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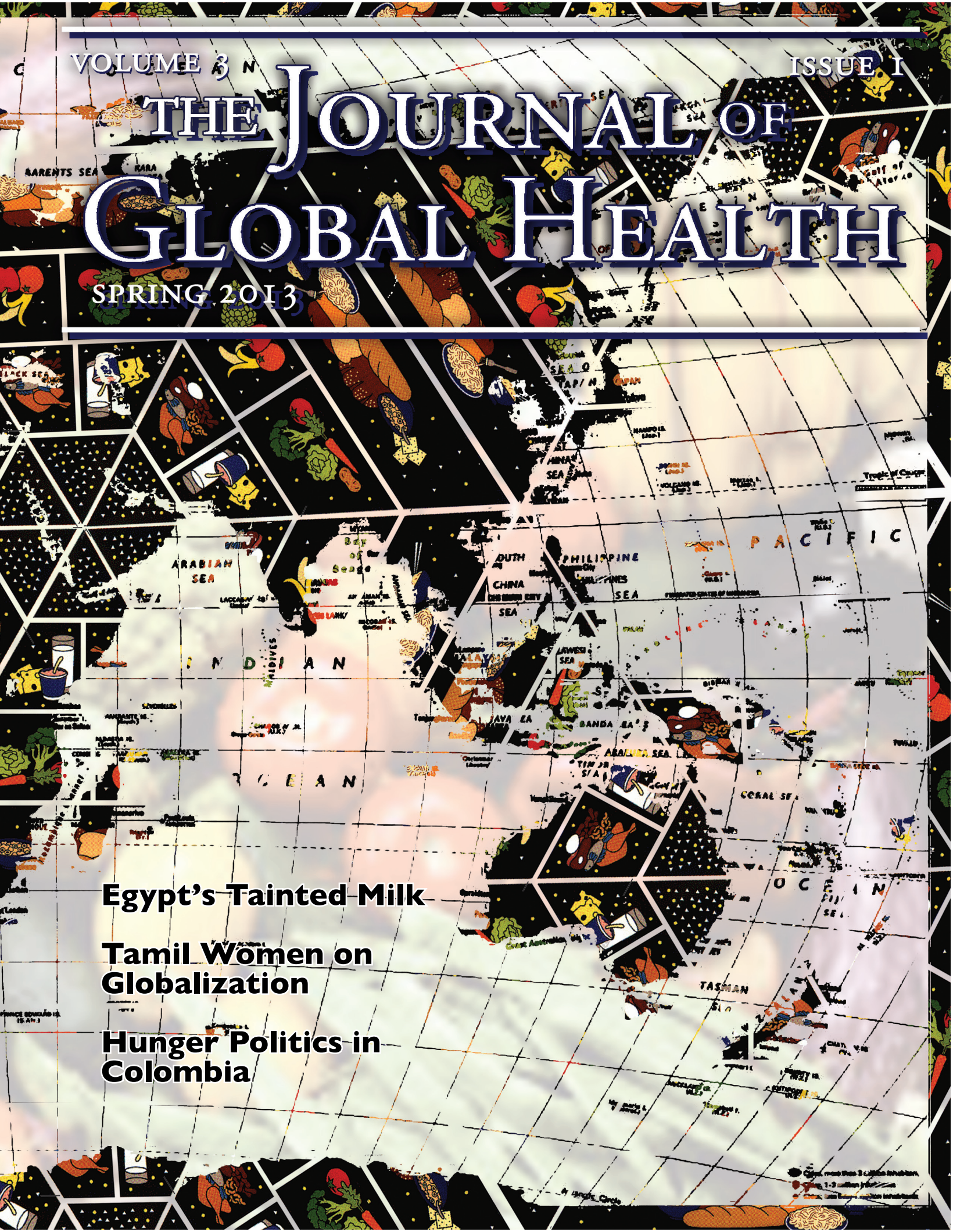

Egypt's Tainted Milk

Tamil Women on Globalization

Hunger Politics in Colombia

Food and Health in the 21st Century

The true advantage of a burgeoning field such as global health lies, above all, in its tremendous versatility. This unique trait permits widespread interdisciplinary and cross-curricular interaction in the study of public health, connecting perspectives in economics, public policy, human rights, geopolitics, biological sciences and anthropology, to name just a few. In Volume 3, Issue I of *The Journal of Global Health*, we have chosen to spotlight a topic that, in its ubiquity and simplicity, manages to span each of these various disciplines with tremendous implications for public health: food.

Of course, the impact of nutrition and food—whether its lack or excess—has been a perennial issue for public health analysts worldwide; ending world hunger is one of the United Nations' eight Millennium Development Goals for 2015, and numerous advocacy groups have been established to combat rising obesity rates in industrialized nations. Beyond these well-known issues, however, the true socioeconomic, political and even cultural impact of food is incalculable, especially in an age of rampant globalization. This issue of the *Journal* aims to address some of these far-reaching effects, featuring articles on the illicit adulteration of staple dietary products, such as milk; the shifting cultural attitudes regarding changes in traditional dietary observations and their impact on women's health; and the nutritional impacts of third-party interference in agricultural practices. Each of these pieces provides groundbreaking insight into the role of nutrition in both local communities and large geographical regions, yet they represent only a sliver of food's overall significance to our understanding of global health.

JGH was founded just over two years ago with the objective of providing a vibrant and much-needed forum for student dialogue on contemporary issues in global health. Our well-received podcast series "What is Global Health?" (WiGH?) has allowed us to achieve this goal to an exciting and unprecedented degree, featuring student leaders, world-renowned academics and grassroots activists through a novel medium available to listeners worldwide. However, the print *Journal* remains the bedrock of our organization, and we are pleased to feature the engaging perspectives offered by our authors—both on food and on a variety of other current issues—in what continues to be the world's premier student-run global health publication.

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Editor-in-Chief

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High Prevalence of Back Pain at Free Clinics in the Sacred Valley of Peru

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Abstract

Back pain is a major contributor to healthcare costs around the world and mainly affects manual laborers. Therefore, back pain may be highly prevalent in areas of the world with economies primarily based on physical labor, such as the Peruvian Andes. In the following study, the authors present data from a short-term medical mission to the Sacred Valley region of Peru, during which 1,114 patients over the age of 18 years old were treated. Back pain was identified as the most common health complaint, with 30% of patients presenting with this symptom. In performing logistic regression analysis, both age (OR 1.01 per year over 18) and remoteness of home village (OR 2.42) were associated with the complaint of back pain. Male sex also had a positive association (OR 1.32) and trended toward significance (p=0.07). Back pain is a major burden on the health and economy of this region and a potential target for medical intervention.

Introduction

Back pain is a major contributor to disability, health care costs and economic burdens around the world, and affects both industrialized and developing countries.[1,2,3,4] A 2008 meta-analysis on back pain in the United States indicated that between $12-90 billion annually in direct healthcare costs, with an additional $7-28 billion for indirect costs, are allocated to treatment for back pain.[5] Although a multitude of risk factors for back pain have been proposed in the literature, certain ones have consistently been identified, including increasing age, lower socioeconomic status, lower education level and occupations requiring repetitive bending, lifting and twisting.[1,2,6,7] The current recommended interventions for back pain include ice, stretching, education on proper lifting mechanics and physical therapy with safe back-strengthening exercises.[7] Non-steroidal anti-inflammatory medications are also commonly used. However, in impoverished and remote regions around the world, such interventions are not routinely implemented, perhaps due to a lack of trained personnel, a dearth of research on prevalence in the area or limited resources.

While back pain has notable economic ramifications in wealthy countries, such as decreased labor productivity and increased healthcare costs, this burden may be even more pronounced in developing countries with fewer economic resources. Furthermore, rural areas in these developing countries are even more dependent on manual labor. These areas may experience a greater burden of back pain that remains unrecognized and untreated due to limitations of resources for intervention.[8]

Efforts have been made within these countries and by outside organizations to identify and provide aid to populations at high risk for developing back pain. For example, in 2012, Foltran et al. proposed that the implementation of educational interventions in developing countries, such as the teaching of proper lifting techniques and effective stretching regimens, could lead to a decreased incidence of back injuries.[9] Implementing such programs could ease the health and economic burdens that individuals carry in these communities. Secondary goals would include lowering the indirect costs associated with back pain, such as loss of work and incurred disability. In order to direct strategic interventions, areas at high-risk must be identified along with the risk factors specific to back pain that would be amenable to interventions.[10]

Unfortunately, a great majority of the literature on the epidemiology of low back pain has been restricted to high-income countries, perhaps because of the less robust research infrastructure and fewer financial resources in low-income countries. In wealthy countries, these studies often focus on occupations that involve prolonged, inappropriate posture or repetitive bending

and twisting with lower weights (e.g., workers in technical, sales, clerical, service or transportation occupations).[11] It is uncertain whether these findings will fully translate to developing regions around the world, which utilize different tools, techniques and body mechanics (Picture 1 and 2). The scarcity of back pain research complicates the development of effective interventions in low-income countries.[4]

The following study describes the epidemiologic findings of the Peru Health Outreach Project, a medical student-managed project of Case Western Reserve University School of Medicine and the Cleveland Clinic Lerner College of Medicine. This project conducts voluntary, short-term medical missions to urban and remote villages in the Sacred Valley region of the Peruvian Andes. In this study, our medical team collected health and demographic information while also providing medical care to impoverished villages. During the medical mission of 2012, the authors identified an overwhelming burden of back pain in adult patients who presented to clinics. As a result, the authors organized this study of collected data to determine the prevalence of back pain in the region and to identify associated risk factors.

Sandy Carney

Methods

From June 5 to June 29, 2012, a team of 70 medical professionals and students set up temporary medical clinics in villages across the Sacred Valley region of the Peruvian Andes. A total of 20 clinics were created at 16 different sites in the Urubamba, Lamay, Coya, Calca and Pisac districts, with ten of the sites in high mountain villages surrounding the valley. Patients of all ages, backgrounds and disabilities were accepted at the clinics. Local health authorities affiliated with the Peruvian Health Ministry assisted with the planning and implementation of the mission. All medical professionals received training in clinical operations, documentation, cultural competency and medical Spanish in advance of the trip. Additionally, translators were provided to translate from Quechua (the native language in the area) to Spanish when necessary.

These temporary clinics provided free, basic primary care services and served to supplement the work of local physicians who did not have the staff or resources to provide sufficient healthcare in the distant villages. Patients seen in the clinic who were found to have chronic diseases were referred to local physicians for periodic follow-up. The free clinics also provided additional services including an on-site pharmacy with free basic medications, eye screenings and free glasses, shoes, fluoridations and toothbrushes for children, as well as health education seminars for all patients (Figure 1).

Team members collected patient information using a standard encounter form that captured demographic and health information. Patients were required to have the form completed prior to leaving the clinic. During medical interviews, volunteers asked patients open-ended questions about their health concerns; for example, patients were not asked if they had back pain, only what symptoms they wanted to discuss. All reported symptoms were recorded on the intake form. These forms were subsequently entered manually into a password secured digital database (Access 2010, Microsoft Corp.). For quality assurance, forms were checked for accuracy by the pharmacy team before dispensing medications and spot-checked by the investigators once entered into the digital database.

In this study, data was analyzed only from individuals aged 18 years or older. This cutoff age was selected because it represents the Peruvian age of suffrage and "Age of Majority"[12]—the age at which an individual enters adulthood. It indicates the age by which a great majority of Peruvians have finished school and entered the workforce full-time.

> It was not uncommon to see elderly men and women working in the fields well into their sixties and seventies, carrying heavy loads on their backs for hours at a time.

The names of patients' home villages were recorded and later dichotomized to either a "Mountain" or "Valley" village. Those villages within the Sacred Valley proper or those in the vicinity of Urubamba, Calca, Coya, Pisac or Cusco were labeled as "Valley"; all others were labeled as "Mountain." This distinction was made because mountain villages in this region are more remote and agricultural than the valley villages. Individuals from these mountain villages were proportionately more likely to be involved in field labor, usually including planting and harvesting crops, and shepherding animals. In the provinces of Calca and Urubamba, which encompass most of the Sacred Valley, agricultural and untrained laborers represented 78% and 34% of the workforce in rural and urban areas, respectively.[13] Individuals residing in the mountain villages were also more likely to adhere to the lifestyle and traditions of their Incan heritage. This included traditional farming practices (Picture 2) as well as a culturally ritualistic understanding of medicine. Furthermore, the valley is significantly more industrialized, and residents will often have access to a community health center within their town, whereas patients in mountain villages often face a several-hour journey to reach an established medical facility.

During our clinics, whether held in mountain or valley villages, patients with musculoskeletal back pain were taught proper lifting techniques and back-strengthening exercises by physical therapists or other healthcare professionals. For example, patients were taught to lift heavy loads with an upright back, exerting force through their thighs to avoid stress on the back. Furthermore, patients were taught to carry heavy objects with an upright spine to avoid the common practice of slinging objects over an arched spine (Picture 1). Additionally, patients with back pain were educated on exercises that stretch and strengthen the core muscles and support back health. Effort was made to use culturally acceptable exercises that were easy to perform. For example, we avoided exercises with positions that were deemed indecent to locals, as well as those which would have required the patient to lie on the dirt floors. Protocols were established for the transportation of pa-

tients with severe or emergent conditions, including back pain with neurological compromise (paralysis, saddle anesthesia, incontinence, etc.), to more advanced care at the closest hospital with specialist and surgical support in Cuzco, Peru.

At the completion of the 2012 mission trip, patient data from the clinics was compiled and analyzed. Using binomial logistic regression,[14] associations among variables of interest and back pain were determined and reported as odds ratios, or the odds of back pain being present in one group compared to another. The regression model was formed using a forward stepwise method including mandatory variables of age and gender. Other variables tested included weight, height, years since last medical visit and mountain or valley residence.[11] Variables reaching a p-value less than 0.05 were kept in the model. Interaction variables were also evaluated for the individual variables that were found to be significant. The model was assessed for Goodness of Fit using the Hosmer-Lemeshow test. Ninety-five percent confidence intervals were included. Statistical analysis was performed using the SPSS Modeler (IBM Corp.).

Results

A total of 2,298 encounter forms were created. From this sample, 1,114 subjects aged 18 years and older were included in the study. Their demographic information, divided up by area of residence, is shown in Table 1 (available online). The study sample contained 503 patients residing in mountain villages and 611 residing in valley villages. Overall, most of the patients were female (73%). Patients had a mean age of 47 years and a range of 18 to 98 years.

The majority of the subjects had encountered a medical professional in the past; only 11% of patients had never received professional medical care in their lifetimes. 23% of subjects used medical clinics, whereas 20% reported using traditional home remedies as their primary source of medical care. Of presenting complaints (Figure 2), the most common complaint of adult patients was back pain (30%). Other common complaints included joint pain other than back pain (29%), vision difficulties (27%), abdominal pain (20%) and acute or chronic headache (15%). Patients reporting back pain were an average age of 49.5 years (SD=17.1 yrs) (Figure 3). Back pain was reported in 23%, 35% and 33% of individuals aged 18-39, 40-59 and 60+ years, respectively. 60% of those complaining of back pain lived in mountain villages. Patients reporting back pain also reported pain in another joint in 53% of cases.

A logistic regression (Table 2, available online) was performed to determine which variables were associated with back pain. The variables tested included age, gender, residence in a mountain village, weight and time since last medical encounter. After stepwise development of the model, only advancing age and residence in a mountain village were determined to be significant risk factors. The odds ratio for age was 1.01, which corresponds to increased odds of back pain of 1% per year of life. The odds ratio for residence in a mountain village was 2.42 compared to the valley villages, indicating a 2.4-fold increase in the odds that a patient from a mountain village will present with back pain compared to a patient from the valley, assuming all other variables are held constant. The interaction between age and mountain residence was not found to be significant. Additionally, gender was marginally significant with p=0.07 and an odds ratio comparing males to females of 1.32 representing an increased risk for males. Performing the Hosmer-Lemeshow Goodness of Fit test for the final model had a chi-square value of 8.6 (p=0.37), indicating reasonable model fit.

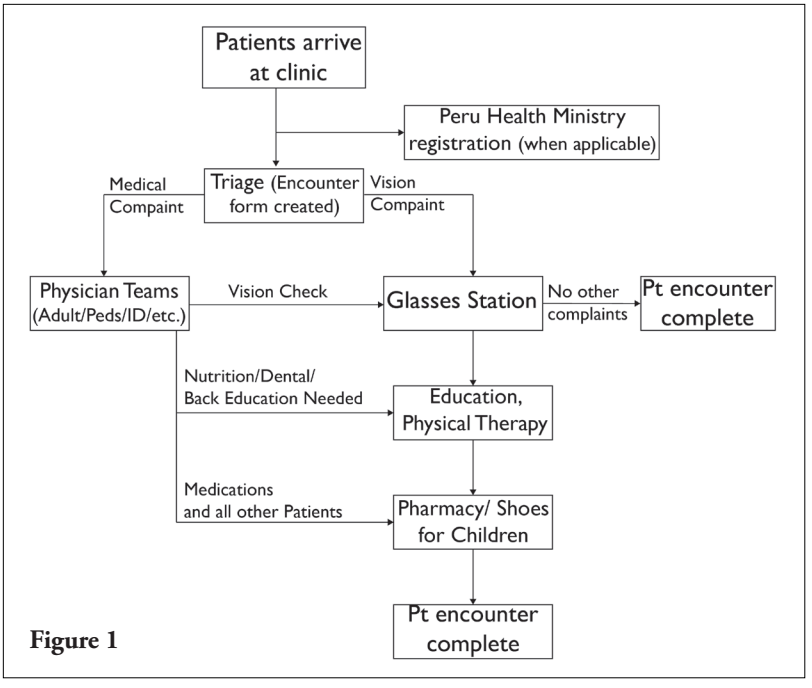

Figure 1

Discussion

During this short-term medical mission in the Sacred Valley region of Peru, we encountered a high burden of back pain among our patients, with 30% of adults presenting with back pain as a health complaint. We also observed that 29% of patients complained of joint pain other than their backs and 27% had vision problems. In this study we focused on back pain, as it has been clearly described in the literature as a major source of disability and, in most cases, can be prevented or treated without a need for major medical interventions. Joint pain, on the other hand, can include a range of disorders from osteoarthritis to ligamentous sprains and is often the result of a permanent internal derangement. As such, joint pain often requires more advanced treatments or surgeries that are difficult to implement in remote regions. Back pain, on the contrary, is most commonly the result of muscular strain or disc herniation, both of which can be treated with physical therapy and prevented with proper lifting techniques.

