

Data and disease in Dhaka: Patterns and perceptions of illness in an unplanned community in Sankar

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Background: We conducted a survey of residents in an unplanned community in Sankar, Dhaka, Bangladesh to determine perceptions of the origin and manifestation of disease with the aim to create improved interventions to increase clinical care utilization. Currently, approximately 11% of local families use the Spreeha clinic.

Methods: We surveyed 77 individuals in their homes using random cluster sampling and a version of the Illness Perceptions Questionnaire adapted for the purpose and translated into Bangla. We asked respondents to evaluate their perceptions of illness outcomes and physician capabilities on a 5-point Likert Scale and to evaluate disease origins and manifestations on a binary scale. We recruited participants by going door-to-door, alternating sides of the road and speaking to the first willing individual in each housing block. We analyzed results with descriptive statistics and two-sample t-tests in Stata and compared them with clinical diagnoses.

Findings: Three-quarters of respondents were women. Most respondents were aware of biological pathogens (89.61%) and the dangers of environmental pollution (90.92%), but 71.43% believed that supernatural forces also cause illness and 10% made unprompted statements that all illness comes from Allah. Half of respondents felt they were at risk of illness. Respondents were significantly more likely to report believing that a physician could aid them in the event of an illness if they also indicated that they felt they had control over whether they became ill ($p = 0.0020$) or if they felt that they were at risk of becoming ill ($p = 0.0357$). There was not a statistically significant difference in the proportions of individuals indicating belief in a doctor's capabilities and acceptance of either superstition ($p = 0.1095$) or their acceptance of biological pathogens ($p = 0.6054$).

Interpretation: Knowledge of biological pathogens is common, but there is still a lag in clinical utilization among Sankar residents. Spreeha might find more success in shifting focus in health promotion interventions from pathogen education to highlighting individual control over health outcomes and individual risk.

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Oncology nursing workforce capacity building in rural Rwanda: Strengthening specialized cancer care through nursing education and skill development

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Program: Providing specialized oncology education and training to nurses in a rural hospital in a low-income country requires human and

financial resources and governmental and institutional support. Since 2012, the Dana-Farber Cancer Institute (DFCI) has collaborated with Partners in Health and the Rwandan Ministry of Health to provide oncology nursing education and skill development. DFCI developed a global oncology nurse fellowship to place a US-trained oncology nurse in-country for three to 12 months to mentor, teach, and build in-country nursing expertise and leadership.

Structure: The following describes two nurse training programs taught by DFCI nurse fellows: a three week orientation for nurses from the oncology department at Butaro Hospital and a 12 week course for nurses from referral hospitals in Rwanda to build national nursing capacity. Both tracks include an overview of cancer, treatments, chemotherapy, side effects, oncologic emergencies, palliative care, patient and family education, and survivorship. Teaching methods were contextually related to cancer care in Rwanda, and include lectures, readings with discussion questions, oral presentations, role-plays, and clinical practice. Evaluations consist of pre and post tests, demonstration of skills, and competency checklists to track mastery of skills and knowledge.

Outcome & Evaluation: The three week program has been offered six times with 46 nurses completing training. Knowledge assessment scores from this program show an average increase of 14% between pre and post tests. The experience has yielded an educated and skilled oncology workforce at Butaro Hospital and has developed the first Rwandan oncology nurse leaders a ward manager, a care coordinator and an educator who now co-teaches both training programs to ensure sustainability. The 12 week program was piloted with two students. Knowledge assessment scores from the pilot show an average increase of 18% between pre and post tests.

Going Forward: In order to develop a robust model of sustainability, DFCI is collaborating with the University of Rwanda to develop a Masters curriculum in oncology nursing using content from the above courses. Oncology nursing workforce capacity building is paramount to address the burgeoning global cancer burden. Similar low resource settings should strive to prioritize oncology education for nurses.

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Global task shifting to nurse anesthetists: A systematic literature review

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Background: Estimates of the surgical workforce defined as surgeons, anesthesiologists, and obstetricians indicate 2.2 million more providers are necessary to address the current global surgical burden of disease. This shortage is concentrated in low- and middle-income settings. Although major increases are required in all three cadres, trained anesthesiologists have historically been particularly lacking. Task shifting, the movement of tasks from

physicians to non-physician clinicians, allows for greater availability of anesthetic care. Nurse anesthetists comprise a significant portion of this cadre. Yet an updated overview of where this group practices, their training programs, and their scope of practice is lacking. We conducted a systematic literature review to provide this and to consolidate information needed for countries considering task shifting to increase their anesthetic capacity.

