

graduates to work in the public sector following graduation. The program currently has a 97% success rate retaining nurses through their service agreement. The objective of this study was to identify job satisfaction and retention factors of scholarship recipients after graduation to evaluate the program, inform stakeholders, and advise future projects.

**Methods:** This was a mixed methods study consisting of qualitative interviews and quantitative surveys that evaluated job satisfaction, factors associated with retention and impact of the GAIA Nursing Scholarship Program. Participants included male and female graduated GAIA scholarship recipients working in the public sector across Malawi, with a representative convenience sample interviewed in person based on employer location. The survey was asked of all program graduates and completed by one-third of this population. We used thematic analysis to analyze qualitative interviews for themes on drivers of public sector retention. Kruskal-Wallis, Pearson correlation and chi-squared tests were used to analyze survey data. Participants signed an informed consent and the study was approved by the Committee on Human Research at the University of California, San Francisco (UCSF) and the College of Medicine Research and Ethics Committee in Malawi.

**Findings:** The study included 30 qualitative interview participants and 56 quantitative survey respondents. The majority of participants indicated they would like to stay in the public sector. Most cited unavailability of supplies, inadequate human resources and high workload as major challenges to their work. Those that indicated poor working relationships with management or coworkers were more likely to consider changing jobs. Low salaries, high workload, poor accommodations provided by public sector workplaces and a lack of appreciation were indicated as reasons nurses choose to leave the public sector. Participants felt supported by GAIA staff and expressed a desire to serve their communities by working in government supported health facilities.

**Interpretation:** There are non-remuneration strategies that low-income countries like Malawi can employ to retain nurses in the public sector. Adequate provision of human and material resources and proper accommodations can greatly improve job satisfaction and retention. Programs such as the GAIA scholarship program may also help increase retention by creating loyalty through careful follow up monitoring.

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### Medical and nursing students' intentions to work abroad or in rural areas: An eight-country cross-sectional survey in Asia and Africa

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**Background:** Migration of medical and nursing graduates from rural to urban areas or overseas greatly threatens health improvements in low- and middle-income countries (LMIC). Despite escalating efforts to enhance graduate retention, little is known about student migration intentions in nations most burdened by this "brain drain." Our objective was to assess medical and nursing students' intentions to migrate abroad or practice in rural areas, and identify any predictors of migration intentions.

**Methods:** We surveyed first- and final-year medical and nursing students at 16 premier government institutions in eight countries with critical health worker shortages (Bangladesh, Ethiopia, India, Kenya, Malawi, Nepal, the United Republic of Tanzania and Zambia). The survey contained questions to identify factors that could predict students' intentions to migrate. Primary outcomes were likelihood within five years post-training: (1) to migrate for work outside the country, or (2) to work in a rural area in the country. We assessed 14 predictors of migration intentions using multivariable proportional odds models. The study was approved by ethics review committees in each country as well as at Vanderbilt University, and all respondents provided informed consent.

**Findings:** Of 3822 students enrolled in first- and final-year medical and nursing classes, 3199 (84%) completed the questionnaire. Among respondents, 28% (870/3156) expected to migrate abroad, while only 18% (575/3158) anticipated a rural career. More nursing than medical students desired professions abroad (odds ratio, OR: 1.76; 95% confidence interval, CI: 1.25–2.48). Career desires before matriculation correlated with current intentions for international (OR: 4.49; 95% CI: 3.21–6.29) and rural (OR: 4.84; 95% CI: 3.52–6.66) careers. Time spent in rural areas before matriculation predicted the preference for a rural career (20 versus 0 years: OR: 1.53, 95% CI: 1.19–1.98) and against work abroad (20 versus 0 years: OR: 0.69, 95% CI: 0.50–0.96).

**Interpretation:** A significant proportion of students surveyed still intend to work abroad or in cities after training. These intentions appear to be identifiable even before matriculation. Adapting admissions standards to account for years spent in rural areas or applicant career desires before matriculation could promote greater graduate retention in the country of training and in rural areas. Strengths of the study include its uniquely large size in terms of countries, institutions, and students evaluated; inclusion of multiple degree programs and class years; systematic institution selection criteria; and high response rate. Future longitudinal research should clarify the relation between student migration intentions and ultimate behavior, while also examining the role of graduate migration from public to private or administrative sectors.

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### Effect of an educational intervention on occupational behaviors related to mercury use in artisanal small-scale gold mining communities

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