

Chronic respiratory diseases in a tertiary healthcare facility in Uganda

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Abstract

Globally it is being increasingly recognised that non-communicable diseases (NCDs) constitute a neglected epidemic, especially in low- and middle-income countries. Chronic respiratory diseases (CRDs) are among the most common NCDs but their burden is unknown in many low- and middle-income countries.

We conducted a retrospective analysis of data collected on hospitalised patients in a pulmonary ward of Mulago National Referral Hospital, between December 2010 and August 2011. The objective of this analysis was to determine the proportion, mortality, and average length of stay of patients with CRDs in a tertiary healthcare facility in Uganda. Demographic characteristics, final diagnosis, vital status at discharge, and the average length of stay were extracted from the inpatient database. Proportions of the diagnoses, mortality, and average length of stay of the admitted patients were calculated.

Five hundred and fifty eight (558) patients were admitted during the study period; 58.2% were male. The mean age was 37.4 years (17.4 SD). The average length of stay was 5.6 days (8.4 SD). Fifty-one patients (9.0%) had CRD; of these asthma was the most frequent.

Eighty (14.1%) of the admitted patients died during hospitalisation; 5 (9.8%) of them were patients with CRD and 73 (14.5%) had communicable disease. Communicable respiratory diseases still account for the majority of inpatients in Mulago hospital and are associated with high mortality but admission rates and mortality associated with CRD, though lower than that of communicable respiratory diseases, are higher than in developed settings and causes of death among patients with CRDs.

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Introduction

Globally, non-communicable diseases (NCDs) constitute a neglected epidemic especially in low- and middle-income countries. The World Health Organization (WHO) estimates that NCDs account for 63% of all deaths. Further estimates also show that by 2015, 70% of all deaths in people less than 70 years of age will be due to NCDs and that 80% of these deaths will occur in developing countries.¹ The world economic forum estimates the economic burden of NCDs by 2030 at US\$47 trillion but also states that the prevention of these diseases can cost as low as US\$0.4 per person.² Despite the above well-known facts, NCDs do not feature in the Millennium Development Goals (MDGs) and account for only 3% of global health aid.³

Efforts are underway to tackle this problem. A United Nations high level meeting held in September 2011 rallied world leaders to support programmes aimed at the prevention and care for NCDs. This meeting was the second in the history of the UN to be held for a health-related issue after the one on HIV/AIDS in 2001 that led to the Global Fund to fight TB, AIDS and Malaria.⁴

Chronic respiratory diseases (CRDs), cardiovascular diseases, cancer, and diabetes are the four major NCDs that account for 80% of all NCDs deaths.

CRD refers to chronic diseases of the airways and other structures of the lung. The most common CRDs include asthma and respiratory allergies, chronic obstructive pulmonary disease (COPD), occupational lung disease, pulmonary hypertension, and lung cancer. About 300 million people are reported to suffer from asthma, 210 million have COPD, and 600 million suffer from allergic rhinitis.⁵ The burden of CRDs in Uganda is not accurately known. WHO estimates that there were 106 400 NCD deaths in Uganda in the year 2010.^{1,6} Fifty one percent of these were under the age of 60 years (essentially premature preventable deaths).⁶ From this report CRDs were shown to be the third leading cause of NCD deaths in Uganda.⁶

A number of studies to measure the burden of the most important CRDs (asthma and COPD) are underway in different countries in Africa. While it will take time before data from these surveys become available, analysis of healthcare facility data can provide insight into the burden of these diseases.

This study was therefore conducted to estimate the proportion, average length of stay, and outcomes of patients admitted with CRD

Methods

This study was carried out on data collected on patients admitted to the pulmonary division of the Department of Medicine, Mulago National Referral Hospital, Kampala, Uganda. Mulago Hospital is a 1500-bed capacity hospital which doubles as Uganda's national referral hospital as well as a teaching hospital for the Makerere University College of Health Sciences. The hospital receives mainly referred patients from all districts of Uganda but a large number are self-referred mainly from neighbouring districts.

The pulmonary division, with 50 beds, admits patients with respiratory diseases. When admitted, these patients undergo a thorough clinical evaluation and laboratory investigations. The division also offers services like bronchoscopy and pulmonary function tests. All patients' data are first entered into patient-specific files and later transferred onto an electronic database at discharge or death.

Data collection. We extracted data from an electronic patient database for patients whose data was entered from December 2010 to August 2011. Patients admitted to hospital have their demographic data captured on a face sheet of the hospital file. Throughout the course of admission patients are reviewed and all data are recorded in the hospital file. On discharge or death the final diagnosis (and date if discharged) is recorded on the patient's file face sheet. Hospital records officers classify final diagnoses according to the international classification of diseases 10 (ICD10). Patient data are then entered into an EPIDATA database.

The patient's hospital number, name, age, sex, date of admission, date of discharge, length of stay, final diagnosis, and outcome at discharge were extracted and exported to STATA version 11 for analysis.

Analysis. Descriptive statistics were used to summarise patients' demographics, length of stay, final diagnoses and outcomes at discharge. Patients were categorised as having CRD if the final diagnosis made was: asthma, COPD, lung cancer, or interstitial lung disease/pneumonia.

