



The use of specialty training to retain doctors in Malawi: A discrete choice experiment



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ABSTRACT

Emigration has contributed to a shortage of doctors in many sub-Saharan African countries. Specialty training is highly valued by doctors and a potential tool for retention. Yet not all types of training may be valued equally. In the first study to examine preferences for postgraduate training in depth, we carried out a discrete choice experiment as part of a cross-sectional survey of all Malawian doctors within seven years of graduation and not yet in specialty training. Over August 2012 to March 2013, 148 doctors took part out of 153 eligible in Malawi. Despite evidence that specialty training is highly sought after, Malawian junior doctors would not accept all types of training. Doctors preferred timely training outside of Malawi in core specialties (internal medicine, general surgery, paediatrics, obstetrics & gynaecology). Specialty preferences are particularly strong, with most junior doctors requiring nearly double their monthly salary to accept training all in Malawi and over six-fold to accept training in ophthalmology (representing a bundle of unpopular but priority specialties). In contrast, the location of work before training did not significantly influence most doctors' choices when guaranteed specialty training. Using a latent class model, we identified four subgroups of junior doctors with distinct preferences. Policy simulations showed that these preferences could be leveraged by policymakers to improve retention in exchange for guaranteed specialty training, however incentivising the uptake of training in priority specialties will only be effective in those with more flexible preferences. These results indicate that indiscriminate expansion of postgraduate training to slow emigration of doctors from sub-Saharan African countries may not be effective unless doctors' preferences are taken into account.

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1. Introduction

Of the 30 countries with the fewest doctors per population worldwide, 27 are in sub-Saharan Africa (World Health Organization, 2015). This paucity of doctors constrains the delivery of essential services and responses to new health threats, such as the rollout of antiretroviral treatment or the recent Ebola epidemic in West Africa (Sidibé and Campbell, 2015; World Health

Organization, 2006). Factors contributing to the current situation include both low production and high emigration of doctors (Mullan et al., 2011; World Health Organization, 2006). Out of 105 medical schools surveyed in the Sub-Saharan African Medical Schools Study, half produced less than one hundred graduates in 2008 (Mullan et al., 2011). Of the doctors trained in sub-Saharan African medical schools, those who are now registered in the USA are equivalent to 22.7%, 26.2%, and 52.3% of the medical workforce in Ethiopia, Ghana, and Liberia respectively (Tankwanchi et al., 2013).

In response, there has been an unprecedented investment in undergraduate medical education in sub-Saharan Africa, with 58 new medical schools established since 1990 and many existing schools mandated to expand enrolment (Mullan et al., 2011). In contrast, there has been less focus on specialty training, the period

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of postgraduate training leading to accreditation as a specialist or general practitioner (World Federation for Medical Education, 2003; World Organization of Family Doctors, 2013). This is despite evidence that such training is highly valued by doctors and a strong driver for emigration (Willis-Shattuck et al., 2008). For example, a survey of 1619 non-European Union doctors working in the United Kingdom (UK) found that three out of four identified postgraduate training opportunities as their main reason for emigration (George et al., 2007). The desire to pursue specialty training increased the intention to emigrate within five years of qualification for medical students in eight low- and middle-income countries (LMIC), including five in sub-Saharan Africa (Silvestri et al., 2014). And nearly 90% of those doctors trained in sub-Saharan Africa but registered in the United States had completed their specialty training there rather than in their country of training (Tankwanchi et al., 2013). Yet only a third of sub-Saharan African medical schools offer such programmes, with a total of 1909 specialty training places for the 7861 graduates every year (Mullan et al., 2011). Offering more specialty training, therefore, is an attractive option for policymakers in sub-Saharan Africa seeking to maximise retention of their new medical graduates.