Upon further analysis of our data, we determined that the home environment of our subjects was the strongest indicator of back pain. Living in the mountain villages surrounding the Sacred Valley increased the odds of presenting with back pain by nearly two-and-a-half times when compared to living in valley villages. This relationship is likely related to the disparate societal structures in these two areas. While the Sacred Valley as a whole is a rural region, the valley villages (i.e., Urubamba, Lamay, Calca, Coya and Pisac) tend to be more densely populated and support a greater variety of occupations than those situated higher in the mountains, such as taxi driving, custodial work and working in merchant shops. The increased variety of occupations in the valley villages decreases the overall percentage of the population that performed labor-intensive occupations and likely helps to decrease the prevalence of back pain when compared to mountain villages. Additionally, the valley villages were home to local health posts, thus providing more readily available access to the healthcare system.

In smaller mountain villages, almost all inhabitants labored in the fields planting and harvesting crops, shepherding animals and performing activities that have routinely been associated with developing back pain.[13] In addition, the mountain villages were much more remote than the valley villages, sometimes requiring two or more hours of bus travel, if available, from the nearest valley village to reach health posts. Limited income and limited access to transportation further inhibited those residing in mountainous communities from accessing healthcare.

In addition to place of residence, age was found to be associated with back pain. The logistic model shows that the odds of reporting back pain increase 1% for every year of life in individuals that are greater than 18 years of age. This relationship between age and back pain has been reported elsewhere[6,11] with similar associations. Interestingly, we did not see the decreased prevalence of back pain in older patients as was suggested by Hurwitz and Morgenstern (1997) (Figure 3), possibly due to the low socioeconomic status of our population, which often necessitates that individuals labor well into their elderly years. It was not uncommon to see men and women working in the fields well into their sixties and seventies, carrying heavy loads on their backs for hours at a time.

While these data are compelling, it should be noted that the primary goal of this medical mission was to provide healthcare and

education to an underserved population. This back pain study grew out of the high proportion of patients who reported back pain in our clinics. As a result, there are notable limitations in this study. The data presented are the result of a cross-sectional survey of patients who attended a free clinic, so proportions of disease that we observed may not perfectly reflect disease burden in the region. A 2007 census of the area indicates that approximately 51,000 individuals live in the region. We collected data on 2,300 men, women, and children—about 5% of the region's population.[13]

In the clinics, we saw more female than male patients. While the exact reason for the female predominance is unknown, we speculate that more women attended the clinic because they often brought in children or grandchildren to be seen. The majority of men said they were coming in from the fields, and thus we further speculate that a large percentage of men were unable to leave their duties to attend our clinic. As such, we may have missed identifying men who were experiencing back pain but were not present at the clinics, leading to a potential underestimation of back pain in men of the area. Likewise, it is possible that the men did not present to the clinic because they did not experience any back pain. However, considering that the male gender was approaching significance (p=0.07) as a risk factor, we believe that our results are more likely to be an underestimation of the true burden of back pain in this region. Additionally, some patients may not have listed back pain as a problem because they had more pressing symptoms or because they had become resigned to their back pain as an irremediable part of their lives.

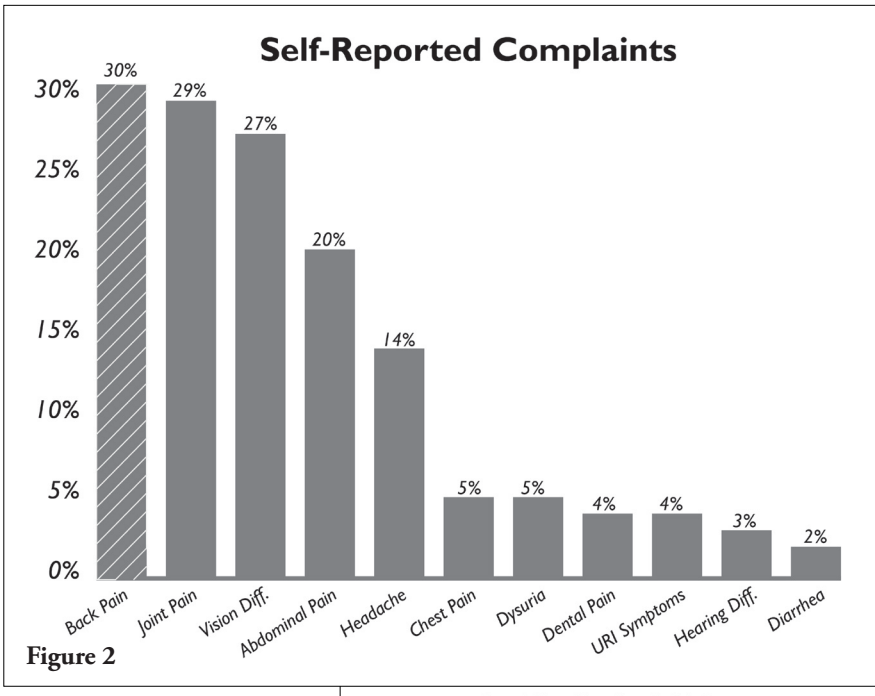

Figure 2

It is also notable that we did not collect data on specific locations of back pain (i.e. upper, middle or lower back pain) in order to simplify data collection. Neck pain was considered separately. Diagnosis was made through a detailed history and physical examination with assessment for "Red Flags." Diagnosis of back pain was made clinically in the same manner that it is diagnosed in the average primary care clinic.[15] Lastly, the data estimate the prevalence of back pain in this region, rather than the incidence. Prevalence describes current burden of disease, whereas incidence measures onset of new disease. Therefore, we cannot comment on the risk of developing back pain in these communities but can only speak to its high burden at the time of the study. Regardless of these limitations, our data show that back pain, joint pain and visual deficiencies are the most common complaints of patients from this region and should be understood as major burdens to the health status of this region of Peru. The high prevalence of back pain identified in this study of the Sacred Valley is comparable to studies in other regions around the world predominantly dependent on physical labor, such as Taiwanese workers (25.7%), Irish farmers (27%) and Chinese farmers (38.5%).[16,17,18] While data on disease severity and impact on quality of life were not collected in our study, a portion of patients anecdotally expressed that back pain had limited their ability to work and had negatively impacted their lives. These patients described a decrease in productivity and income related to back pain, and, in severe cases, families suffered financial uncertainty because the breadwinner was unable to work due to severe back pain. These finding adhere to those of many other studies conducted in developed countries, where lost wages were a significant, if not the largest, cost associated with back pain.[5] In such remote areas, a disabled, unskilled worker has few options to provide food and shelter for his or her family if he or she cannot perform physical labor. This difficulty highlights the significance of the problem and the importance of addressing back pain in remote regions.

By identifying back pain as a highly prevalent health complaint in the Sacred Valley, this study highlights the need for future healthcare missions and local governments to implement interventions to address this burden. The potential value of such interventions is supported by studies showing that, depending on the chronicity and etiology of the back pain, many patients can recover from back pain without residual disability.[19] Also, back pain can potentially be prevented with education on healthy lifting and stretching practices or reversed with appropriate physical therapy. These interventions have fewer barriers to implementation than the technologically advanced interventions required for many other diseases. As such, the potential for a practical, sustainable and effective solution to the high burden of back pain in this region remains realistic. However, disseminating the idea that back pain is treatable and preventable is an important first step forward in helping debilitated patients around the world.

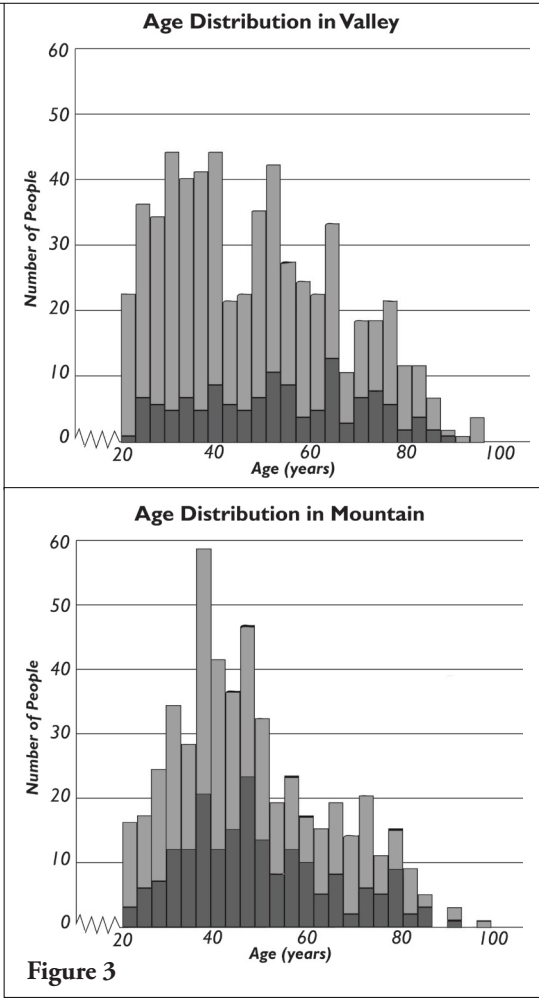

Figure 3

Many, if not all, patients in the clinic had never received back care education before, and many believed that back pain was a permanent part of their lives that could not be treated or prevented. Our patients in the Sacred Valley received a short, practical physical therapy lesson at the conclusion of their visit to the clinic. This session lasted for approximately ten minutes and was integrated into the flow of the clinic (Figure 1). Assessing the effectiveness of this training will be difficult but could be accomplished by surveying adults seen at schools we visit on a yearly basis. A larger goal would be to assist local authorities in developing educational programs in schools to provide education for children before they enter the work force. We believe such an intervention has a strong likelihood of benefitting this region because of the interest shown by patients during teaching sessions at our clinics, as well as successes of educational interventions in other regions of the world. For example, an educational intervention for Brazilian school children showed

retention of ergonomic principles two years after the completion of the intervention.[9] Likewise, implementation of "Back School" in an Iranian pharmaceutical company led to a significant decrease in the level of back pain after three months.[20] Future studies are needed to determine whether such interventions can be successfully implemented in remote regions with potential cultural barriers.

Apart from the struggle of individuals and families, chronic back pain likely has negative effects on the economy of the region as a whole by decreasing the productivity of workers and increasing the burden on the healthcare system (in regions where individuals have sufficient access to healthcare). While medical personnel in the Cusco North Health Network have made great strides in improving healthcare in the region, these initiatives have largely focused on improving maternal and pediatric health. As a result of these public health interventions, this region of Peru has seen improvements in child vaccinations and maternal mortality rates,[21] showing the potential of such initiatives; however, there is much work to be done to confront the ever-present challenge of back pain.

We believe that simple, persistent interventions in education relating to back exercises and proper lifting techniques, disseminated by medical missions and local governmental agencies, could lead to a significant decrease in the burden of back pain in this region. Furthermore, we believe that this education should begin early in the classroom to provide a stronger foundation for children before they leave school to work in the fields. Such an intervention could be modeled after successful programs like the Spanish "Postural Education Program." [22] In this program, grade school children were taught proper lifting and stretching techniques, as well as proper posture for carrying a backpack. After revising this program to specifically tackle the most pertinent local obstacles to back health, such an effectively targeted intervention could lead to a decrease in the burden of back pain in the Sacred Valley.

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References

1. Lee, P., Helewa, A., Goldsmith, C. H., Smythe, H. A., & Stitt, L. W. (2001). Low back pain: prevalence and risk factors in an industrial setting. The Journal of rheumatology, 28(2), 346–351.
2. Rubin, D. I. (2007). Epidemiology and risk factors for spine pain. Neurologic clinics, 25(2), 353–371. doi:10.1016/j.ncl.2007.01.004
3. Almeida, M. C. V. de, Cezar-Vaz, M. R., Soares, J. F. de S., & Silva, M. R. S. da. (2012). The prevalence of musculoskeletal diseases among casual dock workers. Revista latino-americana de enfermagem, 20(2), 243–250.
4. Volinn, E. (1997). The epidemiology of low back pain in the rest of the world. Spine, 22(15), 1798.
5. Dagenais, S., Caro, J., & Haldeman, S. (2008). A systematic review of low back pain cost of illness studies in the United States and internationally. The spine journal: official journal of the North American Spine Society, 8(1), 8–20. doi:10.1016/j.spinee.2007.10.005
6. Alexopoulos, E. C., Konstantinou, E. C., Bakoyannis, G., Tanagra, D., & Burdorf, A. (2008). Risk factors for sickness absence due to low back pain and prognostic factors for return to work in a cohort of shipyard workers. European Spine Journal, 17(9), 1185–1192. doi:10.1007/s00586-008-0711-0
7. Bach, S. M., & Holten, K. B. (2009). Guideline update: what's the best approach to acute low back pain? The Journal of family practice, 58(12), E1.
8. Van Vuuren, B., Van Heerden, H. J., Becker, P. J., Zinzen, E., & Meeusen, R. (2007). Lower back problems and work-related risks in a South African manganese factory. Journal of occupational rehabilitation, 17(2), 199–211. doi:10.1007/s10926-007-9073-4
9. Foltran, F. A., Moreira, R. F. C., Komatsu, M. O., Falconi, M. F., & Sato, T. O. (2012). Effects of an educational back care program on Brazilian schoolchildren's knowledge regarding back pain prevention. Revista brasileira de fisioterapia (São Carlos (São Paulo, Brazil)), 16(2), 128–133.
10. Eijkemans, G. J. M., & Takala, J. (2005). Moving knowledge of global burden into preventive action. American journal of industrial medicine, 48(6), 395–399. doi:10.1002/ajim.20227
11. Hurwitz, E. L., & Morgenstern, H. (1997). Correlates of back problems and back-related disability in the United States. Journal of clinical epidemiology, 50(6), 669–681.
12. U.S. Department of State. (2011). Country Reports on Human Rights Practices for 2011. Retrieved April 9, 2013, from http://www.state.gov/j/drl/rls/hrrpt/humanrightsreport/index.htm
13. Peru National Census. (2007). Instituto Nacional de Estadistica e Informatica. Retrieved from http://www.inei.gob.pe/
14. Nick, T. G., & Campbell, K. M. (2007). Logistic regression. Methods in molecular biology (Clifton, N.J.), 404, 273–301. doi:10.1007/978-1-59745-530-5_14
15. Goertz M, Thorson D, Bonsell J, Bonte B, Campbell R, Haake B, Johnson K, Kramer C, Mueller B, Peterson S, Setterlund L, Timming R., & Institute for Clinical Systems Improvement. (2012, November). Adult acute and subacute low back pain. Institute for Clinical Systems Improvement. Retrieved from http://guideline.gov/content.aspx?id=39319
16. Chou, Y.-C., Shih, C.-C., Lin, J.-G., Chen, T.-L., & Liao, C.-C. (2012). Low back pain associated with sociodemographic factors, lifestyle and osteoporosis: A population-based study. Journal of rehabilitation medicine: official journal of the UEMS European Board of Physical and Rehabilitation Medicine. doi:10.2340/16501977-1070
17. Liu, X., Wang, L., Stallones, L., Wheeler, K. K., Zhao, W., Smith, G. A., & Xiang, H. (2012). Back pain among farmers in a northern area of China. Spine, 37(6), 508–514. doi:10.1097/BRS.0b013e318221e83f
18. O'Sullivan, D., Cunningham, C., & Blake, C. (2009). Low back pain among Irish farmers. Occupational medicine (Oxford, England), 59(1), 59–61. doi:10.1093/occmed/kqn160
19. Andersson, G. B. (1999). Epidemiological features of chronic low-back pain. Lancet, 354(9178), 581–585. doi:10.1016/S0140-6736(99)01312-4
20. Sadeghi-Abdollahi, B., Eshaghi, A., Hosseini, S. N., Ghahremani, M., & Davatchi, F. (2012). The efficacy of Back School on chronic low back pain of workers of a pharmaceutical company in a Tehran suburb. COPCORD stage II study. International journal of rheumatic diseases, 15(2), 144–153. doi:10.1111/j.1756-185X.2011.01660.x
21. Lavadenz, F. (2012). Peru - PE- (APL2) Health Reform Program : P095563 - Implementation Status Results Report : Sequence 07 (No. ISR6786) (pp. 1–5). The World Bank. Retrieved from http://documents.worldbank.org/curated/en/2012/09/16758826/peru-pe--apl2-health-reform-program-p095563-implementation-status-results-report-sequence-07
22. Vidal, J., Borràs, P. A., Ponseti, F. J., Cantallops, J., Ortega, F. B., & Palou, P. (2012). Effects of a postural education program on school backpack habits related to low back pain in children. European spine journal. doi:10.1007/s00586-012-2558-7
23. Maniadakis, N., & Gray, A. (2000). The economic burden of back pain in the UK. Pain, 84(1), 95–103.
24. Quittan, M. (2002). Management of back pain. Disability and rehabilitation, 24(8), 423–434. doi:10.1080/09638280110108850

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Milk in Egypt

Spotlight on a Dilemma

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Affectionately dubbed at times as "the fluid of life," milk has played a vital role in the development of mankind and in the shaping of contemporary culture. From the cheeses of the Swiss or the French to the yak milk of the Asian steppes, milk has irrevocably incorporated itself in most cultures through myth, superstition (spilt milk was thought to signify good luck in some parts of Europe and bad luck in others), habits and traditions. Rich in protein, fat, lactose, and beneficial bacteria and enzymes, milk provides nutrition to children and adults alike, both in liquid form and in preserved forms such as cheese and yogurt. Our ancestors' inability to preserve milk was the driving force behind the creation of cheese and yogurt, but, due to the dawn of the industrial age and recent advancements in biotechnology—notably the discovery of pasteurization and preservatives—milk can be stored for longer durations in liquid form while remaining safe for consumption. Furthermore, as these modern processes prolong the shelf life of milk, it has been more distributed to geographically distant markets. Modern processes have also effectively removed potentially dangerous pathogens (including, but not limited to, bovine tuberculosis and Chlostridia). Milk producers quickly embraced these processes, and consuming raw, unprocessed milk became an increasingly uncommon occurrence in many developed countries. Today, however, the number of consumers of raw milk in developed countries is rising as more people embrace the "organic" way of life and refuse to consume processed or preserved foods. More and more people visit dairy farms to buy fresh, unprocessed milk. At the same time, governments are making efforts to ensure the safety of dubious products, such as raw milk, for consumption. Meanwhile, the issue of raw milk consumption is becoming increasingly heated, especially in Egypt, where its consumption and risks are common.

