

SCIENTIFIC RESEARCH IN GLOBAL HEALTH

PARTNERSHIPS

Authorship equity in global surgery research from low- and middle-income countries (LMICs)

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Background: The field of global surgery has resulted in fostered many collaborations between high- and low-/middle- income researchers. Publication co-authorship is one proxy to determine if these relationships are equitable. In this study, we examined the literature to identify potential research authorship inequality.

Structure/Method/Design: Web of Science search was used searched to search identify studies conducted in low- and middle-income countries (LMICs) from 2008 to 2013. OnlySearch terms included names of LMICs, was limited to primary research articles and that focused on general surgery (and its subspecialties), obstetrics and gynecology, orthopedics, urology, otorhinolaryngology, ophthalmology, and neurosurgery were included. Search terms included the names of all LMICs. An author was considered local if their affiliations were in the country where the research was conducted.

Results (Scientific Abstract)/Collaborative Partners (Programmatic Abstract): 5366 articles were analyzed with a mean percentage of local authors per article of 75%. This proportion varied by region; Central Asia had the highest percentage local authorship (93%) and Sub-Saharan Africa had the lowest (60%) ($P < 0.001$). Articles from low-income countries had lower proportion of local authorship (43%) compared with upper-middle-income countries (83%, $P < 0.001$) based on World Bank income zones. However, individual countries' gross domestic product per capita was not significantly correlated with authorship percentages. Of the articles analyzed, 4120 (77%) had a local first author. Articles with local first authors had a much higher percentage of overall local authorship (94%) compared with articles where the first author was not local (13%). Journal impact factor did not correlate with the proportion of local authors per article in this study.

Summary/Conclusion: As global surgery research expands, it is important to promote equal partnerships between local investigators and high-income country collaborators. These findings suggest that surgical researchers in LMICs have been recognized in publication authorship in collaborative studies. Further research is needed to evaluate if this translates into increased or equal research capacity.

Conducting a nationwide nutrition assessment of micronutrient status and intake in Mongolian adult population

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Background:

Background: Due to cultural preferences and limited agricultural development, Mongolians have a unique diet that tends to include much meat, and little fruit and fewer vegetables than recommended by the World Health Organization (WHO). In combination with the country's high latitude and resultant restricted UVB exposure, Mongolians may be at risk for deficiencies of multiple micronutrients including vitamin D.

Because the impact of micronutrient deficiency is both far-reaching and complicated, micronutrient status in the Mongolian population is of particular concern for public health. Several micronutrient deficiencies have been confirmed in multiple studies in Mongolian children and pregnant women. Yet there is limited data of micronutrient status or intake among Mongolian men and non-pregnant women. An ongoing collaborative project that includes the Mongolian Public Health Institute and the Harvard School of Public Health aims to assess the nutrient status of Mongolian adults to inform national nutrition policy.

Objectives: The primary objectives of this study were to provide data on vitamin D and other micronutrients' status in the Mongolian adult population, as well as quantitatively assess the population's food and nutrient intake, for the primary purpose of identifying nutritional deficiencies. The objectives of my field experience included updating dietary assessment protocols, supervising and training field workers on the collection of dietary intake data, and conducting assessments in the field.

Structure/Method/Design: This study employed methods to measure micronutrient status and intake: a 3-day food record and a blood sample. Qualified students were trained to observe subjects for 3 consecutive days (2 weekdays, 1 weekend day) weighing and describing everything that these subjects ate and drank. Food intake data is currently being analyzed to determine subjects' intake of eight micronutrients of interest, after which it will be possible to estimate the severity of micronutrient intake deficiencies in the population. These data will allow the identification of food-fortification levels and potential fortification vehicles. This process will be informed by our simultaneous assessment of micronutrient status, which allows us to prioritize micronutrients with respect to developing food fortification models.

Results (Scientific Abstract)/Collaborative Partners (Programmatic Abstract): Health Ministry of Mongolia, School of Medicine and School of Public Health, Health Science University of Mongolia. World Health Organization (WHO) in Mongolia, Department of Human Nutrition, University of Otago, New Zealand

Summary/Conclusion: Data collection is currently ongoing. Analysis will proceed further after additional data collection during winter 2013-14, summer 2014, and winter 2014-15.

The prevalence and risk factors of cervical dysplasia and cervical cancer in the Kedougou Region, Senegal

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Background: The Kedougou Senegal Regional Health System has implemented cervical cancer prevention services in partnership with the U.S. Peace Corps, the University of Illinois at Chicago, and Peace Care, a U.S. nongovernmental organization since 2010. This research addresses the gap in evidence related to the prevalence of cervical dysplasia and cancer in Southeastern Senegal and evaluates the impact of this newly implemented primary health care service employing the technique of visual inspection of the cervix with acetic acid (VIA). This technique has a sensitivity (67%-79%) equivalent or better than cytology (sensitivity of 47%-62%) in these settings.

Structure/Method/Design: A cross-sectional population-based survey with quantitative (screening and demographic survey) data

collection was used to estimate the prevalence and risk for cervical dysplasia and cancer in the general population of the Kedougou Region of Senegal. Women aged 30 to 50 years from clusters representing the population at large self-selected for participation in a clinical screening test.