Retaining doctors is particularly important in Malawi, which has the second lowest ratio of doctors to people in the world (World Health Organization, 2015). Malawian doctors used to be trained in the UK, with the result that many never returned (Broadhead and Muula, 2002). In response, the one public medical school (College of Medicine-University of Malawi, COM) was established in 1991, with enrolment of first-year students reaching 105 in 2014 (Broadhead and Muula, 2002; University of Malawi (2014)). Concerns over continued health worker emigration, however, led to the implementation of a six-year emergency programme in 2005 that included a 52% salary increase for doctors (Management Sciences for Health, 2010). Despite this, a study tracing COM graduates from 2006 to 2012 found that the odds of junior doctors being outside Malawi and the public sector increased with time after graduation, with most doctors outside Malawi in specialty training (Mandeville et al., 2014b). While enrolment to medical school tripled under the emergency programme, this was not matched by funding for specialty training (Management Sciences for Health, 2010). Given that previous studies have found that many medical students and junior doctors in Malawi intend to specialise, specialty training may prove a more effective tool for retention in the short-term than financial incentives (Bailey et al., 2012; Mandeville et al., 2012; Sawatsky et al., 2014). What is uncertain, however, is whether all kinds of specialty training would be equally effective. Depending on the availability of trainers for different specialties, Malawian doctors receive specialty training all in Malawi, all in South Africa (or other African countries), or split between the two (Zijlstra and Broadhead, 2007). Qualitative research has shown that junior doctors hold ambivalent views about specialty training undertaken entirely in Malawi (Bailey et al., 2012; Sawatsky et al., 2014). In addition, scholarships available in certain specialties - such as ophthalmology, anaesthetics or dermatology - have suffered from poor uptake from junior doctors. These specialties are a priority for training in terms of disease burden and available expertise in Malawi, yet are less established than the “core” specialties that dominate undergraduate training and internship: internal medicine, general surgery, paediatrics, and obstetrics & gynaecology (Bailey et al., 2012; Palmer et al., 2014; Schulze Schwering et al., 2014). Collectively, this evidence suggests that while junior doctors desire specialty training, not all training may be valued equally. Before specialty training can be used effectively to improve retention in Malawi, more information is needed on junior doctors' preferences towards different kinds of training. Discrete choice experiments are a quantitative method for eliciting

preferences that are being used increasingly to inform health policy, particularly health workforce policy in low- and middle-income countries (Clark et al., 2014; de Bekker-Grob et al., 2012; Mandeville et al., 2014a; M Ryan et al., 2008; M Ryan et al., 2012). We therefore used a discrete choice experiment to investigate specialty training preferences of Malawian junior doctors.

2. Methods

2.1. Choice task design

To identify potential attributes and levels and obtain contextual information to inform the choice task design, we conducted a systematic review of DCEs focused on health workforce policy (Mandeville et al., 2014a) and a narrative review of literature investigating the health workforce crisis in Malawi. Possible attributes and levels were narrowed down through semi-structured interviews conducted with purposively sampling key informants ($n = 18$) and members of the target population ($n = 19$). Key informants were identified by snowball sampling and included policymakers, COM medical educationalists, specialist clinicians, hospital directors, and representatives of professional and hospital associations (Patton, 1990). To ensure common views were captured, junior doctors were sampled for maximum variation in age, job role, location and gender (Coast et al., 2004; Patton, 1990). We also interviewed doctors working outside the public sector ($n = 4$) and those that had left Malawi ($n = 3$) (Patton, 1990). Data were thematically analysed in NVivo version 10 (QSR International Pty Ltd, Doncaster).

Informed by this qualitative work, five attributes were selected that were both important to junior doctors and also potential policy levers. As our primary interest was the trade-off junior doctors would make between different aspects of specialty training, we used a generic rather than labelled design that presented two alternative hypothetical posts in the Malawian public sector (Job A versus Job B). In both jobs, a specialty training place would be guaranteed, but only after some time working in the public sector. This work would differ in the two job characteristics found to be most important to junior doctors and one policy lever:

- **Salary.** The monthly net salary paid before training. This included the basic salary for most junior doctors, MWK110,000 (\$411 at exchange rates prevailing at the time, obtained from www.xe.com) as well as increments that were both realistic from a policy perspective and attractive to participants: 130,000 (\$484); 160,000 (\$596) or 200,000 (\$746).
- **Job location.** The location of the hospital where this work would be undertaken. These were initially the two types of hospital in Malawi (central and district), but two subdivisions were made based on nuances emerging from the qualitative work. The final levels were major central hospital (located in the two main cities of Malawi, best facilities and most specialists), minor central hospital (located in smaller cities with poorer facilities and few specialists), district hospital near a major town (defined as less than 2 h' drive therefore providing proximity to urban amenities), and remote district hospital (more than 2 h' drive, limited amenities) (Bailey et al., 2012).
- **Time before training.** The amount of time required in the job before starting specialty training. While at least two years of training is nominally required before entry to specialty training, this has not always been enforced in the past. Some participants in the qualitative work were also prepared to work for up to five years in exchange for guaranteed specialty training. The final levels were therefore: 1, 2, 3 or 5 years. While best practice

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