Egypt is a subtropical country with a population over 80 million.[1] The country enjoys a delicate demographic balance; several million individuals live in industrialized urban areas (over 20 million in the capitol Cairo alone), while slightly more (57%) live in impoverished, rural areas with limited access to health facilities and education. However, urbanization is continuously increasing, and the rural population dropped by 1% between 2003-2007 and 2008-2012.[2] As individuals move from rural to urban areas, they usually live in impoverished slums with a lack of health and educational resources. In families who move into these slums, all members help make a living – children have part-time jobs, and parents often struggle with two jobs each to make ends meet – and this struggle means less time is available to maintain healthy nutrition practices and knowledge. For the expecting mother, taking a day off work to visit a primary healthcare center or obstetrician deprives the family of much-needed income, so women seek pregnancy and nutritional advice from coworkers, family and neighbors instead of healthcare professionals. This dependence on informal and often unreliable sources of health and nutrition knowledge can take a toll on prenatal care and the behavior of the mother in that critical period and, thus, on society as a whole. Informal sources often contradict the information provided by doctors and medical practitioners and the contradiction can be confusing, especially for pregnant women trying to supplement their diet with milk and women seeking information on the nutritional benefits of cow milk for developing infants. For them, having accurate information on raw milk is key to making healthy decisions to protect themselves and their loved ones.

"I am often approached by future mothers in conflict between the consumption of raw and commercial milk," said Dr. Maha Mosaad, Professor of Obstetrics and Gynecology at the Faculty of Medicine, Cairo University. "Mothers, often lacking the basics in health education, usually tend to follow local culture and folklore, which frowns on the consumption of commercial milk, viewing it as processed and therefore harmful."[3] To understand the risks doctors see in raw, loose (unpackaged) milk, it is necessary to understand the process it undergoes to reach customers.

To maximize revenue and cut costs, most small-scale dairy farmers milk their own cows and then set out in small vehicles to deliver the milk fresh to homes. Most of these small-scale farmers are severely impoverished and cannot afford portable refrigeration to preserve the milk. To maintain

the relative sterility of milk being transported for hours through hot, dusty and crowded streets, they commonly add adulterating substances, including formaldehyde and hydrogen peroxide, which can cause vomiting, diarrhea and other, more severe illnesses. The amount of formaldehyde, a carcinogen, is usually uncalibrated because it is added by the dairy farmer himself, unsupervised by any authorities.[4] This method of delivery mostly services under-privileged slums. In an interview for Al-Ahram Weekly in 2009, the chairman of the Egyptian Chamber of Food Industries, Tarek Tawfik, stated that this informal milk sector contributes up to 80% of the total milk industry (up to four billion liters per year), which shows how deeply entrenched raw milk consumption is in society.[5] Additionally, cost is often the most important factor in the selection of milk in a country in which nearly half of the population earns less than one American dollar a day. The price of raw milk is often less than that of the most affordable brands of commercial, processed milk. Most families simply cannot afford the small price difference; others do not trust the more obscure, but cheaper, commercial brands. This distrust is warranted—the cheaper brands sell the same milk that local farmers would otherwise sell door-to-door, but processed and packaged it in unsupervised factories with questionable sanitation. Hassan Mansour of the Egyptian Food Safety Authority stated in an interview in *Al-Ahram Weekly*, "These marginal producers exist all over the country and work in a way that is difficult to supervise."[5] Raw milk is thus difficult to monitor and often dangerous to consume.

Apart from the cost barrier, commercial milk, while generally available to the same range of consumers (the most impoverished usually do not have access to any milk at all), is culturally frowned upon. Some refuse to buy it on principle—many traditional communities and families look down on a housewife who prefers to buy ready-to-consume goods—while others prefer the "natural" product. A common complaint is that water has been used to dilute milk. This complaint usually arises from a misunderstanding by housewives. Fresh, full-cream, whole-fluid milk is approximately 87.9% water.[6] Housewives who buy fresh milk from wandering milkmen keep it boiling for a few minutes because they cannot effectively pasteurize it, in an attempt to sterilize it. Sometimes it is kept boiling for longer durations than are necessary because they do not follow formal guidelines for this process. As a result, the water content drops and the milk becomes more concentrated, tasting thicker and creamier than commercially-sold milk, which is sterilized according to stricter guidelines and maintains its full water content. Consumers often assume that even the most highly-regulated brands supply milk that is diluted with water. However, commercial milk producers pasteurize and sterilize their product, and constant monitoring by the authorities ensures that major-brand commercial milk is safe (one of the biggest brands boasts six certificates of quality and safety).[7] Thus, contamination incidents are very uncommon.

Most urban consumers are aware of the aforementioned facts, but their distaste for commercial milk is often the result of a social stigma: an unreasonable mistrust of processing and an unshakeable reliance on the "wisdom" of the older generations. Some argue that older generations lived their whole lives without commercial milk, so it follows that raw milk cannot be dangerous. Indeed, even in developed countries, raw milk has its advocates. Small-time dairy farmers and local groups often market raw milk as being healthier and less industrialized. Advocates of raw milk cite a list of arguments, from the mistreatment of cows in commercial dairy farms to the more "natural" methods of nutrition and care provided by small-time dairy farmers. Some advocacy websites, such as thedailygreen.com, naturalnews.com and realmilk.com, insist that pasteurization eliminates probiotic nutrients present in raw milk.[8, 9, 10] Other proponents of raw milk go further by implying that pasteurization was only necessary in past times, when veterinary care and overall hygiene were deficient. Several countries have their own guidelines for the sale of raw milk. Some countries such as Germany, allow the purchase of raw milk only directly from government-certified farms, or with a production date clearly printed.[11] Other countries have banned the sale of raw milk altogether; it has been illegal in Canada since 1991.[12]

In a developing country such as Egypt, the misunderstanding of the health benefits of raw vs. pasteurized milk can have a devastating effect on the growth and nutrition of its undernourished population. Up to 29% of children in urban Egypt under five years old are stunted, and lack of milk in the diets (since pasteurized milk is too expensive and cheap raw milk is unsafe) is partially to blame.[13] Doctors and public health experts try to combat chronic malnutrition and to reduce these figures by staying up-to-date on the latest guidelines in maternal and child nutrition, including supplementation with milk. Despite being somewhat divided on the matter, scientific literature sources often agree that despite any potential benefits raw milk may hold, the benefits are outweighed by the greater dangers stemming from the lack of sterilization. The website for the Center for Disease Control and Prevention states that drinking raw milk can harm consumers as it is often contaminated with Brucella, Listeria, Campylobacter, Salmonella, Shigella, Escherichia coli and Mycobacterium tuberculosis. According to the Center for Disease Control (CDC), 148 outbreaks of food borne illnesses due to the consumption of raw milk were reported to the CDC from 1998 to 2011, causing 2,384 illnesses, 284 hospitalizations and two deaths.[14] The CDC does not comment on the likelihood of cases being underreported, although one cannot always prove the source of an outbreak was indeed raw milk. Furthermore, the CDC emphasizes that raw milk is unsafe, even if it is organic. This statement applies even if the farmer uses grass-fed cows or goats to produce milk and performs laboratory tests for bacteria. The CDC also denies claims that pasteurization reduces the nutritional benefits of milk.[15] The CDC, supported by several research papers, states that it is not true that beneficial enzymes (xanthine oxidase and lactoperoxidase, along with other non-enzyme molecules, such as lactoferrin) are inactivated during the process.[16] A quantitative risk study performed in northern Italy in 2012 suggeststhat the risk of illness associated with raw milk cannot be ignored and that simple measures, such as boiling, can minimize the risk of verocytotoxin-producing Escherichia coli and Campylobacter jejuni.[17] Other studies stress the danger of even low colony counts of Shiga toxin-producing Escherichia coli in raw milk cheese.[18] These results are consistent with older studies, which prescribe milk pasteurization as a means of eliminating possible colonies of Campylobacter jejuni.[20]

In a developing country such as Egypt, the misunderstanding of the health benefits of raw vs. cooked milk can have a devastating effect on the growth and nutrition of its undernourished population.

But some of these pathogens pale against a larger threat—bovine tuberculosis. Bovine tuberculosis is the ingestible form of tuberculosis, a contagious chronic bacterial disease that usually affects the lung but, if ingested, can affect the tonsils and intestines and spread to other organs in individuals with low immunity, such as children. Tuberculosis, including the bovine variety, is very difficult to diagnose clinically early on, but in

the advanced stages it may cause fever, night sweats and weight loss, as well as abdominal pain and diarrhea.[21] Notoriously prevalent in underserviced communities, it constitutes a major source of non-pulmonary tuberculosis in Egypt. A 2009 study using combined Single Intradermal Tuberculin Test and ELISA revealed that 30% of dairy cattle and 40% of farm workers are infected with bovine tuberculosis, which suggests that the presence of M. bovis in milk represents a major source of infection for humans.[22] Other factors that come into play when examining the risk of infection from raw milk consumption are climate, preservation and the local prevalence of food-borne disease. In Egypt, these factors exacerbate the risk of tuberculosis. This debilitating disease leaves individuals ineffective and markedly affects the growth and future productivity of children, thus burdening the community. It is also worth mentioning that gastrointestinal TB may require treatment with up to four drugs daily for 12 months.[23] One of these drugs, rifampicin, can cost anywhere from 70 USD to 160 USD per 100 pills, depending on the manufacturer. Tarek Tawfik, chairman of the Egyptian Chamber of Food Industries, states in an interview that the Egyptian government "has been dedicating 10% of its annual budget allocated for health to the treatment of diseases caused by 'loose' milk."[5] All in all, Egypt and many similar countries cannot afford the disease burden of bovine tuberculosis, and preventing the consumption of risky loose milk might be the most efficient solution.

Improving the standards of education and ensuring that health providers are well equipped to dispel cultural myths is key to helping Egypt overcome the health-related issues related to raw milk consumption. With better education comes greater income, and only with an understanding of proper personal hygiene and milk sanitation practices can general nutrition be improved. Word of mouth helped create the local cultures and myths about milk, and perhaps these myths can be dispelled through peer education and cooperation with local figures of social authority in the smaller towns and villages. Thus, healthy practices can spread into the collective subconscious of the whole society. In addition, increasing the production of pasteurized milk and agricultural products in general will help lower milk and food prices, benefiting millions, especially infants, children and the elderly. Egyptians live mostly in the Nile basin and its delta, and therefore occupy only 4% of their land.[24] Perhaps the expansion and cultivation of the remaining desert areas can help improve agricultural outcomes. Given enough time and hard work, Egypt is capable of overcoming its issues through managing ignorance, unemployment and poverty, as well as trying to directly eradicate the disease that is the result.

It is necessary for the risks of raw milk consumption by vulnerable populations in Egypt to be reviewed and reassessed. Modern evidence suggests that the biological risks of contamination outweigh raw milk's potential benefits over pasteurized milk, but are scientific papers enough to find a solution to a conflict that involves health, poverty, education and deeply rooted cultural beliefs? Finding a solution to the dilemma may be difficult in a country stricken by poverty, but it is definitely not impossible. While there may be no simple or direct answer to the problem, combined efforts can save time and accelerate the progress of ongoing projects. In 2009, the Egyptian Ministry of Health launched a three-year milk-drinking campaign to promote the practice and ensure product safety.[5] Perhaps with increased awareness of the issue, more sponsors and advocates can be alerted to the cause, and with their help, as well as that of medical practitioners and medical students, this matter can be brought into the public eye. If the raw milk situation can be contained and improved in Egypt, home to the oldest medical schools and some of the best public health service networks in the Middle East and North Africa, then perhaps the same solution can be implemented to help improve the lives of people in its neighboring countries with similar demographic distributions and/or cultural backgrounds. "This is an issue that has been rarely addressed in formal scientific settings," said Professor Mosaad, "but for the families affected, a small effort can mean a world of change."[3]

References

1. The World Bank. (2013). Egypt, Arab Repub. Retrieved 2013, from the World Bank:from http://data.worldbank.org/country/egypt-arab-republic
2. The World Bank. (2012). World Bank Indicators: Rural Populations (% of total population). Retrieved 2013, from the World Bank:http://data.worldbank.org/indicator/SP.RUR.TOTL.ZS
3. El-Kharbotly, I. Personal communication, January 15, 2013.
4. National Library of Medicine. (2013, February 19). Tox Town. Retrieved 2013, from National Library of Medicine: http://toxtown.nlm.nih.gov/text_version/chemicals.php?id=14
5. Abdel-Moneim, A. (2009, June 18-24). The Milky Way. Al-Ahram Weekly.
6. National Nutrient Database. (n.d.). Nutrient data for 01230, Milk, buttermilk, fluid, whole. USDA - National Agricultural Library.
7. Juhayna. (n.d.). Certificates. Retrieved 2013, from Juhayna: http://www.juhayna.com/en/farm-to-consumer/plants/id/226/certificates
8. Dolan, D. (2008, June18). The Many Benefits of Drinking Raw Milk. Retrieved 2013, from The Daily Green: http://www.thedailygreen.com/living-green/blogs/organic-parenting/raw-milk-55061801
9. Hartley, J. (2008, April 23). The Amazing Health Benefits of Raw Milk. Retrieved 2013, from Natural News: http://www.naturalnews.com/023083_milk_raw_benefits.html
10. Irons, R. (2008, June 30). Pasteurization Does Harm Real Milk. Retrieved 2013, from A Campaign for Real Milk: http://www.realmilk.com/health/pasteurization-does-harm-real-milk/
11. BVDM. (n.d.). Vorzugsmilch = Vorzügliche Milch. Retrieved January 2013, from Bundesverbrand der Vorzugmilcherzeuger und Direktvormarkter von Milch und Milchprodukten: http://www.milch-und-mehr.de/de/11758-Vorzugsmilch
12. Health Canada. (2005, April 22). Statement from Health Canada About Drinking Raw Milk. Retrieved 1 2013, from Health Canada: http://www.hc-sc.gc.ca/fn-an/securit/facts-faits/rawmilk-laitcru-eng.php
13. UNICEF. (2012). Egypt Nutrition Landscape Analysis Report. UNICEF.
14. Centers for Disease Control and Prevention. (2013, February 28). Raw Milk Questions and Answers. Retrieved 2013, from Centers for Disease Control and Prevention: http://www.cdc.gov/foodsafety/rawmilk/raw-milk-questions-and-answers.html#related-outbreaks
15. Centers for Disease Control and Prevention. (n.d.). Food Safety: Raw Milk Questions and Answers. Retrieved January 28, 2013, from www.cdc.gov/foodsafety/rawmilk/raw-milk-questions-and-answers.html
16. Sheehan, J. (2005). On The Safety of Raw Milk (with a word about pasteurization). Retrieved 2013, from U.S. Food and Drug Administration: www.fda.gov/downloads/food/foodborneillness-contaminants/UCM166067.ppt
17. Glacometti, F. ; Serraino, A. ; Bonilauri, P. ; Ostanello, F. ; Finazzi, G. ; Losio, M. , et al. (2012). Quantitative Risk assessment of verocytotoxin-producing Escherichia coli O157 and Campylobacter jejuni related to consumption of raw milk in a province in Northern Italy. J Food Prot., 2031-8.
18. Peng, S.; Hoffmann, W.; Bockelmann, W.; Hummerjohann, J.; Stephan, R.; & Hammer, P. (2013). Fate of Shiga toxin-producing Esherichia coli during production and ripening of semihard raw milk cheese. J Dairy Sci., 815-23.
19. Doyle, M. P.; & Roman, D. J. (1982). Prevalence and survival of Campylobacter jejuni in unpasteurised milk. Appl Environ Microbiol., 1154-1158.
20. Xiong, J. (2009). Survival of Animal-derived Campylobacter Strains in Raw and Pasteurized Milk, and the Roles of Capsule in Campylobacter Survival in vitro, and in Chick Colonization (Doctoral dissertation). North Carolina State University.
21. CDC. (2011). Mycobacterium bovis (Bovine Tuberculosis) in Humans.
22. Hassanein, N. A.; Hassanein, M. A.; Soliman, Y. A.; Ghazy, A. A.; & Ghazyi, Y. A. (2009). Bovine tuberculosis in a dairy cattle farm as a threat to public health. African Journal of Microbiology Research.
23. NHS. (2012, November 30). Tuberculosis (TB) - Treatment. Retrieved 2013, from NHS Choices: http://www.nhs.uk/Conditions/Tuberculosis/Pages/Treatment.aspx
24. Egyptian State Information Service. (n.d.). Land and People: Egypt Topography. Retrieved March 2013, from Egyptian State Information Service: http://www.sis.gov.eg/En/Story.aspx?sid=4

The Burden of Hepatitis C in the Injection Drug User Population

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Introduction

Hepatitis C virus (HCV) is estimated to affect about 130 million people worldwide, but determining the actual incidence of HCV infection is complicated by the asymptomatic nature of the disease. Asymptomatic individuals do not physically manifest the disease but still have the potential to transmit the disease to others, and chronically infected persons face the risk of developing advanced liver disease, cirrhosis and hepatocellular carcinoma.[1]

As HCV is most efficiently transmitted through large or repeated percutaneous exposures to blood, transfusions represented the main method of transmission before the virus was identified in 1989 and improved screening techniques were implemented in 1990.[1,2] Transfusion-associated transmission of HCV has essentially been eliminated in most of the developed world, due to risk reduction measures such as screening blood donations and potential donors.[3] Transmission via injection drug use is now the predominant mode of transmission in these countries, accounting for 60-75% of infections.[2]

This paper explores the reasons for the prevalence of Hepatitis C in the injection drug user (IDU) population. As IDUs represent a socially marginalized sector of the population, we must consider how stigma interacts with historical, socioeconomic, cultural and institutional forces to contribute to the current epidemiology. Syringe-sharing is a known method of transmission,[4] and therefore efforts to reduce the incidence of HCV infection in the IDU population have included health promotion campaigns and programs that provide sterile drug injection equipment.[5,6] However, there is limited evidence to support the effectiveness of needle and syringe programs (NSPs) in preventing HCV transmission. Lack of evidence in support of these programs does not necessarily mean that NSPs are ineffective. Also, observational studies are limited by their susceptibility to bias because NSP attenders, as a self-selecting group, may engage in other behaviors that lower their risk of becoming infected, as compared to non-attenders. Furthermore, it is ethically problematic to conduct randomized trials, because a control group would not be able to benefit from an intervention that has face validity.[7] Still, it is important to consider how stigma might impede the ability of IDUs to access services like NSPs. Furthermore, antiviral therapy for HCV exists, but treatment has historically been offered only in a limited manner to IDUs.[8] Ultimately, a socio-psychological analysis conducted through the framework of stigma will inform both treatment and prevention efforts to address the prevalence of HCV in developed countries.

The Framework of Stigma

Drawing upon research in both psychology and sociology, Link and Phelan define stigma as "exist[ing] when elements of labeling, stereotyping, separation, status loss, and discrimination occur together in a power situation that allows them." [9] Their definition captures how any sort of difference, once imbued with social value, can be transformed into a label that is accompanied by concrete forms of inequality.

