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Studies of patient waiting time are scarce in low-income countries. Significant consequences of long patient waiting times, such as reduced healthcare seeking behaviours, indicate that minimising patient waiting time should be prioritised in low-income settings. Several short and long-term intervention strategies to combat the effects of patient waiting time and improve overall efficiency are based on the analysis of patient waiting time at the Medical Outpatient Department of Kilimanjaro Christian Medical Center.

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1. Background

Organisational efficiency achieved through maximisation of human and monetary resources is especially important in low-income countries. Patient waiting time is a key indicator of efficiency of outpatient departments (Pillay *et al.*, 2011), and is found to moderate patients' healthcare seeking behaviours (Kurata *et al.*, 1992). Especially in settings with high burdens of disease, reduced healthcare seeking behaviours can have detrimental effects on community health. Therefore, prolonged patient waiting time is a growing concern for healthcare administrators and policy-makers (Bielin and Demoulin, 2007).

In addition to serving as an indicator of efficiency, patient waiting time can have a significant effect on healthcare delivery in a hospital. Quality of healthcare may be

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compromised when patients spend relatively long amounts of time waiting to see medical personnel (McClelland *et al.*, 2011). When the demand for healthcare exceeds the supply within a facility, the opportunities for error in healthcare delivery increase. Studies have shown that crowding of people waiting for care contributes to poor quality care (Cho, Hwang and Kim, 2008).

Patients tend to weigh the inconvenience of receiving healthcare against their gain from receiving health services to determine their willingness to return (Camacho *et al.*, 2006). Therefore, if the patient concludes that he or she receives poor health care relative to the burden of receiving care, the patient may be less likely to seek treatment for future medical problems. These burdens include financial losses for a patient due to treatment, transportation to the facility, or a lost day of paid work (Pillay *et al.*, 2011). If the Kilimanjaro Christian Medical Center (KCMC) patients do not seek medical treatment or preventive care because the perceived burden of treatment was greater than the benefits during previous experiences at KCMC, then it is likely that the region may suffer from increased morbidity and mortality.

KCMC serves approximately 15 million people in the northern region of Tanzania (KCMC, 2015). Medical Outpatient Department (MOPD) patients pass through a number of steps before consultation with medical personnel: patients register at the medical records office, make payments at the accounting or insurance offices and then wait for consultation with medical personnel. This case study aims to investigate policy issues that lead to increased patient waiting times in the MOPD, and to develop feasible policy interventions for reducing patient waiting time. In this study, 'patient waiting time' refers to the cumulative amount of time a patient spends waiting for service at KCMC registration and insurance/accounting offices, and then waiting for consultation with medical personnel at the MOPD.

2. Methods

Initial review of relevant literature began in May 2013 at Kilimanjaro Christian Medical University College in Moshi, Tanzania. Peer-reviewed journal articles on patient waiting time were found through online academic databases. Qualitative data was collected from semi-structured interviews of several stakeholders during June 2013.

To gain a multidisciplinary understanding of patient waiting time at the KCMC MOPD, several stakeholders with conflicting interests and varying levels of influence were interviewed. The questions asked during individual interviews were specific to the perspective of the stakeholder. The majority of interviews were conducted in Kiswahili and then translated into English.

Stakeholders interviewed include an Assistant Medical Officer (AMO) of a community health center, a Medical Administrator of a community health center, an Administrator at KCMC, three Medical Doctors of the MOPD, three Medical Records

Personnel at KCMC, and 25 patients from the MOPD. Stakeholders were chosen by availability and willingness to participate in the case study.

Permission to interview patients was obtained from hospital and college authorities. Patients were interviewed immediately after medical personnel consultation on June 10, 2013. The patients were chosen randomly upon their exit from the MOPD.

3. Limitations of the Study

The greatest constraint was limited accessibility and availability of data, especially regarding patient waiting times, percentage of patients who are properly referred to KCMC and funding sources for KCMC. Therefore, discussions with stakeholders were a principal source of information. Other limitations include stakeholders' difficulty recalling past events, as well as the inherent subjectivity of qualitative interviews. These elements may have affected the validity of data collected from individuals.