Methods: We conducted a systematic literature review following PRISMA guidelines. PubMed, Embase, The Cochrane Library, CINAHL, WHOLIS, and five regional databases were searched for journal articles published between Jan 1, 1995, and May 14, 2015, screened for anesthetic care provision by nurse anesthetists. Article references and online resources were also searched. The extracted data included nurse anesthetist training program duration and physician supervision. This data was compared across regions and World Bank income groups.

Findings: Data on the presence of nurse anesthetists was obtained for 142 countries. Of these, 113 countries were found to practice task shifting to nurse anesthetists. Nurse anesthesia was documented in all major regions of the world. Training duration ranged from 0 to 3.5 years of post-nursing school training in anesthesia. For countries where data on supervision was available, unsupervised nurse anesthetist practice was identified in 17% (3/18) of high-income countries, 47% of upper-middle-income countries (7/15), 60% of lower-middle-income countries (9/15), and 100% of low-income countries (15/15).

Interpretation: Nurse anesthetists are widely utilized providers of anesthetic care across all income categories and all major geographic regions. Their training duration varies significantly. High-income settings provide increased supervision compared to low- and middle-income settings. Future studies focused on health outcomes may provide the basis for consolidated models of anesthetic task shifting to address the surgical workforce crisis.

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Developing human capital in clinical research: Impact on reducing transfusion-transmitted HIV and hepatitis virus infections in Africa

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Program Purpose: Clinical and epidemiologic research is an important contributor to the prevention of transfusion transmitted HIV and hepatitis virus infections. However in low and middle income countries, such research has been limited by a lack of trained researchers. Long-term training in Europe or the USA is impractical due to high cost and long absence from primary job responsibilities. We designed a novel program of clinical research training in low- and middle-income countries.

Methods: Blood transfusion professionals who wish to pursue clinical research are recruited for 2-week short courses. Morning lectures teach the principles of clinical research in concert with a practical textbook (Hulley SB et al. *Designing Clinical Research*, 4th ed.). Each trainee develops their own research question into a 6-page research protocol during afternoon workshops. After the course, many trainees accomplish their projects with assistance from a minigrant program and ongoing mentorship by course professors. Selected trainees are invited for 6-week internships in San Francisco to analyze data and write manuscripts.

Outcome and Evaluation: From 2004–2015, a total of 236 trainees have participated in 21 courses. Fifteen trainees have participated in subsequent 6-week internships in San Francisco, 26 mini-grants have been awarded and at least 80 publications have been co-authored by course alumni. Transfusion research networks have been developed in both Brazil and South Africa (funded by the NHLBI REDS-III International Program) and francophone Africa (coordinated by the French INTS). Outcomes include estimations of HIV incidence and residual risk with current testing, studies of behavioral risk factors for HIV and hepatitis virus acquisition and quality assessment of viral testing done by blood bank laboratories.

Going Forward: A curriculum in clinical and epidemiological research has produced new human capital in transfusion safety research. We are now focused on obtaining stable funding to allow advanced mentoring and training using a hybrid approach of in-country short courses, medium term internships in the USA and Master's degree training in South Africa.

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Near-peer teaching for sustainable capacity building of basic life support training in Haiti: Feasibility of a training the trainers model

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Design and Methodology: In 2013, Medical Students for Haiti (MS4H) developed a 'near-peer' teaching module for Université Quisqueya in Port-au-Prince, Haiti. Each year, American medical students and emergency medicine residents, certified as Basic Life Support (BLS) instructors, train and certify Haitian medical students in BLS. The program was designed to complement medical education at Université Quisqueya where BLS is not taught to students. This year a "Training the Trainers" model, designed to enhance long-term, sustainable capacity-building, was introduced where Haitian students certified in previous years were trained to be BLS instructors. As a pilot program, MS4H trained six of these students, who then trained 12 Haitian students new to BLS.