Labeling arises when certain human differences—for example, race or sexual preferences—are deemed to carry social significance, as though they provide means to gain insight into the nature of individuals with such characteristics. The next step in the construction of stigma is negative stereotyping, through which demarcated human differences are linked with a set of undesirable characteristics. The label loses its innocuous nature; it becomes a tool to devalue the labeled individuals and leads to social discrimination.[9]

According to Morone (1997) and Devine et al. (1999), these value-laden labels subsequently promote the separation of an "us" from a "them."[9] This drive for separation can be better understood as a mechanism to protect the self, "a highly pragmatic, even tactical response to perceived threats, real dangers, and fear of the unknown."[10] But the process of protecting "us" consequently excludes "them," so that those who are devalued experience status loss and discrimination. This exclusion is the point where social stigma translates into concrete forms of inequality. Link and Phelan observed that stigmatized groups often have disadvantaged socioeconomic profiles, such as low income, poor psychological well-being and unstable housing status.[9] These social and economic factors may make disadvantaged populations more likely to engage in behavior that is stigmatized,[11] thus reinforcing the stereotype and augmenting the inequality that these populations already face.

Thus, both the origin and self-reinforcing nature of stigma serve as a critical framework to first understand how IDUs are marginalized and then identify the complex forces that perpetuate the prevalence of Hepatitis C in this population. This same foundation of understanding may also provide insight into developing effective interventions to address such prevalence.

Historical Underpinnings

The marginalization of IDUs can be traced back to the policy of drug prohibition. In the United States, one of the first federal laws against opium smoking was enacted in 1887,[12] and stringent drug prohibition policy continues today.[13] MacCoun and Reuter (2001) find such policy grounded in moralist perspectives, guided both by legal moralism and legal paternalism. The former proposes that drug use is intrinsically immoral and therefore should be banned. The latter seeks to prevent the harm that drug users can inflict on themselves and their families.[14]

These moralist arguments are evident in historical efforts to establish the global prohibition of common drugs, such as opiates, cannabis, stimulants and psychedelics. The preamble of the United Nation's Single Convention on Narcotic Drugs of 1961 clearly outlines the agendas of the parties involved: "*Concerned* [emphasis in original] with the health and welfare of mankind… *Recognizing* that addiction to narcotic drugs constitutes a serious evil for the individual and is fraught with social and economic danger to mankind, *Conscious* of their duty to prevent and combat this evil."[15] In this statement, the frequent use of "evil" dem-

onstrates the fundamental moral concern surrounding the abuse of narcotic drugs. Furthermore, the document outlines that this evil not only threatens the individual user, but also constitutes a "social and economic danger to mankind," calling on the legal paternalist view for action. As a result, the convention finds international coordination necessary to bring about effective measures. While the convention is beneficial in impelling global cooperation, its moral overtones may alienate IDUs and are liable to be amplified by legislation.

It is therefore important to consider how a continuation of stringent policy of drug prohibition in the United States has contributed to the marginalization of IDUs in this country. The United States' 1967 "Report of the Task Force on Narcotics and Drug Abuse of the President's Commission on Law Enforcement" reflects a moral concern similar to that of the United Nation's Single Convention and communicates the domestic approach to combating drug use:

> We have built our drug control policies around the twin judgments that drug abuse was an evil to be suppressed and that this could most effectively be done by the application of criminal enforcement and penal sanctions… Thus the addict lives in almost perpetual violation of one or several criminal laws.[13]

Again, the reference to "evil" is telling of the justification for the criminalization of drug use. Such criminalization was solidified by President Nixon's declaration of the War on Drugs in 1971, which bolstered the role of legislation in drug control; in the 21st century, the attitude toward drug prohibition remains largely punitive.[13]

Taken together, these responses to drug use, especially in the United States, reflect a moral battle that has become dominated by legal implements. Yet it is worrisome how the process of criminalizing drug use contributes to the stigmatization of drug users. In the context of Link and Phelan's definition of stigma, the label of "drug user" is deemed to carry social significance because it means someone who has committed a moral transgression and may therefore present a danger to society.[9] The moral concerns impelling drug prohibition are certainly valid; however, labeling drug users as criminals may result in discrimination that is counterproductive to efforts that address their drug use and, consequently, risk of HCV infection. This glimpse of drug prohibition policy, as exemplified by contemporary legislation in the United States, elucidates the roots of the marginalization of IDUs, which may ultimately provide insight into the high prevalence of hepatitis C in this population.

Drug prohibition has created a subculture of illicit drug users that is in conflict with mainstream society.

Social Networks of IDUs

Drug prohibition has created a subculture of illicit drug users that is in conflict with mainstream society. The response of IDUs to the hostile environment constructed by their larger society reveals many unintended consequences of drug prohibition, ranging from how IDUs sustain the drug practice that marginalized them in the first place to how they develop networks of survival and support. Link and Phelan note in their definition that ostracized groups are often economically disadvantaged.[9] Thus, there is an economic impetus for IDUs to form social networks in order to pool limited resources or obtain drugs or drug-injecting equipment. The formation of these "convenience networks" is additionally spurred by the difficulty of acquiring drugs, due to the criminalization of drug use.[4] Without stable resources of their own, individuals within these networks may engage in unsafe injecting practices, such as sharing needles. It is also important to consider the power imbalance in these networks. For example, individuals who have fewer resources to share are often left to inject with used equipment, placing them at higher risk for disease.[16]

In line with their disadvantaged socioeconomic profiles, IDUs also rely on each other to fulfill basic needs. Studies have found that IDUs share such commodities as food, shelter and clothing, establishing a pattern of reciprocal assistance.[17] The convenience network, which can first emerge as a source of acquiring drugs and fulfilling other needs, develops into a community that provides social support; sharing drugs and other resources becomes a reaction to the communal struggle that this marginalized population faces daily.

On a fundamental level, these networks satisfy the desire of IDUs for mutual understanding.[18] Therefore, the "convenience network" becomes a "comfort network."[4] Within these "comfort networks," syringe sharing becomes normalized as part of the social experience; network members serve as role models for injection practices, which can be impressed particularly upon younger injection drug users and thus perpetuated through the network.[16] In addition, the IDU subculture may represent the only communal source of resources and relationships for these individuals, who are otherwise excluded from mainstream society.[18] As a result, the desire for empathy through sharing resources, even needles, may trump an interest in safe injecting behavior.

These networks provide insight into why IDUs may engage in unsafe injection practices even when they have access to sterile syringes. Programs that provide sterile injection equipment for IDUs have been central to strategies aimed at reducing the spread of blood-borne viruses.[6] Underlying this harm reduction measure is the philosophy that individual choice represents the sole determinant of IDU behavior.[4] Yet, the economic drive to form IDU networks and the social importance of these networks are examples of influences other than individual choice in controlling injection behavior; these networks represent social constructions that have become impenetrable to the agency of the individual.[19] Therefore, access to sterile syringes in and of itself may not be an entirely effective measure to prevent syringe sharing and the consequent risk of HCV transmission.

The external pressures of mainstream society may further facilitate HCV transmission through IDU networks. The rigorous laws central to the American policy of drug prohibition can increase the movement of individuals within these networks. Different individuals from different groups can then come into contact with each other, thus facilitating the spread of HCV among networks.[18] The spread of HCV may therefore be seen as an unintended consequence of drug prohibition and the subsequent methods of legal enforcement, as IDUs who are marginalized participate in networks that increase their risk of infection.

Cultural Pressures of Larger Society

An additional problem is that IDUs, even as they are embroiled in their own subculture, are still held accountable to the cultural values of mainstream society. In Western culture, the perceptions of individualism, responsibility and health have intertwined to yield several notable consequences. One is that the rational individual is seen as capable of, and therefore responsible for, maintaining his own well-being. However, a less positive corollary is that the individual thus bears the blame for an illness that he or she is supposed to have been able to prevent, such as a sexually transmitted disease.[5] Citizens who do not fulfill their duty of self-care to themselves and, ultimately, to their society face judgment and stigmatization.

Before the early 1980s, IDUs were viewed as incapable of such self-regulation and care; the extremely addictive nature of drugs was thought to trump their intrinsic capacity for rational decision-making. However, this attitude shifted during the HIV/AIDS era, as the rise of neoliberalism promoted the development of harm reduction strategies. IDUs today are expected to engage in the same process

of self-regulation that non-stigmatized citizens do.[20] However, it is important to consider how stigma may hinder IDUs' ability to engage in such processes.

Health promotion campaigns rely on individual IDUs to minimize the risk of disease transmission associated with drug use.[5] Framing the individual IDU as active in HCV prevention is supposed to be empowering, conferring resilience and the possibility of redemption. At the same time, though, IDUs who do contract HCV are seen as having neglected their duty to care for themselves and also now represent a danger to others. This compounded stigma can be seen in the account of one IDU with chronic Hepatitis C (CHC): "Not only are you a druggie and all that this implies, but [it is assumed that because you have CHC] you don't care about other people because you shared needles."[21] The judgment that this individual faces for sharing needles exemplifies the tension between IDU subculture and mainstream society. A certain degree of moral judgment is warranted, if it can effectively discourage IDUs from continuing to engage in risky behavior. Nonetheless, it is important to remember that syringe sharing may be normalized within IDU networks, whether due to limited resources or perhaps to build a sense of community. Because mainstream society is often insensitive to the economic and social motivations underlying the practice of reusing injection equipment, it imposes stigma that may hamper IDUs' attempts to engage in self-determination.

Stigma constitutes a burden of the disease of hepatitis C, as individuals internalize feelings of shame. To avoid further ostracism, IDUs may try to keep their infection a secret and refrain from seeking help, a response that can preclude them from accessing necessary healthcare services for treatment.[2] Moreover, if these IDUs are still involved in unsafe injection behaviors, they can spread HCV to others.

It is important to examine further the conflict between the morals of IDUs and mainstream society.[22] While it is not unreasonable to expect the former to share the individualist values of the latter, it is necessary to heed how stigma can hinder the ability of IDUs to carry out such values. Link and Phelan remind us that stigmatized groups are often socioeconomically disadvantaged.[9] However, expectations of individualism, especially as related to health, assume that IDUs can act appropriately on social and economic capital to reduce the risk of HCV transmission.[20] As contracting HCV is seen as a failure to fulfill expectations of individualism and thus warrants moral judgment, IDUs experience stigma that unnecessarily compounds the stigma they already face as drug users. A later section of this paper will discuss how to develop strategies that move away from placing the responsibility of treatment and discontinued transmission of HCV entirely on the individual IDU.

Institutional Barriers in the Healthcare Setting

Even if IDUs are able to surmount the patient-side barriers to seeking HCV treatment, they soon encounter provider-side barriers in the healthcare setting. These barriers are worrisome because practitioners not only make decisions that directly impact the well-being of patients[23]—which, in the case of HCV-infected patients, involves addressing the biological consequences of the virus on the body—but also have the potential to incorporate caregiving into their relationship with their patients and lessen the stigma that these patients face from other parts of society. [24]

In 1997, the National Institutes of Health (NIH) recommended, in its consensus statement on the management of hepatitis C, that illicit drug users not receive treatment until they have discontinued drug use for at least six months.[25] Likely underlying these treatment guidelines were concerns about poor adherence to treatment, side effects of treatment and HCV reinfection. As HCV treatment entails a rigorous course of antiviral therapy, there may have been doubts that IDUs were able to fulfill this serious commitment. The severe psychological side effects of treatment do present a legitimate concern to patient well-being, especially since drug use is often associated with poor mental health, yet this too often prevents patients from being assessed for their capability to tolerate and benefit from treatment.[8] In addition, successful treatment and clearance of the virus does not confer immunity,[26] and current drug users may easily reacquire HCV. However, it is important to question how much weight was given to economic considerations in the development of these guidelines. While it is important to ensure that funds for healthcare are spent efficiently, the NIH guidelines seemed like a blanket statement dictating drug use as a contraindication to treatment. HCV treatment may indeed be more successful for patients who have discontinued drug use.[27] However, the guidelines did not distinguish between individuals who are unwilling to discontinue drug use and those who are willing but simply do not have the resources (such as access to drug treatment programs) to do so.[8] While such a distinction may be difficult to make, especially in the clinical setting, these guidelines may have precluded a dialogue between physician and patient about how to discontinue drug use.

The 1997 NIH treatment guidelines were ultimately problematic because IDUs constitute the majority of current and new HCV infections in the United States. As the various concerns about initiating HCV treatment for IDUs were codified into guidelines, such policy essentially turned a blind eye to the sector of the population that faces the highest burden of this disease.[8] Bureaucratic policies are certainly necessary in a healthcare system, from guaranteeing a baseline quality of service to ensuring that funds are spent most efficiently. However, the rigid HCV treatment guidelines did not sufficiently acknowledge the barriers that drug users face when seeking to discontinue drug use. As a result, the guidelines created another barrier to accessing the resources that could reduce the prevalence of hepatitis C among IDUs. Exemplifying the theory of social suffering, [28] the healthcare bureaucracies designed to alleviate suffering instead perpetuated the prevalence of hepatitis C in the population most vulnerable to the disease. Fortunately, the NIH guidelines were revised in 2002, as will later be discussed in more detail. Nevertheless, it is important to keep in mind how vestiges of the initial guidelines may persist in how physicians practice medicine with drug-using patients.

Stigma impinges on the trust that is integral to the patient-physician relationship and detracts from the basic requisite of caregiving as a moral experience.[24] This cycle of mistrust and lack of cooperation may find its origin in the interactions between patients and physicians, and if either party has negative experiences with the other, it then expects similar experiences in future interactions.[23] For example, a physician may have had a few patients who are known to be IDUs with Hepatitis C. If these patients miss appointments or deviate from prescribed treatment regimes, the physician may be averse to providing similar resources to other HCV-infected IDU patients. Such patients who encounter a lack of support upon interacting with the healthcare system may then be reluctant to seek help in this environment. Suspicion and frustration thus become typified between individual actors.[19] Once codified into guidelines, such as the 1997 NIH treatment guidelines, mistrust translates into discrimination on the institutional level. As physicians deliver these treatment guidelines, we can see how the healthcare setting itself contributes to the epidemiology of HCV infection observed in the IDU population.

Suggested Solutions

Through an analysis of the social network of IDUs, the cultural pressures of larger society and the institutional barriers in healthcare settings, we can see that stigma not only affects the experience of IDUs who are infected with HCV but also perpetuates the prevalence of hepatitis C in this marginalized population.

To alleviate the suffering of the IDUs currently infected with HCV, policymakers must take the lead by countering the institutional constraints that prevent HCV patients from receiving treatment and care. While healthcare practitioners are the ones who interact directly with patients, they are limited in their ability to combat the stigma that has been codified into treatment guidelines.[23] Past treatment guidelines in the United States represent an unfortunate consequence of the "iron cage" of rationality, [29] whereby bureaucratization and rationalization take too much precedence over individual decision-making.

Encouragingly, research on rates of adherence, side effects and risk of reinfection in the IDU population has begun to guide policy change. The 1997 NIH guidelines that decree that cessation of drug use should precede treatment of HCV infection reflected an arti-

ficial boundary on the role of medicine, a "practice of sanitizing [sic] people in order that they become acceptable patients for specialist physicians."[30] These divisions promote mistrust in the patient-physician relationship that may be found at the root of those blanket guidelines. However, in 2002, the NIH decided that IDUs be offered treatment on a case-by-case basis and that "active injection drug use in and of itself may not be used to exclude such patients from antiviral therapy."[31] Such changes not only mitigate the suffering of those currently infected with HCV, but also expand the perception of the patient from someone who seeks purely medical treatment to someone who also requires social support.

Such comprehensive support can be found in models of treatment that simultaneously address both HCV and drug use. These models can be additionally effective by recognizing how poor mental health and other infectious diseases may be comorbid with HCV in the experience of an IDU. In the United States, there are already several such initiatives underway. For example, the Substance Abuse and Mental Health Services Administration is developing curricula on how to combine drug treatment and hepatitis management strategies.[32] Ultimately, providing patients with a multidisciplinary team of healthcare and social support can best ameliorate the experience of HCV for IDUs and lead them to end drug use.[33] Here, individual practitioners can take the initiative to promote trust in their relationship with their patients by setting a common goal of improved health. For example, physicians can clearly vocalize a commitment to giving their patients the best treatment possible, as long as patients reciprocate with a desire to discontinue drug use.

To provide long-term solutions to the problem of hepatitis C in the IDU population, we must look further upstream and consider how the marginalization of IDUs places them at greater risk of HCV infection. The earlier discussion of IDU social networks, which first develop out of "convenience" and then evolve into sources of emotional support and communal understanding, elucidates the limited nature of individual control over injection behavior. Rather than subscribing to the prevailing mentality of penal action and trying to dissolve these networks, public health officials may instead consider how these networks can help disseminate information about safe injection behavior.[16] As social norms within a network play a key role in health behaviors, individuals within it can be trained as peer health educators to change the norms of injection behavior. For example, they might encourage their peers to seek access to sterile syringes through needle and syringe programs. By helping each other to gain access to more resources, they can connect through a common goal of improving health and, perhaps in the future, ending drug use.

Stigma is interwoven with the socio-economic, cultural and institutional forces that conspire to aggravate the suffering of HCV-infected IDUs and perpetuate the prevalence of the disease in this population. However, it is promising that an awareness of this stigma can inform healthcare policy change and public health initiatives that leverage the social networks of IDUs, to ultimately alleviate suffering and address the current epidemiology.

Conclusion

In developed countries, the prevalence of hepatitis C in the IDU population constitutes not only a high burden of disease but also an issue of social justice. A biosocial analysis through the framework of stigma affords an understanding of how various large-scale forces act together to contribute to the observed epidemiology. With such an understanding, developed countries would be poised to design and implement effective measures to ameliorate the suffering of IDUs infected with HCV and fight against the persistence of hepatitis C in this marginalized population.