Results (Scientific Abstract)/Collaborative Partners (Programmatic Abstract): Final data due in January 2014 will be reported. Preliminary data, based on 240 screenings, illustrate the prevalence of cervical dysplasia in the Kedougou Region of Southeastern Senegal at 5.2% with one of three districts displaying a preliminary prevalence of 7.32%. Final data will be based on $n = 800$. The number of identified VIA-positive lesions and the number of cases of suspected frank cervical cancer as well as a comparison of prevalence within each district of the Kedougou region will be reported. The risk factors identified from our survey for the development of cervical dysplasia will also be reported. We will distinguish the risks among all districts in the region.

Summary/Conclusion: We have employed the VIA screening technique to estimate the prevalence of cervical dysplasia and cancer in a rural setting in Senegal. Low-resource setting communities, health leaders in low-income countries, and global health advocates who are prioritizing the advancement of cervical cancer prevention programs will find this work illustrative. In addition to prevalence data, findings about the associated risk factors can guide future interventional research programs aimed at addressing dysplasia or cervical cancer in this population. This will build on previous knowledge that characterizes relevant risk factors for cervical cancer in similar settings while expanding our understanding of how to further develop the cervical cancer services in this specific region. This information will also be used to inform the implementation of cervical cancer prevention programs in other areas in Senegal and similar low-resource settings.

The Caribbean Consortium for Research in Environmental and Occupational Health (CCREOH): A model for trans-disciplinary global health research

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Background: The Caribbean Consortium for Research in Environmental and Occupational Health's (CCREOH) overarching goal is to address high-priority environmental and occupational health risks in Suriname and those common to the increasingly vulnerable Caribbean region while preserving the unique assets, health, and cultural traditions of indigenous and other health disparate populations. CCREOH's investigator team is indicative of its trans-disciplinary research portfolio, bringing together an array of scientists from biology to epidemiology including toxicology and medicine.

Structure/Method/Design: Funded by the Fogarty Center of the National Institutes of Health, CCREOH partners are characterizing key environmental and occupational health (EOH) risks associated with gold mining—related mercury contamination, pesticide use in agriculture including pesticide-induced suicide, and indigenous nutraceutical contamination to inform a gap and opportunities assessment of relevant environmental policies in Suriname and the Caribbean region; creating a sustainable public health and EOH network to serve as the trans-disciplinary research and training hub; developing a trans-disciplinary research roadmap to guide the consortium's environmental and

occupational health research leveraging all consortium partner assets; and putting in place a capacity-building portfolio including a regional EOH training program to successfully implement the priority areas articulated in the CCREOH research roadmap. The research roadmap deployed by the CCREOH team represents the continuum from basic, mechanistic approaches to community-based participatory environmental health designs.

Results (Scientific Abstract)/Collaborative Partners (Programmatic Abstract): The CCREOH builds on the existing partnerships in place between the University of Suriname, Faculty of Medical Sciences, Tulane University, School of Public Health and Tropical Medicine, and the Caribbean Public Health Agency.

Summary/Conclusion: The CCREOH has conducted and advanced a series of assessments to document baseline capacity levels and community needs focused on health outcome data, laboratory capacity, training programs, and environmental health policy. Currently, research is focused on the impact on the environment and human health of gold mining-related mercury contamination in Suriname through the examination of four Maroon and indigenous communities; analyzing pesticide residues in frequently consumed vegetables and fruits, as well as the role pesticides play as an effector in suicide attempts and successful suicides; exploring the anti-proliferative effects of indicator medicinal plants; and evaluating the data derived from a preliminary environmental and occupational health assessment in Trinidad and Tobago.

"Bind wounds, not make blood run"—Evaluation of Surinamese plant-derived nutraceuticals for their potential effects on angiogenesis

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Background: Aberrant angiogenesis is involved in a multitude of distinct diseases including cancer, rheumatoid arthritis, chronic wounds, and certain cardiovascular, ocular, and skin diseases. This has led to the development of a wide array of therapeutically efficacious anti- and pro-angiogenic substances, and the identification of a number of (plant-derived) substances that allegedly prevent angiogenesis-dependent diseases. Based on the latter consideration, the Departments of Pharmacology and Physiology of the Faculty of Medical Sciences (FMeW), Anton de Kom University of Suriname (AdeKUS), have implemented a large-scale research project to evaluate Surinamese plant-derived nutraceuticals for their potential to interfere with angiogenesis. Suriname is located on the Guiana Shield, a hotspot with a unique biodiversity and a substantial expanse of pristine tropical rain forest. The project is part of a more comprehensive collaborative effort with the Suriname Conservation Foundation aimed at the identification of Surinamese plants with clinically applicable angiogenesis-interfering properties.

Structure/Method/Design: Candidate plants are acquired on the basis of ethnopharmacological indications from Suriname's rich medicinal folklore and chemosystemic clues from the literature. The plants are authenticated by taxonomists, and then extracted according to the traditional use. Angiogenesis involves, among others, the proliferation, migration, and structural rearrangement of endothelial cells to form tube-like structures. Therefore, the samples are subsequently assessed for these effects in cultured human umbilical vein endothelial cells using a sulforhodamine B, a Boyden chamber, a scratch wound healing, and a tube formation assay.