4. Results

The combination of several complex and interacting factors determine patient waiting time at the MOPD of KCMC. From the start of a patient's encounter with KCMC, he or she immediately experiences one of the leading sources of prolonged waiting time, overcrowding. Tanzania's high burden of disease and the practice of bypassing lower-tier facilities contribute to doctors' frustrations with overcrowded conditions.

Misguided self-referrals produce higher patient loads at high-level healthcare facilities such as KCMC. An AMO of a community health center posited that 'the referral system is not well elaborated to patients (…) they are not told for which diseases they should go to KCMC' (AMO, Interviewed 11 June 2013). A Medical Records employee corroborated with the AMO, emphasising that no restrictions exist to discourage patients without referral letters from attending KCMC, resulting in overcrowding (Medical Records Personnel, Interviewed 12 June 2013). The majority of MOPD patients are returning patients who seek continuous care for chronic conditions such as diabetes and hypertension, even though most lower-level healthcare facilities can also adequately treat their illnesses through continued medication regiments (Medical Doctor, Interviewed 14 June 2013).

A final challenge that contributes to overcrowding is the MOPD's limited hours of operation; the clinic is only open on Mondays and Fridays. Although approximately 75% of MOPD patients have scheduled appointments for follow-up care, limited hours prevent patients from finding optimal appointment dates, which reduces the likelihood of patients making their designated appointments (Medical Records Personnel, Interviewed 12 June 2013).

Human resource challenges are another main contributor to patient waiting time at the MOPD. In an analysis of KCMC's clinical services, it was determined that shortage of medical personnel is one of KCMC's critical weaknesses (KCMC, 2015). Staff shortages within the administrative and clinical settings restrict the MOPD's ability to cater to the needs of the few thousand patients who pass through the clinic each year.

According to the head of the Medical Records Department, the staff shortage problem exacerbates waiting time across the entire hospital because the manual filing system is not only time-consuming, but is also often mismanaged. The few medical records personnel are overwhelmed by the several hundred patients that visit KCMC daily and patient files are easily misplaced (Medical Records Personnel, Interviewed 12 June 2013). In 2013, the Medical Records Department reported a deficit of eight trained health records officers. Unfortunately, the gap between the number of trained health records officers employed and the number required for sufficient service has reportedly widened to 17. To meet the required 62 total employees, the Medical Records Department must recruit 39 additional employees (KCMC, 2014).

Furthermore, many KCMC employees have few tangible incentives to work efficiently. An increased quantity of patients seen does not correlate with any financial bonus, because health professionals are paid with fixed salaries in the MOPD (Medical Doctor, Interviewed 14 June 2013). The registration officers, among many other administrative employees, earn minimum wages. In the event of colleague absenteeism, medical records personnel are often expected to work multiple back-to-back shifts, although overtime wages do not differ from their usual minimum wage earnings. Their limited income discourages employees from exceeding management's expectations (Medical Records Personnel, Interviewed 12 June 2013). For many employees, both clinical and administrative, job description and performance standards are unclear (KCMC, 2015). The combination of misunderstood expectations and insufficient financial incentives creates a culture of tolerance for mediocrity among employees at the MOPD and within the registration departments and prevents the employees from reaching their full potential.

5. Discussion

The goal of these recommendations is to combat the underlying causes of patient waiting time and limit the repercussions, thereby aiming to improve overall efficiency of the MOPD of KCMC. Although the MOPD is the subject of this analysis, many of the proposed recommendations would have positive impacts on all of KCMC's outpatient departments. To be successful in creating organisational change, it is important that the hospital leadership consistently makes patient flow improvement a priority and that they provide enthusiastic support to the lower level managers who promote change within their own departments. Additionally, it is essential that all staff members are afforded the

opportunity to provide input throughout the planning, implementation and monitoring and evaluation stages (Rich, Sullivan and Kirby, 2007).