References

1. Alter, M. J. (2007). Epidemiology of hepatitis C virus infection. World Journal of Gastroenterology, 13(17), 2436-2441.
2. Butt, G. (2008). Stigma in the context of hepatitis C: Concept analysis. Journal of Advanced Nursing, 62(6), 712-724.
3. Shepard, C.W., Finelli, L., & Alter, M.J. (2005). Global epidemiology of hepatitis C virus infection. The Lancet Infectious Diseases, 5(9), 558-567.
4. Shaw, S. Y., Shah, L., Jolly, A. M., & Wylie, J. L. (2007). Determinants of injection drug user (IDU) syringe sharing: The relationship between availability of syringes and risk network member characteristics in Winnipeg, Canada. Addiction, 102(10), 1626-1635.
5. Fraser, S. (2004). 'It's your life!': Injecting drug users, individual responsibility and hepatitis C prevention. Health, 8(2), 199-221.
6. Morissette, C., et al. (2007). Minimal uptake of sterile drug preparation equipment in a predominantly cocaine injecting population: Implications for HIV and hepatitis C prevention. The International Journal on Drug Policy, 18(3), 204-212.
7. Palmateer, N., et al. (2010). Evidence for the effectiveness of sterile injecting equipment provision in preventing hepatitis C and human immunodeficiency virus transmission among injecting drug users: a review of reviews. Addiction, 105(5), 844-859.
8. Edlin, B. et al. (2001). Is it justifiable to withhold treatment for hepatitis C from illicit-drug users? The New England Journal of Medicine, 345(3), 211-215.
9. Link, B.G. & Phelan, J.C. (2001). Conceptualizing stigma. Annual Review of Sociology, 27, 363-385.
10. Yang, L. H., Kleinman, A., Link, B. G., Phelan, J. C., Lee, S., & Good, B. (2007). Culture and stigma: Adding moral experience to stigma theory. Social Science & Medicine, 64(7), 1524-1535.
11. Farmer, P. (2010). On suffering and structural violence: Social and economic rights in the global era. In Pathologies of power: Health, human rights, and the new war on the poor (pp. 29-50). Berkeley: University of California Press.
12. "How did we get here?: History has a habit of repeating itself," The Economist, July 26, 2001. Retrieved from http://www.economist.com/node/706583
13. Levine, H. G., & Reinarman, C. (2010). The trouble with drink and drugs: Why prohibition and criminalization matter. Addiction, 105(5), 806-807.
14. Solano, P. L. (2002). Reconsideration of contemporary U.S. drug policy. The Journal of Mental Health Policy and Economics, 5(4), 175-183.
15. United Nations Office on Drugs and Crime. (1961). Single Convention on Narcotic Drugs, 1961. Retrieved from http://www.unodc.org/unodc/en/treaties/single-convention.html
16. De, P., Cox, J., Boivin, J. F., Platt, R. W., & Jolly, A. M. (2007). The importance of social networks in their association to drug equipment sharing among injection drug users: A review. Addiction, 102(11), 1730-1739.
17. Wieder, D. L. (1974). Telling the code. In R. Turner (Ed.), Ethnomethodology: Selected readings (pp. 144-172). Middlesex, England: Penguin Education.
18. Grund, J. P., et al. (1996). Syringe-mediated drug sharing among injecting drug users: Patterns, social context and implications for transmission of blood-borne pathogens. Social Science & Medicine, 42(5), 691-703.
19. Berger, P.L. & Luckmann, T. (1967). Origins of institutionalization. In The social construction of reality: A treatise in the sociology of knowledge (pp. 52-67). Garden City: Anchor Books.
20. Moore, D., & Fraser, S. (2006). Putting at risk what we know: Reflecting on the drug-using subject in harm reduction and its political implications. Social Science & Medicine, 62(12), 3035-3047.
21. Butt, G., Paterson, B. L., & McGuinness, L. K. (2008). Living with the stigma of hepatitis C. Western Journal of Nursing Research, 30(2), 204-21; discussion 222-33.
22. Kleinman, A. (2010). Four social theories for global health. Lancet, 375(9725), 1518-1519.
23. Paterson, B. L., Backmund, M., Hirsch, G., & Yim, C. (2007). The depiction of stigmatization in research about hepatitis C. The International Journal on Drug Policy, 18(5), 364-373.
24. Kleinman, A. (2012). Caregiving as moral experience. Lancet, 380(9853), 1550-1551.
25. National institutes of health consensus development conference panel statement: Management of hepatitis C. (1997). Hepatology, 26(3 Suppl 1), 2S-10S.
26. Davis, G. L., & Rodrigue, J. R. (2001). Treatment of chronic hepatitis C in active drug users. The New England Journal of Medicine, 345(3), 215-217.
27. Bangsberg, D.R. & Moss, A. (1999). When should we delay highly active antiretroviral therapy? Journal of General Internal Medicine, 14(7), 446-448.
28. Kleinman, A., Das, V., & Lock, M. (1997). Social Suffering. Berkeley: University of California Press.
29. Weber, M. (1946). On bureaucracy. In H.H. Gerth & C.W. Mills (Eds.), From Max Weber: Essays in sociology (pp. 196-024, 224-244). New York: Oxford University Press.
30. Hopwood, M., & Treloar, C. (2007). The drugs that dare not speak their name: Injecting and other illicit drug use during treatment for hepatitis C infection. The International Journal on Drug Policy, 18(5), 374-380.
31. National Institutes of Health. (2002). NIH consensus statement on management of hepatitis C: 2002. NIH Consensus and State-of-the-Science Statements, 19(3), 1-46. Retrieved from http://consensus.nih.gov/2002/2002hepatitisC200116main.htm
32. Ward, J.W., Valdiserri, R.O., & Koh, H.K. (2012). Hepatitis C virus prevention, care, and treatment: from policy to practice. Clinical Infectious Diseases, 55(S1), S58-63.
33. Edlin, B. R., et al. (2005). Overcoming barriers to prevention, care, and treatment of hepatitis C in illicit drug users. Clinical Infectious Diseases, 40 Suppl 5, S276-85.
34. Fraser, S. (2010). Hepatitis C and the limits of medicalisation and biological citizenship for people who inject drugs. Addiction Research and Theory, 18(5), 544-556.

The Argument for Global Tobacco Control

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Introduction

The prevention and control of non-communicable diseases (NCD) have been largely neglected, although these conditions have become the primary cause of global mortality. In fact, NCDs accounted for approximately 63% of worldwide deaths in 2008.[2] Currently, NCD mortality exceeds the cumulative mortality attributed to communicable, maternal, perinatal and nutritional disorders in every region but Africa.[3] A leading risk factor for NCDs is tobacco usage. Tobacco consumption causes five to six million deaths annually.[3] Approximately 71% of lung cancer deaths, 42% of chronic respiratory disease cases and 10% of cardiovascular disease cases are attributed to smoking.[3] Projections of current trends predict that by 2030, this number will reach nearly 10 million and up to 70% of smoking-related deaths will occur in low and middle-income countries (LMICs).[4] By 2050, smoking will have caused an estimated total of 450 million deaths.[4] Although these statistics are certainly alarming, they have not garnered adequate attention from international donors. In fact, in 2007, only 3% of all development assistance for health targeted NCDs.[5]

This paper presents an ethical argument in favor of greater involvement of the international community, particularly the governments of high-income countries (HICs), in global tobacco control efforts. Section I provides the theoretical framework by which smoking may be defined as a market failure. Section II explores the applicability of John Stuart Mill's harm principle to the government's involvement in tobacco control efforts. Section III focuses on the social and economic institutions that have increased global tobacco consumption. Specifically, the policies pursued by HICs have dramatically increased cigarette usage and its associated afflictions among vulnerable populations in LMICs. This rise in tobacco usage in LMICs may be termed a negative externality of domestic and international policies. Therefore, according to the theoretical framework outlined in Section I, HICs and LMICs share an ethical responsibility to recognize the tobacco epidemic as a global health priority and to help reverse the increases in tobacco consumption worldwide. The final sections of this paper elaborate upon corresponding policy recommendations.

Section I: Theoretical Framework

Currently, the international community does not use consistent ethical guidelines for prioritizing specific health conditions on the global health agenda. Thomas Pogge, Director of the Global Justice Program at Yale University, attempts to provide such a framework. Pogge recognizes that governments and the international community have limited resources devoted to public services; therefore, he provides criteria whereby these governments may judge and rank their ethical responsibility to address particular public health concerns. Pogge posits that a government's moral responsibility to mitigate health disparities both within and among countries is based on the relationship between social institutions and health outcomes. He states that economic institutions, namely "the basic rules governing ownership, production, use, and exchange of natural resources, goods, and services," are the principal social institutions that affect global health.[6] A cursory understanding of Pogge's framework and its scenarios suggests that cigarette usage falls in "scenario 6", which states that social institutions "avoidably [leave] unmitigated the effects of a self-caused defect."[6] Pogge states that because social institutions do not directly cause the defect in this scenario, the government is less responsible for addressing the needs of the affected populations.[6] In other words, because tobacco consumption is perceived as an individual choice, the government does not have a moral responsibility to mitigate resulting health conditions such as tobacco addiction (which may itself be considered a disease) and NCDs such as cancer.

However, the conceptualization of the global tobacco epidemic as a market failure will show that "scenario 3" is a more appropriate characterization. In "scenario 3," "social institutions foreseeably and avoidably engender" a poor health outcome and thus ethically require international interference.[6] Unlike "scenario 6," "scenario 3" shifts the responsibility from the individual to the institutions. In "scenario 6," institutions do not mitigate self-caused defects; in "scenario 3," institutions, for which more optimal alternatives exist, actually *cause* the health outcome. In this context, the poor health outcomes are the scientifically demonstrated consequences of tobacco usage. Specifically, epidemiological studies have associated tobacco usage with increased risk of mortality associated with tuberculosis, lower respiratory infections, cardiovascular diseases and cancer, among other diseases.[7] The negative health effects of tobacco are well-established, therefore social institutions that facilitate the growth of the tobacco industry "foreseeably and avoidably engender" a poor health outcome. The "scenario 3" classification of the global tobacco epidemic serves as the basic ethical framework for this paper.

The concept of market failure adds another helpful dimension to this ethical framework. A market failure is a scenario in which the allocation of goods and services is inefficient. In this paper, the specific type of inefficiency considered is allocative inefficiency, in which inputs or outputs are not used in a way that no further gains in output or welfare are possible. Market failures may be caused by negative externalities (costs borne by a third party) arising from an economic transaction between consumer and producer, imperfect competition and information asymmetry. The application of each of these economic concepts to the global tobacco market is further clarified in Section III. Market failures are generally used as the justification for governmental regulation of the failed sector; hence, a global market failure may likewise justify intergovernmental regulation. This economic concept may be synthesized with Pogge's guidelines through the following framework: if international economic institutions elicit allocative inefficiency in a particular sector, then those actors who constructed or perpetuated those institutions have an ethical responsibility to intervene in the market.

The global tobacco market meets the criteria defined in the synthesized framework for increasing the prioritization of tobacco-related mortality on the global health agenda. The absence of strong international regulation of the tobacco industry allows the societal harm of tobacco addiction and associated diseases to remain unchanged. This suboptimal outcome of poor public health constitutes allocative inefficiency and thus market failure. International economic institutions largely constructed by HICs facilitated the proliferation of the tobacco market in LMICs and as a result HICs have a moral responsibility to respond to the resulting

health crises abroad.

Section II: A Reconceptualization of the Smoker

The most common arguments regarding tobacco control mechanisms derive from John Stuart Mill's harm principle. Mill asserts that the individual is sovereign "over himself, over his own body and mind," and that everyone should be allowed to engage in their own self-destructive habits.[8] By this logic, the government may not interfere with cigarette smoking, despite the destructive effects of first hand smoke (FHS).

The aptness of the argument regarding the right of the individual is contingent on several assumptions. For example, according to Mill, an individual's rights may only be protected insofar as his actions do not cause harm to others.[8] Yet biological and epidemiological studies have suggested that the toxins found in cigarette smoke are harmful to persons other than the smoker.[9] According to the CDC, since 2000, second hand smoke (SHS) has caused well over 3,000 cancer-related deaths in nonsmokers within the United States per year.[9] Several scientific studies have shown that SHS contains roughly 70 carcinogens.[9] Thus, the probability of developing cancer increases with increasing exposure duration.[9] According to this interpretation of Mill's harm principle, the secondary effects of smoking warrant governmental intervention.

Both of the arguments outlined above are flawed, as they place the entire responsibility of smoking and its negative effects on the smoker himself. Only those who inhale SHS are victims, while smokers are the perpetrators who engage in wrongful practices. As Brandt posits, "in the last years of the twentieth-century, the American smoker has become a pariah in a powerful moral tale of risk and responsibility—the object of scorn and hostility."[10] This one-dimensional perception of the smoker does not place any responsibility on the government because it does not take into consideration the socioeconomic factors that increase the prevalence of smoking among particular communities. As argued below, while outsiders may view the smoker as a pariah and render cigarette smoking entirely a consequence of individual choice, smokers within particular socioeconomic communities may not face such stigma from their peers and may not experience any pressure to *not* smoke. These smokers may be exposed to a slew of stressors that actually encourage the habit. Due to the addictive nature of cigarette smoking, the effects of these determinants are grave.

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These trends may be attributed to the social environments of impoverished populations. As posited by Harwood, Salsberry and Ferketich, socioeconomically disadvantaged populations tend to experience high levels of stress derived from income insecurity, minimal control in the work environment and deprivation of material goods.[11] Cigarettes may serve as a coping mechanism against such depressive factors.[11, 12] Furthermore, as suggested by Peretti-Watel *et al.*, exposure to smokers in the social environment is linked to persistent smoking.[12] If those in a person's social group are perpetual smokers, a person may accept smoking as a norm. These social factors suggest that smoking cigarettes is not entirely an individual's choice, but is, in part, determined by an individual's socioeconomic circumstances. The risk factors among the economically disadvantaged for life-long smoking are exacerbated by their relative inability to battle tobacco addiction. Phelan and Link posit that "the capacity to control disease and death creates disparities; […] when we make gains in our ability to control disease, people with more knowledge, money, power, prestige, and beneficial social connections are better able to harness the benefits of the control we have developed."[13] In the context of tobacco consumption, the more privileged are able to afford smoking cessation treatments due to the relative flexibility of their resources. On the other hand, the economically disadvantaged may be unable or less willing to allocate money to nicotine patches or other treatments due to more immediate expenses. Despite the cumulative costs of cigarettes and the potential economic burden that smoking may pose, addiction may prevent an impoverished individual from pursuing the "rational financial decision" to seek help to stop smoking.[14]

As the negative health effects associated with smoking have become apparent, Western governments have shifted away from blatant support of the tobacco industry towards an emphasis on public health interests. All fifty states within the U.S. have passed cigarette taxes, ranging from $0.07 to $3.46 per pack.[15] In 1999, California declared all public and work places smoke-free and since then, Massachusetts, Nevada and New York have enacted similar legislations.[16] As a result of these types of measures, the smoking rate in adults 18 years or older dropped from 42% in 1965 to 20.5% in 2008.[15] While the implementation of these policies has clearly not eliminated smoking in the U.S. and other Western countries, governmental regulations of the tobacco industry appear to have contributed to the dramatic decline in smoking rates and demand for cigarettes within these countries.

Section III: Cigarette Smoking as a Global Market Failure

Despite the significant decrease in the prevalence of smoking within the U.S., American tobacco companies have remained lucrative, in part due to a substantial increase in global trade. Although cigarette consumption fell by 20% in the U.S. from 1975 to 1994, cigarette production rose by more than 11% overall during this same period as companies expanded their markets to other countries.[17] Companies targeted newly developed or rapidly developing countries, particularly in East and South Asia. The rapid increase of cigarette sales in these regions incited competition among large multinational corporations (MNCs), such as Philip Morris (PM), which aimed to dominate these new markets.[18] As a result, the U.S. witnessed an increase of 18% in cigarette exports in 1988 alone and secured its position as the largest cigarette exporter in the world.[18]

The increase in cigarette exports from Western HICs to LMICs continued throughout the subsequent decade. In 2005, for example, the British American Tobacco (BAT) company reported that it sold 40 billion cigarettes in Equatorial and West Africa.[19] Smokers in Sub-Saharan Africa contributed an estimated $340 million to BAT's net earnings.[19] By 2008, BAT reported that approximately 75% of its sales are concentrated in developing countries.[19] According to Glynn et al., "The data are very clear in indicating that the tobacco epidemic has now expanded to, and become more focused on, the world's low- and middle-income countries (LMIC)."[20]

The power and influence of tobacco companies in these markets are often understated. Stebbins accurately describes the general international attitude toward cigarette smoking in developing countries. He writes:

> A temptation exists to blame governments when health-threatening products are allowed within their borders. However, this view ignores the extent to which extra-national forces influence domestic policies and conditions. Also a temptation exists to blame cigarette smokers themselves for their lethal habit even though billion-dollar promotional schemes draw people into the smoking habit while distracting them from the consequences of consuming a drug whose addictive properties make it difficult to quit.[21]

In other words, LMICs (the third party) bear the uncompensated and direct consequences, or negative externalities, of HICs' economic policies toward the tobacco industry and the international economic institutions that allow tobacco companies to aggressively promote their products. The negative externalities of increased prevalence of smoking and disease burden reduce the welfare of popula-

tions in LMICs and thus constitute allocative inefficiency. Therefore, the global smoking epidemic may be characterized as an international market failure. This conceptualization of global tobacco consumption affirms Stebbin's claim that smokers in LMICs cannot bear the full responsibility for their actions; they simply bear the consequences of a foreseeable and avoidable market failure.[21] The factors that have contributed to the market failure are further explicated below.

The Tobacco Industry as an Oligopoly

Over the past twenty years, the global tobacco industry has come to be dominated by large multinational corporations (MNCs) that are garnering increasing political influence. Privatizations, mergers and acquisitions have concentrated market power in the hands of four main tobacco companies – British American Tobacco (BAT), Philip Morris (PM), Japan Tobacco International (JTI) and the Imperial Tobacco Group (Imperial).[22, 19] In 2008 alone, these four companies accumulated approximately $220 billion in total profits and controlled over half of the world's cigarette market.[19] This consolidation has rendered the tobacco industry an oligopoly rather than a competitive market.

One manner in which these companies have increased their clout is through collusion. Although tobacco firms compete for similar markets, they attempted to cooperate for mutual benefit. As early as 1977, seven tobacco companies formed the International Committee on Smoking Issues (ICOSI), which was eventually replaced by the Tobacco Documentation Center (TDC) and Hallmark Marketing Services (HMS).[23] Through these two partner organizations, tobacco companies have employed tactics to undermine national and international attempts to regulate the industry.[23] For example, the member firms agreed to exclude any mention of the health effects of cigarette smoking in their marketing campaigns and to object to the legislated application of cigarette warning labels.[23] While the membership and standing of the TDC and HMS have dramatically declined since the withdrawal of BAT and PM in the 1990s, these organizations established significant precedence for collusion in the industry. Several smaller associations of tobacco companies were subsequently established to enable similar communication and cooperation among MNCs, as well as national companies and subsidiaries.[23]

As a result of this collusion and consolidation, the few firms that dominate the market hold immense economic and political power. Particularly, tobacco companies wield sufficient influence to threaten and undermine the international community's attempts to regulate the industry, such as through the World Health Organization's (WHO) Framework Convention on Tobacco Control (FCTC).[22] Tobacco companies' success in penetrating new markets abroad may be attributed to aggressive lobbying efforts within the U.S to persuade the U.S. government to support their attempts to enter Asian markets in the late 1980s.[24] Due to the imbalance of power between the U.S. and these countries, the U.S. was able to effectively coerce countries such as Japan, Taiwan and South Korea to abolish tariffs on imported cigarettes through threats such as the use of sanctions.[24] Tobacco corporations thus used their influence with their own governments to establish a foothold worldwide.