Respiratory communicable disease included tuberculosis (all forms), pneumonia, pulmonary Kaposi's sarcoma and *Pneumocystis carinii/jiroveci* pneumonia (PcP/PJP). Patients admitted on the ward with diagnoses other than the above were excluded from this analysis. Patient outcome on discharge was categorised as either alive or dead.

Ethics. Ethical approval to conduct this analysis was sought from Mulago hospital ethics and research committee. Because this was a retrospective analysis individual patient's consent was not obtained. However all patients consented to the hospital procedures that they underwent at the time of diagnosis.

From December 2010 through to August 2011, a total of 568 patients with respiratory diseases were admitted to the pulmonary division ward; 330 (58.2%) were male and 238 (41.8%) were females. The mean age was 37.4 years (17.2 SD) and average length of stay was 5.6 days (8.4 SD). The frequencies of the different respiratory diseases encountered on the ward are shown in Table 1.

Prevalence of CRDs. Fifty-one out of the 568 patients (9.0%) admitted patients had a CRD diagnosis. The commonest CRDs were asthma and COPD accounting for 70.6% and 21.6% of all CRD admissions respectively (see Table 2).

Patient outcome and average length of stay at discharge. Eighty (14.1%) patients died on the ward. Mortality by different disease conditions is shown in Table 1.

Five patients (9.8%) of the patients with CRD died, while 73 (14.5%) of the patients had communicable respiratory disease. The mean ALOS for chronic respiratory disease was 5.6 days (\pm SD 8.6) and 5.2 days (\pm 6.2) for communicable respiratory disease.

In this retrospective data analysis the prevalence of CRD was 9.0%. Asthma and COPD were found to be the commonest CRDs in this study as has been reported

Respiratory disease	Number of patients (% of total)	Number of deaths* (%)
Asthma	36 (6.3)	3 (8.3)
COPD	11 (1.9)	1 (9.3)
Lung cancer	3 (0.5)	1 (33.3)
Interstitial lung disease	1 (0.2)	0 (0.0)
Tuberculosis	266 (46.8)	39 (14.7)
Pneumonia	243 (42.8)	34 (14.0)
Pulmonary Kaposi's sarcoma	3 (0.5)	1 (33.3)
PcP/PJP	5 (0.9)	1 (20)
Total	568 (100)	80 (14.1)

Table 1 Prevalence and outcomes of respiratory disease patients admitted to the pulmonary division, December 2010–August 2011 (* % of patients with the identified disease)

Chronic respiratory disease	Number of patients (% of total)	Number of deaths* (%)
Asthma	36 (70.6)	3 (8.3)
COPD	11 (21.6)	1 (9.1)
Lung cancer	3 (5.9)	1 (33.3)
Interstitial lung disease	1 (2.0)	0 (0.0)
Total	51 (100)	5 (9.8)

Table 2 Prevalence and outcomes of CRD patients admitted to the pulmonary division, December 2010–August 2011 (* % of patients with the identified disease)

by studies elsewhere in Africa.⁷⁻⁹ However the number of admitted asthma patients was lower than reported in other African settings. This could be due to the fact that in our hospital many asthma patients are attended to at the emergency ward and discharged before transfer to the ward. COPD numbers could be low because in most cases COPD is associated with an insidious nature and slow progression, hence only those with severe exacerbations are hospitalised. In addition to this, spirometry, the most important test to identify COPD patients, was only recently introduced in the hospital.

Infections of the lung are still a major cause of admissions with TB and pneumonia accounting for largest proportion of admissions to the ward. Other African hospital studies previously published show similar data.^{7,9} The burden of TB is driven by a high prevalence of HIV as reports from WHO indicate that 39% of Ugandan smear-positive patients are HIV infected.¹⁰

HIV/TB patients are usually very sick. With limited ward space clinicians in the admissions wards triage patients to identify the most sick for in-patient care. It is possible that NCD patients may be triaged more for discharge than the TB/HIV patients, creating selection bias towards more TB patients. We also recognise that the capacity to diagnose the CRD is low. Limited diagnostic equipment and lack of awareness of the magnitude of these conditions may mean that clinicians may be under-diagnosing them.

We found in-hospital asthma mortality of 8.3%. World-wide mortality from asthma has significantly reduced,^{11,12} however, asthma morbidity and mortality remains high in Africa. This is possibly due to lack of training in standard asthma management principles coupled with poor access to asthma management guidelines and unavailability of asthma medications.¹¹⁻¹³ A recent survey has indicated that clinicians in developing countries do not follow asthma management guidelines.¹⁴

The major limitation of this study is its retrospective design. Data available on the individual patients are limited because they are not captured on the database. Because of this more detailed analysis, such as factors associated with mortality, reasons for deterioration to admission, especially for CRDs, was not possible.

Conclusion

Communicable respiratory diseases still account for the

majority of in-patients in Mulago hospital and are associated with high mortality; but admission rates and mortality associated with CRD, though lower than that of communicable respiratory diseases, is higher than in developed settings. There is need for studies that investigate the reasons for admissions and causes of death among patients with CRDs.

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