There are many opportunities to improve KCMC operations. However, to truly reduce patient waiting time in Tanzania's healthcare system, long-term efforts must be made to reduce high morbidity throughout the country. As one of Tanzania's leading hospitals, KCMC is responsible for contributing to national efforts to reach health related Sustainable Development Goals set forth by the World Health Organization. Therefore, although the overcrowding and high burden of disease surrounding KCMC is likely to be unremitting, KCMC is committed to working towards developing a healthier community (KCMC, 2015). The high burden of disease contributes greatly to the overcrowding at the MOPD, but only long-term community health initiatives can make a noticeable impact on reducing the high need for health services, and thus further lower waiting times throughout the healthcare system.

Understanding the limitations of opening the MOPD only twice per week, KCMC plans to expand the availability of clinic days to meet the needs of the overcrowded healthcare system (KCMC, 2015).

Bypassing lower-level healthcare facilities is indicative of a costly and inefficient health system. Investments by the Tanzanian government to improve the quality of services provided by primary care facilities would likely reduce bypassing and improve the overall efficiency of the referral system (Kruk *et al.*, 2009). Although the government is responsible for many long-term improvements to the healthcare system in Tanzania, the MOPD can adjust procedures to more effectively accommodate the many patients who seek care unnecessarily from KCMC. Castelnuovo *et al.* (2009) found that introducing pharmacy-only refill visits and nurse-only visits in an outpatient clinic effectively reduced patient waiting time. Given that the majority of patients are returning patients seeking treatment for chronic diseases, minimising visit procedures to only include the necessary steps for re-prescribing can effectively shorten visit length. Streamlining chronic patient care will thus allow medical personnel to see more patients throughout a shift.

There are several feasible and inexpensive interventions that can alleviate the negative impact of human resource shortages on patient waiting time. Considering the extreme shortage of doctors in Tanzania (KCMC, 2015), doctors' expertise should be optimised through task shifting. Assigning low-priority patients to nurses and other lower cadre healthcare workers can give doctors more freedom to attend to high-need patients. Training and recruiting lower cadre health workers is a cost-effective alternative to training and recruiting doctors (Fulton *et al.*, 2011) and should therefore be a priority for KCMC. Increased nursing support can lower patient waiting time when task shifting is appropriately implemented (Potisek *et al.*, 2007).

The registration personnel shortage can be minimised over time through increased class sizes at the KCMC School of Medical Records (KCMC, 2015). Even without the additional staff, the Medical Records Department can improve efficiency through

implementing an electronic record-keeping system (KCMC, 2015) to replace the manual filing system. KCMC should take care to thoroughly train employees to avoid the potential that a new electronic system could create even more inefficiencies (Rich *et al.*, 2007).

Lastly, while addressing staff shortages would be one of the most effective methods of reducing patient waiting time, training and recruiting staff is both time-consuming and expensive. Therefore, improving staff motivation could catalyse change without requiring large monetary input. KCMC's (2015) intentions to make improvements to staff promotion guidelines could serve as a practical way to motivate employees to improve performance. Easily accessible promotion guidelines can give employees a tangible goal with a corresponding financial reward. Additionally, efforts to clarify job descriptions and performance standards (KCMC, 2015) can improve employees' motivation to meet or exceed expectations. A study at one of the other Tanzanian consulting hospitals found that employee 'awareness of job description through performance evaluations and feedback, as well as the administration of rewards and punishment for work-related behaviors' influenced motivation and performance, and provided opportunities for intervention (Leshabari *et al.*, 2008).

Through a combination of multifaceted interventions, KCMC could effectively reduce patient waiting time at the MOPD, while simultaneously improving overall efficiency across KCMC's entire outpatient operations.

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Interviews

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Medical Administrator, Interviewed 13 June 2013.
Medical Doctor, Interviewed at KCMC, 14 June 2013.
Medical Records Personnel, Interviewed at KCMC, 12 June 2013.
Patients interviewed from MOPD of KCMC, 10 June 2013.