Evidently, the political influence associated with the tobacco oligopoly contributed to the current market failure. As a cohesive group with a united agenda, the tobacco companies were able to influence their policy makers and manipulate international economic institutions to favor the opening of tobacco markets abroad. Collusion within the tobacco industry harmed social welfare in LMICs causing a market failure. However, the culpability of international actors and their resultant ethical responsibility to devote resources to tobacco control rests on the question of whether the negative externalities of social institutions either passively allowed or avoidably and foreseeably facilitated the industry's gain of power and influence.

The Externalities of the Legal Framework

The rapid shift in target markets from HICs to LMICs may in part be attributed to HICs' relationship with the tobacco industry. These countries enacted national policies and programs to reduce tobacco consumption within their own borders. Although the negative externalities of these legal actions were grave, they may have potentially been unintended and unforeseen. If the U.S. government, for example, was aware of these externalities when constructing anti-tobacco policies, it could have overlooked the ramifications in LMICs. Yet these same governments directly facilitated the tobacco industry's expansion into developing markets through social institutions, such as international and national trade policies.

Tobacco companies used stipulations of the General Agreement on Tariffs and Trade (GATT) to infiltrate global markets. The GATT, established in 1948, is the primary document governing international trade, and specifies that every country must engage in "non-discrimination between a country's domestically produced goods and foreign goods, and also among all foreign goods."[25] Consistent with this international regime, Section 301 of the 1974 Trade Act in the U.S. grants the President the authority to retaliate or authorize sanctions against countries that engage in discriminatory practices against American goods.[26] The law effectively barred foreign governments from establishing any restrictions against tobacco companies. Even if such restrictions were intended as public health measures, the tobacco companies would portray such actions as favoritism of domestic tobacco companies over foreign MNCs. As a result, the tobacco industry was able to penetrate markets in Japan, South Korea and Taiwan by convincing the U.S. government to threaten sanctions against these countries.[27] The application of the GATT provisions in this manner reveals the U.S. government's intimate relationship with the tobacco industry.

At the same time, the GATT includes provisions that serve social welfare. Namely, the GATT explicitly states that all "measures necessary to protect human, animal, or plant life or health," such as national laws or regulations, are excluded from its trade policies.[25] Restrictions on tobacco, therefore, can potentially be interpreted as a public health measure rather than a discriminatory practice. Yet the World Trade Organization (WTO) and other international actors have far narrowly interpreted this provision for public health.[25] The national government implementing restrictions against tobacco imports must prove that its policies qualify for the GATT public health exception by a) showing that "no less trade restrictive measures that achieve the same public health purpose were available," and b) showing that the "proposed public health measure does not constitute a 'disguised restriction on international trade.'"[25] Unfortunately, for the majority of cases, trade tribunals have ruled against national governments that have allegedly violated trade agreements for goods that harm public health.[25]

Hence, while the GATT technically offers some flexibility by excluding goods that harm health from its trade policies, namely those that mandate non-discrimination, such prioritization of health over trade has not been practically achieved. The cooperation between the U.S. government and tobacco companies is further demonstrated by the government's exportation of more than one billion dollars of tobacco to developing countries from the 1970s to 1980s as part of the Department of Agriculture's Food for Peace Program.[17] This close relationship between the government and tobacco industry was not unique to the U.S. during the 1980s and 1990s and was replicated in many other developed countries, including the United Kingdom.[26] These governments' actions suggest a causal link between the social institutions that govern global health and trade and the market failure of global tobacco consumption—the governments of several developed Western countries allowed tobacco companies to accrue power and affect global tobacco consumption patterns.

Section IV: The Challenges of Smoking Cessation in Developing Countries

These early trade arrangements enabled transnational tobacco companies to infiltrate markets all over the world. Companies including BAT and PM have established a foothold in regions such as Sub-Saharan Africa, North Africa, Western and Eastern Europe, South Asia and East Asia.[3] For the sake of simplifying the discussion of the tobacco industry's actions in developing markets, this section focuses on cigarette smoking in several Asian territories for which information is most readily available. However, the analyses are applicable to the transnational tobacco companies' (TTC) actions elsewhere, such as Sub-Saharan Africa.

One of the primary causes of market failure is information asymmetry. In the case of the tobacco industry, such asymmetry takes the

form of the consumer's inability to access full information on the health effects of cigarettes. Tobacco companies initially entered new markets in developing countries due to the promise of reaching previously untapped and vulnerable populations, including socioeconomically disadvantaged individuals. The relatively weak legal restrictions on the operation of tobacco companies in these countries allowed these firms to gain access to their target markets. For example, although warning labels were required in the U.S., TTCs were able to export cigarettes without such labels to countries with less stringent regulations.[18] Moreover, in the U.S., knowledge regarding the health risks posed by tobacco consumption has been disseminated through comprehensive education programs infused in primary school curricula, public service announcements and the mandatory placement of warning labels on cigarette packages. However, such proactive and consistent education campaigns have not been as consistently or effectively implemented in developing countries.

TTCs were able to further capitalize on the education systems abroad through aggressive advertising campaigns. These companies directed the majority of their advertisements in Asia toward youth. In its corporate documents, PM openly and repeatedly affirmed its prioritization of attracting young smokers.[28] The Taiwan branch of PM was particularly interested in gaining access to the youth market; this cohort constituted two-thirds of all new smokers in the state.[28] The firm introduced scented and sweetened cigarettes in Singapore in order to increase the attractiveness of their products among young consumers.[29] As a result, in the ten years following their entrance in the market, the percentage of youth smokers preferring foreign over domestic cigarette brands increased from less than 5% to 75%.[28] Smoking prevalence among young adults increased by over 16%, most likely because foreign cigarette brands increased the popularity of smoking among youth.[28] Foreign companies introduced aggressive advertising techniques adopted in the west to these new markets.[24] Similar shifts were noticed in many other Asian tobacco markets, such as Taiwan and Thailand.[24]

The tobacco industry's emphasis on the youth market aligns with its prioritization of profits. Companies recognize that this strategy rapidly expands their markets, as non-smoking youth can be easily influenced and will remain long-term consumers due to the addictive nature of nicotine.[24] These individuals often do not recognize the risks of addiction until they are unable to combat it.[30]

Indonesia serves as a prime example of TTCs' manipulation of youth and the information gap. Of all of the countries in the world, Indonesia ranks five in annual cigarette consumption per person.[31] According to the Global Tobacco Youth Survey (GTYS), approximately 12.6% of Indonesian students between 13-15 years of age smoke cigarettes.[31] More than 90% of all students in 2006 stated that they had seen some form of tobacco advertisements.[31] Particularly alarming is the finding that over 60% of the students acknowledged the high usage of cigarettes at home.[31] This exposure not only puts youth at risk of second hand smoke (SHS) related illnesses, but also increases the likelihood that they will begin smoking themselves. As discussed in Section II, the prevalence or level of social acceptability of cigarette usage in an individual's environment may encourage or pressure him to engage in the behavior. The high exposure of students to TTCs reveals the extent to which tobacco companies have managed to pervade daily life in Indonesia.[31] As a result, smokers' habits particularly in such countries as Indonesia cannot be reduced to Mill's conceptualization of an independent, individual choice.

Although the Indonesian government has enacted several legal restrictions on the operations of the tobacco industry, the implementation and effectiveness of these laws remain weak. While the government mandates the printing of warning labels on cigarette packages, the public's comprehension of the health risks remains poor. As shown in a 2008 study conducted by Barber, et. al., "boys 13 to 17 years old could repeat the health warnings on cigarette packs but also claimed that smoking one to two packs per day was not harmful to health."[32] This misconception stems from the deceptive marketing strategies of tobacco companies. For example, the government requires that companies print tar and nicotine levels on cigarette packages, but such labeling has been manipulated to sell these products as "healthy" options. Although these "healthy" options often contain marginally lower percentages of toxins than other cigarettes, the reductions are not substantial enough to change the health outcome.[32] These techniques have effectively undermined the government's relatively passive attempts to educate the consumer of the health risks associated with smoking, particularly as these strategies are geared toward easily influenced youth.

The consumer's lack of knowledge regarding the detriments of cigarette smoking violates Mill's harm principle. Mill states that even in cases where the usage of a drug does not directly impact others, "such a precaution, for example, as that of labeling the drug with some word expressive of its dangerous character, may be enforced without violation of liberty."[33] He continues, explaining "the buyer cannot wish not to know that the thing he possesses has poisonous qualities."[33] In other words, Mill supports the individual's right to make an informed decision. Without the mandatory placement of effective warning labels on tobacco products, the consumers remain unaware of the potential consequences of their choice to begin smoking. As a result, consumers make uninformed decisions, which have long term consequences.

Therefore, TTCs' operations in LMICs appear to be driven primarily by technical efficiency rather than allocative efficiency, as no regulator forces TTCs to consider social welfare. As a result, the externalities of their product promotion are perhaps even more severe in these developing countries than they were in their original markets. In the U.S., tobacco companies competed for the seemingly safest product, and thus lowered the tar and nicotine contents of their cigarettes.[18] However, in less developed countries, these same companies faced no such marketing pressure and thus were able to minimize production costs by selling cigarettes with significantly higher toxin concentrations.[18]

Although the full effects of the rise in tobacco consumption on population health may only be apparent after a significant delay, upward trends in the associated NCDs have already been observed. Specifically, in India, approximately 32% and 6% of cancer deaths in men and women respective (ages 30-69 years) were linked to smoking.[4] Similarly, China had similar rates of approximately 28% and 6% in men and women, respectively in 2000.[4] The high prevalence of smoking-related deaths will only increase as tobacco consumption rises worldwide.

The onset of chronic diseases poses unique challenges in developing countries. One primary challenge is the weakness of the health system infrastructure in many of these nations. As Pisani affirms, health interventions cannot be successful and sustainable if the health system is incapable of reaching the entire population.[34] Chronic diseases, such as cancer and cardiovascular disease, require constant treatment. If the patient does not have consistent access to care, chances of survival dramatically decline. Yet many of these affected nations do not possess or train the personnel required to monitor and combat the tobacco epidemic and the NCDs associated with it. [16, 34] Current trends suggest that governments are "[unwilling] to assign the resources required to prevent further tobacco-related death and disease among their own populations, let alone to help subsidize measures to control tobacco use in other countries."[16] Thus, the underfunding of tobacco control efforts, coupled with weak health systems, suggest that a smoker in a developing country has a reduced chance of fighting any diseases that may result from his habits.

Finally, cigarette smoking may exacerbate other public health challenges specific to LMICs. For example, smoking may increase susceptibility to tuberculosis and the risk of death due to the disease. According to Jha, almost 40% of tuberculosis deaths among middle-aged men may be attributed to smoking, as this behavior may facilitate the pathogen's transition from an inactive to active form[4]. The dual burden of communicable and non-communicable diseases influenced by smoking, therefore, may further cripple health systems and patients, as they must continually finance treatment for both categories of health defects. Given the limited resources available in LMICs, HICs should assist in defraying this immense financial burden.

Section V: International Policy Options

As previously discussed, the governments that preside over the new tobacco markets are partially responsible for addressing tobacco consumption within their borders. However, their attempts to fight the influential TTCs through national regulations have proven insuf-

ficient possibly due to the limited power and resources of LMICs to fully commit to such initiatives.

Through various means, the tobacco industry has been able to successfully evade national regulations. For example, many tobacco companies have supplemented their advertisements with manipulative marketing methods. Specifically, firms such as PM and Mild Seven (a Japanese multinational tobacco company) have engaged in *brand stretching*. This practice involves the usage of cigarette brand names and logos on non-tobacco products.[28] In Taiwan, for example, the government limited cigarette advertising to magazines and points of sales. In order to get around this legislation, Mild Seven began to sell watches and other consumer goods in 2000. Partially as a result of these efforts, Mild Seven has become the predominant cigarette brand of choice among youth.[28] Similarly, in Singapore, PM marketed a wine cooler called Alpine in order to gain a consumer base for its new cigarette brand by the same name.[29] Therefore, the tobacco industry was able to subvert national regulations through marketing methods.

Furthermore, in the absence of coordinated efforts among national governments, powerful tobacco companies have been able to successfully discourage the government from enacting strict anti-tobacco policies through financial and political pressure.[35] This is evidenced by the government's revision of the Regulation on Tobacco Control (PP No. 81/1999) from a prohibition on all electronic advertisements to a weak limitation on the times during which tobacco companies could access such advertising venues.[35] Such relaxations on restrictions regularly occur across many LMICs due to the tobacco companies' lobbying efforts. In fact, the heavy influence of tobacco companies over the government prevented Indonesia from signing and implementing the World Health Organization's Framework Convention on Tobacco Control, discussed in the subsequent section.[35]

Unfortunately, even when governments are able to resist the external pressure posed by TTCs, companies may still externally influence national markets resulting in insufficient national legislation to limit duplicitous marketing schemes. For example, the tobacco industry was able to subvert national authorities to gain entrance to the Singaporean market by taking advantage of globalization. Singapore has one of the most comprehensive and strongest anti-tobacco regulations and national programs in the world, in part due to the government's strong authority as a nation-state. The government banned smoking in public places as early as 1970, and further banned tobacco advertisements in 1971. The state supplemented these legislations by prohibiting brand stretching.[29] In an attempt to bypass these regulations, PM increased its advertisements for the Marlboro brand on Malaysian television. This strategy was devised to target the many Singaporeans who receive and watch Malaysian channels.[29] This incident suggests that while national policies are certainly necessary and useful in the control of cigarette smoking, they may be rendered inefficacious. Such subversion of national legislation is particularly a concern in the increasingly globalized world, where advertisements displayed in one country may easily be transmitted to others via the Internet. Therefore, developing countries cannot cope with the challenges of the tobacco epidemic through distinct national efforts but rather through international cooperation.

Developing countries cannot cope with the challenges of the tobacco epidemic through distinct national efforts but rather only through international cooperation.

In an attempt to control the profit-seeking tobacco industry, the World Health Organization (WHO) drafted the Framework Convention on Tobacco Control (FCTC) in 2003. The explicit purpose is to reduce the "demand and supply of tobacco and tobacco products."[36] The document first and foremost recognizes the undeniable health detriments of cigarette smoking. The convention then aims to "protect present and future generations from the devastating health, social, environmental and economic consequences of tobacco consumption and exposure to smoke."[37] Among its broad policy recommendations, the FCTC recommends the implementation of cessation and education programs, in order to reduce the demand for the products and facilitate the process of quitting.[37] Additionally, the FCTC calls for an increase in funding for global tobacco control.[37]

The language of the FCTC suggests a shift in the international community's relationship with the tobacco industry. The document blatantly places blame on tobacco companies, and asks member governments to protect their public health programs from the "commercial and vested interests of the tobacco industry."[37] The FCTC requests that each member nation enact regulations against these firms, such as the prohibition of marketing and advertising, requirement of clear labeling of tobacco products and implementation of cigarette taxes.[37] Hence, this document appears to reprimand tobacco companies and, finally, shifts the paradigm of trade-over-health to health-over-trade. In this manner, the FCTC appears to address the basic social institutions that enabled the spread of the tobacco epidemic.

But in actuality, the reforms elicited through the FCTC are minimal and weak. One aspect that is noticeably missing from the document is the regulation of foreign direct investment (FDI). The rapid growth of these multinational tobacco companies was in part facilitated through FDI. For example, tobacco companies invested in domestic cigarette production and distribution branches in Asian countries in order to increase their proximity to their new target markets.[36] TTCs further used FDI to buy domestic tobacco production plants in their new target markets. As a result, these companies were able to decrease the costs of production and increase their output.[36] While the FCTC mentions the role of FDI in the proliferation of cigarette smoking, it provides no policy recommendations on this topic. This one loophole may undermine the remaining FCTC suggestions, as it allows tobacco companies to use FDI to subvert tariffs and encourage increased consumption.[36]

Furthermore, the FCTC has not yet effected significant tangible changes in global tobacco control. The general weakness of the FCTC is derived from the power imbalance between the tobacco industry and the international actors involved in its drafting. Specifically, several countries and TTCs opposed the inclusion of a clear statement defining health as a priority over trade. These actors feared that such a provision would allow "disguised protectionism."[27] According to this argument, the formal prioritization of health may undermine the GATT and allow many countries to arbitrarily impose tariffs and other trade restrictions on foreign goods. The compromise between those who wished to emphasize health and those who wished to preserve the current trade system resulted in the deliberate omission of the topic's mention in the FCTC.[27] These actors justified their decision by stating that the combination of the FCTC and the WTO's health allowances were sufficient to suggest that health is a priority over trade. They argued that explicit language was unnecessary.[27] This defense is baseless and seems to indicate that the international community has not yet recognized the need for a dramatic shift in priorities. Therefore, the FCTC is an inadequate means to rectify the negative externalities of the social institutions that enabled developed countries to export the tobacco epidemic across the world.

Section V: Conclusion

Tobacco control has long incited debate in the international community. Many global health policy makers ignore this subject due to the perception that cigarette smoking is an individual choice. In accordance with Mill's harm principle, these policy makers believe that they do not have a responsibility to address the health conditions associated with tobacco consumption. This paper aimed to disprove this notion by invoking the theoretical frameworks created by Pogge and conceptualizing the current state of the tobacco epidemic

as a market failure. An individual's socioeconomic status and social environment is strongly linked to his likelihood of engaging in persistent cigarette smoking. This central finding transfers the blame placed on the smoker to the social institutions that permit and exacerbate such disparities. These effects of the social institutions may be defined as negative externalities that facilitated the market failure. According to Pogge's framework, the analysis of smoking in this manner thus warrants governmental intervention. Indeed, governments of HICs in which cigarette smoking first posed a significant public health problem established regulations that reduced, but did not eliminate, the disease burden linked to these negative externalities.

Unfortunately, the western government's regulations engendered far more significant negative externalities than they mitigated within their borders. By restricting the activity of tobacco companies, these states pushed the industry to seek markets in developing countries, particularly in Asia and Africa. Moreover, international social institutions have enabled tobacco companies to become increasingly powerful economic and political actors. Through coercive practices, these transnational companies have been able to pressure governments, enter foreign markets and manipulate consumers to begin and remain addicted to smoking. The LMIC governments may be responsible for the national social institutions that increased the vulnerability of the consumers, such as inadequate access to education; however, the tobacco industry and the institutions that enabled TTCs to amass such power and influence are also at fault. Inadequate regulation and the international commitment to trade over health thus caused the market failure. Consistent with "scenario 3" in Pogge's framework, these social institutions and the HICs that perpetuated them "avoidably and foreseeably" produced negative health outcomes, and thus warrant international attention and intervention.

