipp, 1998). The trend could be due to the variation in patient needs between wards and for different staff cadres. A patient on maternity ward for example takes more of the midwife's time if compared with a patient on the medical ward. However, it is worth noting that there is likely to be a variation also in the number of patients that can be taken care of by one nurse in the other wards other than maternity because of differing patient needs between wards.

Nursing aides are able to look after more patients than nurses and midwives because on average they have fewer duties which deal with the patient directly. Most of the work they do is done for all the patients in general which minimizes the time spent per patient hence are able to look after more patients. Doctors are able to look after more patients on the wards because also the patients needs for the doctor's time is minimal.

The setting of staffing standards would be more useful if they were set in terms of patients per staff cadre (staffing ratios) rather than patient days per staff cadre. However this would require a deeper analysis of the staff activities and case presentations per ward. Staffing ratios also vary with vary with the level of the health unit, the quality of services, the equipment available, the morbidity patterns and services available (Shipp, 1998). This level of analysis was not possible in this study. Also from literature, it was noted that most authors were not keen to come up with these staffing ratios because of the above range of factors which had to be investigated.

Conclusion

The standards set in this study may not be generalized to all hospitals but can be used in UCMB hospitals of the same size and range of services. This is on the assumption that the morbidity pattern and level of technology does not vary much between the hospitals. It is also worth noting that these standards are optimal. They are the minimal number required. As Bile et al (2003) found in their study on quality staffing and payment of nursing homes, there are minimum staffing levels below which quality of care is compromised. So the set standards in this study are these minimum.

The minimal staffing needs set were calculated based on the workloads experienced by the hospitals. This means that they are not static. They change with changing workloads. They need to be revised to cater for the changes in workload and morbidity patterns. The period after which this can be done will depend on how fast the workloads and morbidity patterns are changing. It will entail a close trend analysis of the workloads and morbidity patterns to know the needed frequency of making the adjustments.

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