The discussion of the inadequacy of national policies suggests that international cooperation to fight the tobacco epidemic is necessary. While the FCTC is certainly a step in the right direction, verbal commitment must be accompanied by action. Specifically, although the U.S. signed the FCTC, it has not yet ratified the treaty. The explicit support and commitment of the U.S. to the treaty may cause a reduction in the political influence of tobacco companies. Furthermore, the signatories of the FCTC should implement international policies regarding the control of the industry through such strategies such as limitations or prohibition of these companies' engagement in FDI and taxation of their international financial transactions and operations. The funds collected through these means may then be allocated to tobacco control efforts within vulnerable countries. The international community should further supplement this money through a dramatic increase in funding provided by such HICs as the U.S., which exported the tobacco epidemic across the world.

These brief and cursory suggestions are not intended to serve as comprehensive policy recommendations. Rather, the main conclusion of this work is that developed Western countries such as the U.S. bear a moral responsibility to devote funds and expertise to global tobacco control, as they themselves facilitated the global increase in tobacco consumption. Without establishing such commitment, any global policy recommendations may be politically infeasible.

References

1. Folland, S., Goodman, A. C., & Stano, M. (2004). Glossary. The Economics of Health and Health Care, 4, pp. 561–7.
2. The World Bank. Chronic Emergency: Why NCDs Matter. http://siteresources.worldbank.org/HEALTHNUTRITIONANDPOPULATION/Resources/281627-1095698140167/ChronicEmergencyWhyNCDsMatter.pdf. (last visited: April 18, 2013).
3. WHO. Noncommunicable diseases. Media Centre. http://www.who.int/mediacentre/factsheets/fs355/en/index.html. (last visited: February 24, 2013).
4. Jha, P. (2009). Avoidable global cancer deaths and total deaths from smoking. Nature Reviews Cancer, 9, 655–664.
5. Ross, H., & Stoklosa, M. (2011). Development assistance for global tobacco control. Tobacco Control, 21, 465-70.
6. Pogge, T. (2002). Responsibilities for poverty-related ill health. Ethics and International Affairs, 16(2), 71–9.
7. WHO Global Report: Mortality Attributable to Tobacco. (2012). World Health Organization. http://www.who.int/tobacco/publications/surveillance/rep_mortality_attributable/en/index.html. (Last visited: April 18, 2013.)
8. Mill, J. S. (1869a). Chapter I: Introductory. In On Liberty. London: Longman, Roberts & Green. http://www.bartleby.com/130/. (Last visited: April 18, 2013).
9. Smoking & Tobacco Use. Centers for Disease Control and Prevention. http://www.cdc.gov/tobacco/index.htm. (Last visited: March 10, 2013).
10. Brandt, A. M. (2003). Blow some my way: passive smoking, risk and America. In Ashes to Ashes: The History of Smoking and Health, 2nd ed., 46, pp. 164–187.
11. Harwood, G.A., Salsberry, P., & Ferketich, A. K. (2007). Cigarette smoking, socioeconomic status, and psychosocial factors: examining a conceptual framework. Public Health Nursing, 24(4), 361–371.
12. Peretti-Watel, P., Seror, V., Constance, J., & Beck, F. (2009). Poverty as a smoking trap. International Journal of Drug Policy, 20(3), 230–236.
13. Phelan, J., & Link, B. (2005). Controlling disease and creating disparities: a fundamental cause perspective, 60(Spec No 2), 27–33.
14. Healton, C., & Nelson, K. (2004). Reversal of misfortune: viewing tobacco as a social justice issue. American Journal of Public Health, 94(2), 186–191.
15. Cokkinides, V., Bandi, P., McMahon, C., Jemal, A., Glynn, T., & Ward, E. (2009). Tobacco control in the United States -- recent progress and opportunities. CA: A Cancer Journal for Clinicians, 59(6), 352–365.
16. Wipfli, H., & Samet, J. M. (2009). Global economic and health benefits of tobacco control: part 2. Clinical Pharmacology & Therapeutics, 86, 272–280.
17. Chaloupka, F. J., & Laixuthai, A. (1996, April). U.S. Trade Policy and Cigarette Smoking in Asia. National Bureau of Economic Research. http://www.nber.org/papers/w5543.pdf?new_window=1. (Last visited: April 18, 2013).
18. Barry, M. (1991). The influence of the U.S. tobacco industry on the health, economy, and environment of developing countries. New England Journal of Medicine, 324(13), 917–20.
19. Callard, C. (2010). Follow the money: how the billions of dollars that flow from smokers in poor nations to companies in rich nations greatly exceed funding for global tobacco control and what might be done about it. Tobacco Control, 19(4), 285–90.
20. Glynn, T., Seffrin, J., Brawley, O., Grey, N., & Ross, H. (2010). The globalization of tobacco use: 21 challenges for the 21st century. CA: A Cancer Journal for Clinicians, 60(1), 50–61.
21. Stebbins, K. (1991). Tobacco, politics and economics: implications for global health, 33(12), 1317–26.
22. Bialous, S. A., & Peeters, S. (2012). A brief overview of the tobacco indusry in the last 20 years. Tobacco Control, 21(2), 92–4.
23. McDaniel, P. A., Intinarelli, G., & Malone, R. E. (2008). Tobacco industry issues management organizations: creating a global corporate network to undermine public health. Globalization and Health, 4(2).
24. Chen, T. T., & Winder, A. E. (1990). The opium wars revisited as US forces tobacco exports in Asia. American Journal of Public Health, 80(6), 659–662.
25. Shaffer, E., Brenner, J., & Houston, T. (2005). International trade agreements: a threat to tobacco control policy. Tobacco Control, 14(Suppl 2), ii19–ii25.
26. Schmeisser, P. (1988, July 10). Pushing Cigarettes Overseas. The New York Times. Washington. http://www.nytimes.com/1988/07/10/magazine/pushing-cigarettes-overseas.html?pagewanted=all&src=pm. (Last visited: April 18, 2013).
27. Mamudu, H. M., Hammond, R., & Glantz, S. A. (2008). Project Cerberus: tobacco industry strategy to create an alternative to the Framework Convention on Tobacco Control. American Journal of Public Health, 98(9), 1630–1642. doi:10.2105/AJPH.2007.129478
28. Wen, C., Chen, T., Tsai, Y., Tsai, S., Chung, W., Cheng, T., … Liu, W. (2005). Are marketing campaigns in Taiwan by foreign tobacco companies targeting young smokers? Tobacco Control, 14(Suppl 1), i38–i44.
29. Assunta, M., & Chapman, S. (2004). "The world's most hostile environment": how the tobacco industry circumvented Singapore's advertising ban. Tobacco Control, 13, ii51–ii57.
30. Dresler, C., & Marks, S. (2006). The Emerging Human Right to Tobacco Control. Human Rights Quarterly, 28(3), 599–651.
31. Aditama, T., Pradono, J., Rahman, K., Warren, C., Jones, N., Asma, S., & Lee, J. (2008). Linking Global Youth Tobacco Survey (GYTS) data to the WHO Framework Convention on Tobacco Control: the case for Indonesia. Preventative Medicine, 47(Supplement 1), S11–S14.
32. Barber, S., Ahsan, A., Adioetomo, S. M., & Setyonaluri, D. (2008). Tobacco Economics in Indonesia. International Union Against Tuberculosis and Lung Disease. http://global.tobaccofreekids.org/files/pdfs/en/Indonesia_tobacco_taxes_report_en.pdf. (Last visited: April 18, 2013).
33. Mill, J. S. (1869b). Chapter V: Applications. In Of Liberty. London: Longman, Roberts & Green. Retrieved from http://www.bartleby.com/130/
34. Pisani, P. (2011). The cancer burden and cancer control in developing countries. Environmental Health, 10(Suppl 1), S2. doi:10.1186/1476-069X-10-S1-S2
35. Hurt, R. D., Ebbert, J. O., Achadi, A., & Croghan, I. T. (2011). Roadmap to a tobacco epidemic: transnational tobacco companies invade Indonesia. Tobacco Control, 21, 306–312.
36. Lo, C. (2010). FCTC guidelines on tobacco industry foreign investment would strengthen controls on tobacco supply and close loopholes in the tobacco treaty. Tobacco Control, 19, 306–310.
37. Conference of the Parties to the WHO FCTC. (2003). WHO Framework Convention on Tobacco Control. WHO. Retrieved from http://www.who.int/fctc/text_download/en/index.html

Female Genital Cutting

Knowledge and Intervention in Egypt

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Introduction

In its most extreme form, female genital cutting (FGC) removes a woman's clitoris and severely narrows the vaginal opening to the size of a dime. However, in its most minor form, a woman's clitoris is scratched or minimally excised resulting in little permanent damage. Between 100 and 140 million women have undergone some form of FGC worldwide and this number is expected to increase by a projected number of two million every year.[1] Doctors, lobbyists, journalists, NGOs and other interest groups in their discussion of FGC demand complete eradication of the practice due to its observable short-term and long-term health implications. Often, demands for complete eradication are coupled with the criticism of FGC as a practice which oppresses women. Internationally, any compromise, including harm-reduction policies, is condemned by the media and by western audiences. The most prominent of such policies is institutionalization in hospitals and medicalization, the education of doctors about FGC.

While it sounds unprecedented to the western audience, FGC is an important tradition of women in Egypt. The purpose of this paper is to explore the gaps within current published knowledge regarding FGC. I will argue that those who advocate absolute eradication of FGC often do so without the strong support of peer-reviewed literature or research, but instead from a platform of moral outrage.

The prevalence of FGC can be explained by its important cultural purpose. FGC is often seen as a rite of passage—done to gain honor, continue tradition and avoid social exclusion.[2] In this paper I will refer to the practice as female genital cutting (FGC) instead of using the more prevalent terms female genital mutilation (FGM) or female circumcision. FGM, which suggests violent disfiguration, is a term often used by groups fighting for its eradication.[3] The discourse surrounding FGC in western countries suggests that it is the ultimate tool of oppression, forced upon women by men. Advocacy groups tend to ignore the fact that women are often approving of FGC; these are attitudes that I will explore later in this paper.[4] While one could make the argument that this practice undeniably qualifies as mutilation, this framing is problematic because it alienates women by stripping females of agency and ignoring female endorsement. Additionally, the term female circumcision has also been criticized as a misnomer since it likens female and male circumcision, although they are physically different procedures; FGC alters or removes an important sex organ while male circumcision removes foreskin.[5] Anthropologist Christine Walley summarizes the issue in this way: "existing usages are deeply embedded in the 'either/or' perspective characteristic of discussions of female genital operations, with *circumcision* signaling relativistic tolerance and *mutilation* implying moral outrage."[6] Whenever possible, I will refer to this practice as female genital cutting (FGC) because of its neutral connotation.

I will begin by describing the World Health Organization's definition of FGC. This definition will be followed by a discussion of attitudes concerning FGC among Egyptian women in 1995, before any major legislation or advocacy against FGC was enacted, and then attitudes in 2008, after major legislation was passed. I will then discuss the variations in the practice of FGC, the physical health implications of type I and type II FGC and the disease burden and cost associated with FGC, pointing out the assumptions in existing literature and the lack of research and knowledge in each of these sections. There are serious discrepancies between available data and the dominant claims made in favor of eradication, and these discrepancies could have serious implications for the future of FGC policy. I will then discuss official Egyptian legislation in response to advocacy work and international pressures regarding FGC. There is poor evidence to support the push for the complete eradication of FGC and rather, this position may be developed against a background of moral outrage. I will conclude by discussing concrete areas where more research can be done and will put forth reasons why medicalization should be discussed as a practical possibility. Given the polar discourse surrounding FGC, understanding and responding to the practice requires a multidisciplinary lens, one that takes into attitudes of women and men, health-related consequences and economic burdens. Hopefully, by discussing what is known and not known, we can explore these gaps of knowledge and approach FGC objectively, with the ultimate goal of lessening or eliminating its health and economic burden in the best, most effective way possible.

The World Health Organization (WHO) definition of female genital mutilation/cutting

The WHO's definition and classification of "female genital mutilation" has been used widely in almost every publication about this practice since its publication. In a Joint Declaration published by the WHO, the United Nations Children's Fund (UNICEF) and the United Nations Population Fund (UNFPA) in 1997, female genital mutilation was defined to include all procedures that involved the total or partial removal of female genitalia or any injury to female genital organs without medical reason. This document officially classified the different severities of "mutilation": type I is the partial or total removal of the clitoris; type II is the total removal of the clitoris and the partial or total cutting of the labia minora; type III is the partial or total removal of the external genitalia and the stitching or narrowing of the vaginal opening (also known as infibulation); type IV includes all other unclassified damage done to female genitalia, including but not limited to scraping, pricking, burning or introduction of corrosive substances into the vagina.[7]

Attitudes of Egyptian women in 1995

Culturally, FGC extends beyond the physical, emotional or psychological harm it causes. FGC is seen as not only a procedure, but also as a rite of passage in many communities, marking a girl's coming of age or the beginning of her womanhood.[8,9] Marriage, future economic stability and social acceptance can be contingent on this practice.[10-13] Richard Shweder, a cultural anthropologist at the University of Chicago, argues from his experience in Kenya that this procedure is seen as a test of courage, encouraged by mothers and maintained by the community of women. After the procedure is completed there is a celebration, marking a girl's maturation into a young woman, allowing her to join the ranks of older generations of women.[10]

The Egypt Demographic and Health Survey (EDHS) first

collected information on FGC in 1995. Since this survey uses the term female circumcision, I will refer to FGC as female circumcision when using data from the Egyptian Demographic and Health Surveys. The survey found that 97% of female respondents had been circumcised: by age, prevalence rates are 98.1% among women ages 15-19 and 96.8% among women ages 45-49 in 1995. 81.6% of participating women claimed that they wanted the practice to continue, while only 13% claimed that they wanted it to end, with not much difference between age groups and only a small difference between urban and rural residents (91.2% of rural residents supported the practice, while only 70.3% of urban residents showed support). Of the group of women who wanted the practice to continue, approximately 60% said it was a good tradition, 40% attributed the practice to cleanliness and 30% said it was religious duty.[14]

Attitudes of Egyptian women in 2008

Between 1995 and 2008, there has been rapid change in attitudes among Egyptian women towards FGC. The Egyptian government banned the procedure in 2000, but the 2008 EDHS found that the practice is still prevalent: 91.1% of female respondents overall (out of the 5,540 surveyed) between the ages of 15 and 49 had been circumcised. However, only 54% of women in 2008 argued that this practice should be continued (compared to 82% in 1995), and these attitudes differed significantly based on age-group; only 34% of women ages 15-19 believed this practice should continue, while 69% of women ages 40-44 supported the practice. The percentage of women who believed men supported the practice also dropped significantly from 61% in 2000, the earliest survey to ask this question, to 49%.[4,33] When asked about reasons for supporting the practice, 50% of women in 2008 still thought it was a religious duty, 45% of women thought that husbands preferred this practice, 34% of women thought the practice could prevent adultery and only 6% of women recognized that this practice makes childbirth difficult. The reduction and regulation of a woman's sexual desire through the clitoris was still a prevalent justification for FGC in some rural and slum areas.[2]

> In this intermediary stage, we must remember that alienation and victimization of men and women complicit in FGC, especially on the foundation of inconclusive research, can compromise the sustainability of any intervention.

The numbers reported by the EDHS suggest that significant changes are occurring in the nation. The prevalence of FGC among younger cohorts of women is lower: 80.7% of women ages 15 to 19 have had this procedure, compared to 96.0% of women ages 45 to 49. However, it is unclear to what extent these differences could be attributed to specific interventions, legislation or different methods of survey administration.

Significant variations in the practice of FGC

Though the WHO has defined and classified types of FGC, almost all aspects of the practice differ drastically by region.[8,12] There is high variation in the severity of cutting, the age at which the procedure is performed, the person who performs the procedure, the instrument used for the cutting, whether it is done privately (in the home) or in a hospital and how the wound is cared for afterwards.

To illustrate this point, I will compare the urban areas of Upper Egypt and the rural areas of Upper Egypt. The urban areas can be characterized by higher levels of education, higher standards of living and higher levels of urbanization: 48.3% of men and 40.7% of women have completed or achieved more than a secondary level of education, 96.1% of respondents had a television, 60.0% owned their own satellite dish, and only 4.2% of households had agricultural land. In the rural parts of Upper Egypt, only 26.4 % of men and 14.8% of women have completed or achieved more than secondary level of education, 87.5% of households had a television but only 35.4% owned their own satellite dish, and 25.3% of households had agricultural land.

Comparing these two regions, the prevalence rate of FGC in the rural parts of Upper Egypt is 95.6%, but the prevalence rate in urban areas was 86.2%. While the median age of circumcision is around 10 years for all regions of Egypt, only 36.8% of women in rural Upper Egypt underwent the procedure at that age, compared to 42.3% of women living in urban areas. Unsurprisingly, this survey also recorded that a higher percentage of women living in urban areas received the procedure by medical personnel, while a higher percentage of women in rural areas got the procedure done by *dayas*, or traditional birth attendants. The conditions of the procedure, whether it was in the hospital or by *dayas*, can be telling of other characteristics, like the tools that were used to perform the cutting, the hygienic conditions of the procedure and the aftercare.[4]

Apart from data collected from the EDHS, very few broad qualitative studies addressing the variations of the procedure have been conducted. Sayed *et al.* conducted a survey of 819 households in 1996, representative of 1,732 girls under the age of 20 in a village near but not within Assuit, an Upper Egyptian urban center. This study is not generalizable to Egypt nationally since this study was done only in one village in Upper Egypt. Sayed *et al.* found that 62.3% of girls in that village had undergone type I cutting, and the parents of 36.3% of girls planned for their daughters to undergo type I cutting in the future. In this study, 80% of girls were circumcised between five to eight years of age, 90% of girls reported no complications with the procedure, 97.5% of girls had this procedure done by a *daya* and 80% of girls had the procedure done with razors. From this research, type I cutting is observed to be the prevalent procedure in this area and it is usually done at a young age by dayas in villages in Upper Egypt. Since routines for FGC depend heavily on geographical location and socioeconomic context, more research like that of Sayed *et al.* needs be done for a national picture of FGC. These studies are useful to make rough generalizations about specific areas of similar composition, and they can be instructive to use as a starting point for future research. The context of the cutting procedure is important and, as I will subsequently describe, there is insufficient research to describe how physical consequences differ based on which method is used. This lack of knowledge is an obstacle to the formation of any broad claim or intervention about harm-reduction or eradication of FGC.

Type I and type II FGC and the physical implications

The prevalence of each type of FGC is unclear, but it is generally accepted that type I and type II procedures are the most common in Egypt, while type III and type IV circumcisions, which are common in countries like Sudan, Somalia or Djibouti, are rare in Egypt for reasons that are not clear.[15-17] As previously mentioned, FGC may present both short-term and long-term health problems, depending on the type of cutting. Once a girl is cut, there is an immediate risk of shock, infection, profuse bleeding, hemorrhage, sepsis and tetanus. Infection can halt healing, promote keloid scar formation and lead to acute urinary retention.[13] Some of these health conditions including sepsis and tetanus are caused by the lack of sterile tools or lack of awareness about proper hygienic practices, which are often amplified by unsterile conditions.[13,18]

Possible long-term health conditions include problems with urination, sexual dysfunction, anemia, infertility, problems with menstruation, frequent cysts, obstetric complications and a higher

risk of contracting HIV.[7,19] However, these conditions do not occur in every case of FGC, and studies that seek to document this causal relationship are often unsound.[11] For example, in a study done by El-Defrawi *et al.*, 250 women were randomly selected from Maternal and Childhood centers to participate in a questionnaire about the psychological aspects of their sexual impulse and behavior (psychosexual activity). Of these women, 80% were circumcised and these women had disproportionally more problems with dysmenorrhea, vaginal dryness, lack of sexual desire, being less satisfied with sex and having difficulty reaching orgasm. This study is a good indication that sexual dysfunction can exist among circumcised women. However, this study is not representative of the general circumcised population because the participants were already patients in these centers for psychosexual problems.[20]

There is no evidence that all women who have undergone FGC suffer from all or any of these complications; instead, the noted prevalence of each specific health consequence differs throughout the literature and the ramifications of circumcision vary for each individual.[11] The undocumented nature of these health consequences is a critical gap in knowledge and will be explored later in this paper.

The disease burden and cost associated with FGC

More research is necessary to understand the cost of FGC and why or how women experience different physical consequences.[11,13,21] According to an extensive review of literature done by Obermeyer, there have been no published attempts to establish overall the economic and physical burden associated with FGC.[11]

In one of the few studies documenting the cost of this practice, Bishai *et al* extrapolates obstetric costs from a large study done by the WHO in which 28,393 women were followed to determine adverse outcomes from admission before labor or early in labor.[22,23] Bishai *et al* uses frequency, relative risk and cost of health consequences for each type of FGC to create a statistical model to approximate overall costs. Using this model, the researchers found that a total medical cost of $3.7 million in purchasing power parity (an international standard that is used by economists to compare across different countries) was incurred for the 53 million women in Burkina Faso, Ghana, Kenya, Nigeria, Senegal and Sudan. Egypt was not one of the six countries analyzed using this statistical model, but these results provide a rough approximation of the burden Egypt may face. The study estimates that in the next year, approximately 2.8 million 15-year-old girls undergoing the procedure worldwide would lose approximately 130,000 years of life, collectively. This study is specifically concerned with obstetric costs and focuses heavily on type III cutting, but it allows us to extrapolate the significant monetary burden of FGC. By using the statistical model to estimate the cost of type I and type II cutting given multiple different constraints, Bishai *et al.* reveals that type I and type II cutting procedures lead to higher costs, more years of life lost, or both, 77% and 85% of the time, respectively.[22] Unfortunately, equivalent studies have not been published for Egypt or for type I and type II cutting specifically.

Since this study does not measure psychological damage, other medical complications immediately after the initial procedure or hospitalizations due to recurring infections or pain, it underestimates the actual societal cost of FGC. Different women experience different degrees of pain or handicap, but since variations of FGC have not been well researched, the disease burden and economic cost cannot be easily characterized or measured.

Characterizing the insufficient data informing the discourse about FGC

In an extensive review of literature on female genital surgeries that support "facts" about FGC, Carla Obermeyer discovered that many surveys were not generalizable to all women who had undergone the procedure; often these studies were biased or contextual. Of the 435 articles that appeared when "female circumcision" and "female genital mutilation" were searched as of April 1996, Obermeyer concluded that only 17 articles and eight surveys sought to estimate prevalence of FGC and only eight articles systematically assessed the complications of FGC. The surveys contained various flaws: they lacked information about the method of data collection, had high percentages of non-response to questionnaires or had biased sample selection. The difficulty of proving causation exists even in countries with well-established infrastructure and with issues that are not controversial. Egypt does not have the necessary infrastructure in rural areas, and this type of research is ethnically and methodologically controversial because FGC is a sensitive issue. To avoid these obstacles, data measuring health outcomes are usually collected by asking women to report the complications they have experienced. However, this can be inaccurate due to the possibility of selection bias, and women are often unable to accurately determine the cause of pain. Obermeyer concludes that the base of knowledge that is usually used to draw conclusions about FGC is flawed and limited. As a result, barriers to collecting comprehensive research have driven a disproportional allocation of resources towards "intervention studies" without "scientific inquiry."[11]

In a recent systematic review of published sources between 1997 and 2005, Obermeyer explores the claim that FGC is associated with certain health consequences. Through this review, she found that there are statistically higher risks for anemia (prevalence of 81%), swelling in the vaginal area (prevalence range between 2% and 50%), chronic pelvic infections (prevalence of 22%), caesarean section (prevalence of 51%), perineal tears (62%), prolonged labor of over 24 hours (40%) and pain when urinating (58-64%). Though these percentages are high, ranges are wide and there is insufficient evidence to prove definite infertility or increased mortality of the mother or infant. There is also inconclusive evidence regarding urinary symptoms and mixed evidence on obstetric and gynecological complications. Additionally, there is insufficient data to prove a causal relationship between FGC and any of these health consequences.[24] The lack of reliable data in this area of research is a gap in knowledge requiring urgent attention.

Egyptian legislation and advocacy with regards to FGC

Before the 1990s, conservative and Islamic institutions used religious and moral conduct to argue for the traditional, religious and cultural value of FGC.[25,26] This was important because the Egyptian constitution maintained that Shari'a (Islamic) law should be the main source of legislation in the nation (Lombardi 2006). However, FGC actually predates Islam, indicated by evidence of type III circumcision, also known as Pharaonic circumcision, among mummies of ancient Egypt.[27] The association of FGC to religion is unclear.

The debate about the virtue of FGC started in the 1950s, but the 1994 International Conference on Population and Development (ICPD) is considered to be the turning point.[25,26,28] During this conference, an Egyptian task force, made up of Egyptian NGOs and activists took a solid stance against *all* practices of FGC. In 1997, the Court of Cassation (Egypt's highest appeal court) upheld a decree that banned FGC by all people, including all medical practitioners, in response to international pressures to ban FGC.[29] Whether this decree was issued for reasons of health or physical wellbeing is unclear; it is perceived that this decision was made to appease advocates and lobbyists who upheld any genital mutilation as a violation of human rights. This emphasis opposed medicalization: anything less than eradication was unjustified.[25] In 2007 and 2008, the practice was criminalized and loopholes to the previous decree were closed. Grand Mufti Ali Gomma, Egypt's current highest ranking official of religious law, issued a *fatwa*, absolutely condemning the practice on a religious level.[30-32] However, laws against this practice do not seem to be seriously enforced; these procedures, especially in rural areas, are difficult to monitor. Local beliefs and traditions supporting FGC are still prevalent as of 2008, making enforcement even more difficult.[33]

The complete eradication of "female genital mutilation"

The WHO recently published another interagency statement in 2008 with UNAIDS, UNFPA, UNICEF and other international organizations condemning "female genital mutilation" as a manifestation of "deep[ly]-rooted inequality between the sexes…an extreme form of discrimination against women… a violation of the rights of the child" and other violations of human rights.[23] This statement is written in the same tone as the initial joint declaration published in

1997, which frames "female genital mutilation" as a problem that needs to be completely eliminated through enforcing legislation, working with youth organizations and educating women's groups about the dangers of the practice.[7] In both these statements, the medicalization of "female genital mutilation" was prohibited on the basis that there are still serious risks associated with even a medical procedure. Medicalization was seen as a threat because it would legitimate and institutionalize this form of "mutilation."[7,23]

Since FGC is a practice that inflicts extraneous harm and presents a burden to health care systems, some scholars argue the ultimate goal should be eradication.[34] Whether or not eradication is the goal, there has not been adequate research to conclusively identify the most effective method of responding to FGC. There is insufficient data quantifying the harm medicalization might cause, which means there is insufficient data to argue that medicalization is not a viable interim solution.[11] Acting from a position of moral outrage and arguing for complete eradication without considering realistic interim solutions will compromise any end goal, whether it is eradication or harm-reduction.[13,34,35]

The medicalization of FGC as a viable alternative

The addition of the harm-reduction approach to the services that doctors are educated about and that hospitals provide, is often framed in opposition to complete eradication, but this is not necessarily true.[34] Using Obermeyer's work, Bettina Shell-Duncan argues that medicalization could reduce physical risk by improving hygienic conditions, reducing the amount of cutting and by serving as an interim solution while other interventions are conducted to eradicate the practice. This could serve many purposes: the procedure could be done in sanitary conditions, professionals could monitor the procedure and researchers would have the time and means to study FGC in a medical setting. Furthermore, given the changing attitudes among Egyptian women in coming years, this procedure may become a choice for women in the future, at which point, they can choose to have this procedure done in a safe place. As a compromise, a harm-reduction approach through medicalization would allow for a wide scope of services that will offer safer solutions in the process of change.[13]

In some contexts, complete eradication of FGC is unheard of, given its social importance. In 2000, Shell-Duncan published a study surveying 920 Rendille women, a group inhabiting the Kaisut Desert of northern Kenya, across five communities in the Marsabit District. In this community, FCG is critical to the women. One woman claimed that, for the Rendille women, "circumcision is the only thing that separates us from animals." Shell-Duncan describes the ceremony that accompanies the excision during the marriage ceremony and overall involvement of the community; there is no question of how precious this ceremony is to the Rendille people. While this example might not be representative of FGC generally, any attempt to completely eradicate FGC would have social implications within communities. As discussed above, 54% of women in Egypt in 2008 still believe that this tradition should continue (this percentage represents 62.3% of women in rural areas and 42.7% of women in urban areas). While the ultimate goal is to eradicate FGC, there are effective, concrete intermediate steps that could be taken in light of the cultural significance of this practice to reduce harm: sterile razors, anti-tetanus injections and prophylactic antibiotics are associated with a nearly 70% lower risk of immediate complications.[13]

There are opponents to this view: for example, C. Nana Derby argues that medicalization of FGC "…not only nullifies earlier struggles by concealing the general, fallacious rationale behind the practice, it also denies the negative social, physical and psychological impact on the lives of women."[36] However, many of the physical and psychological surveys Derby cites were conducted more than two decades ago or they are not generalizable to *all* women who could benefit from medicalizing FGC. These surveys often suffer from selection bias by representing only specific groups of women.

To be fair to the opponents, there is also a lack of research proving the potential positive effects of medicalization. However, the claim that medicalization opposes eradication is unmerited. Given its value to women who may not be concerned about its negative social, physical or psychological impact, like the women of the Rendille community, medicalization must be discussed as a viable option. As Richard Shweder argued when writing about FGC, we must "save any powerful conclusive feelings for the end of the argument, rather than have them color or short-circuit all objective analysis."[10]

The future of FGC research and intervention

As I have demonstrated in this paper, there are many gaps in knowledge remaining in the field of FGC today. First, FGC operates in many different cultural contexts within Egypt, and there are significant variations in the way it is conducted. While there is a good approximation of what FGC looks like on a national level due to the work of the EDHS, there is no holistic information about characteristics of FGC. Consequently, there is not enough research detailing how different variations of FGC affect the severity of health complications. Factors like hygiene, practice or aftercare vary significantly depending on whether the procedure is being done in rural or urban areas, in the hospital or at home, by a traditional birth attendant or a doctor. While research in this domain is difficult, researchers should think about ways to investigate important characteristics like the setting in which the procedure is done, what is used for the cutting, how sterile the environment usually is, whether it is done privately or publicly and how the wound is cared for afterwards.

While I have described the possible consequences of FGC, definitive data on the physical implications solely due to FGC is lacking because these factors are not controlled for when arguing causality.

In addition to causality, the psychological and psychosexual implications of FGC are not well understood. The consequences of FGC might be tied to other factors that could be eliminated through medicalization. El-Defrawi *et al,* in the study above, showed correlation between psychological and psychosexual implications among women using services from Maternal and Childhood centers. Nonetheless, generalizable research that shows these consequences impact all women who have undergone FGC needs to be done.

Not only is the field ill-informed about the physical health consequences, but also there has been little research detailing the exact health burden or economic cost of this tradition. In looking for articles that address this topic, I was unable to find anything specific to Egypt or type I and type II cutting. This type of research can further inform the debate of the future of FGC and whether, economically, suggestions of eradication or medicalization are financially viable and advantageous.

Finally, attitudes among women are changing, but researchers are unsure of the cause of this change. There is a plethora of possibilities: advocacy, education, legislation, media or acculturation. If the impetus is pinpointed, legislators could use this information to effectively discourage FGC.

In light of all these gaps in knowledge, the first critical step is to conduct more research in Egypt and in other countries in which FGC is a common practice. The consequences of FGC for a woman's health, controlling for variations of method, need to be researched further in order for any definitive claims to be made concerning the future of FGC. This way, all parties may have an informed dialogue about how much damage FGC causes and how best to achieve a situation in which women are as safe and healthy as possible. In addition to improving health outcomes, this research should be used to influence legislative decisions. In this intermediary stage, we must remember that alienation and victimization of men and women complicit in FGC, especially on the foundation of inconclusive research, can compromise the sustainability of any intervention. Because FGC is a tradition that is still important to many women, cultural awareness and sensitivity should always be at the forefront of our minds. Community involvement and consent is absolutely necessary to ensure an intervention's success, especially with regards to a practice as fundamental and deeply embedded as FGC. While intervention is done to prevent the most harmful practices and methods, efforts to be culturally competent should lay the groundwork for the final resolution, a resolution that is well informed and celebrated by all parties.

References

1. World Health Organization (WHO). (1999). FGM: Report of a World Health Organization Technical Working Group. Geneva: World Health Organization.
2. Fahmy, Amel, Mawaheb T. El-Mouelhy, and Ahmed R. Ragab. (2010). Female Genital Mutilation/Cutting and Issues of Sexuality in Egypt. Reproductive Health Matters, 18.36, 181-90.
3. Hernlund, Ylva, and Bettina Shell-Duncan. (2007). Transcultural Bodies: Female Genital Cutting in Global Context. New Brunswick, NJ: Rutgers UP.
4. Egypt Demographic and Health Survey 2008. (2009). Cairo, Egypt: Ministry of Health, El-Zanaty and Associates, and Macro International.
5. Gruenbaum, Ellen. (2001). The Female Circumcision Controversy: An Anthropological Perspective. Philadelphia: University of Pennsylvania.
6. Walley, Christine J. (1997). Searching for "Voices": Feminism, Anthropology, and the Global Debate over Female Genital Operations. Cultural Anthropology, 12.3, 405-38.
7. World Health Organization (WHO). (1997). Female Genital Mutilation: a joint WHO/UNICEF/UNFPA statement. Geneva: World Health Organization.
8. Abusharaf, Rogaia Mustafa. (2006). Female Circumcision: Multicultural Perspectives. Philadelphia: University of Pennsylvania.
9. El, Dareer Asma. (1982). Woman, Why Do You Weep?: Circumcision and Its Consequences. London: Zed.
10. Shweder, Richard A. (2000). What about "Female Genital Mutilation"? And Why Understanding Culture Matters in the First Place. Daedalus, 129.4, 209-32.
11. Obermeyer, Carla Makhlouf. (1999). Female Genital Surgeries: The Known, the Unknown, and the Unknowable. Medical Anthropology Quarterly, 13.1, 79-106.
12. Mackie, Gerry. Female Genital Cutting: The Beginning of the End. In Bettina Shell-Duncan, Female "Circumcision" in Africa (pp. 253-82).
13. Shell-Duncan, Bettina. Women Without Choices: The Debate over Medicalization of Female Genital Cutting and Its Impact on a Northern Kenyan Community. In Bettina Shell-Duncan, Female "Circumcision" in Africa (pp. 109-28).
14. Egypt Demographic and Health Survey 1995. (1996). Calverton, Maryland [USA]: National Population Council [Egypt] and Macro International Inc.
15. Al-Hussaini, Tarek. (2003). Female Genital Cutting: Types, Motives and Perineal Damage in Laboring Egyptian Women. Medical Principles and Practice, 12, 123-28.
16. Tag-Eldin, Mohammed A., Mohsen A. Gadallah, and Mahmoud Al-Tayeb. (2008). Prevalence of Female Genital Cutting among Egyptian Girls. Bulletin of the World Health Organization, 86.4, 269-74.
17. Sayed, G., M.A.Abd El-Aty, and K.A. Fadel. (1996). The Practice of Female Genital Mutilation in Upper Egypt. International Journal of Gynecology & Obstetrics, 55.3, 285-91.
18. Toubia, N., and E. Sharief. (2003). Female Genital Mutilation: Have We Made Progress? International Journal of Gynecology & Obstetrics, 82.3, 251-61.
19. Utz-Billing, I., and H. Kentenich. (2008). Female Genital Mutilation: An Injury, Physical and Mental Harm. Journal of Psychosomatic Obstetrics & Gynecology, 29.4, 225-29.
20. El-Defrawi, Mohammed H., Galal Lotfy, Khadiga F. Dandash, Amany H. Refaat, and Moustafa Eyada. (2001). Female Genital Mutilation and Its Psychosexual Impact. Journal of Sex & Marital Therapy, 27.5, 465-73.
21. Lightfoot-Klein, Hanny. (1989). The Sexual Experience and Marital Adjustment of Genitally Circumcised and Infibulated Females in the Sudan. The Journal of Sex Research, 26.3, 375-92.
22. Bishai, David (WHO). (2010). Estimating the obstetric costs of female genital mutilation in six African countries. Geneva: World Health Organization.
23. World Health Organization (WHO). (2008). Eliminating female genital mutilation: An interagency statement. Geneva: World Health Organization.
24. Obermeyer, Carla Makhlouf. (2005). The Consequences of Female Circumcision for Health and Sexuality: An Update on the Evidence. Culture, Health & Sexuality, 7.5, 443-61.
25. El Dawla, A. (1999). The Political and Legal Struggle over Female Genital Mutilation in Egypt: Five Years since the ICPD. Reproductive Health Matters, 7.13, 128-36.
26. Hadi, Amal A. A Community of Women Empowered: The Story of Deir El Barsha. In Rogaia M. Abusharaf, Female Circumcision (pp. 104-24).
27. Kouba, Leonard J., and Judith Muasher. (1985). Female Circumcision in Africa: An Overview. African Studies Review, 28.1, 95-110.
28. El-Gibaly, Omaima, Barbara Ibrahim, Barbara S. Mensch, and Wesley H. Clark. (2002). The Decline of Female Circumcision in Egypt: Evidence and Interpretation. Social Science & Medicine, 54.2, 205-20.
29. Toubia, Nahid, and Susan Izett. (1998). Female Genital Mutilation: An Overview. Geneva: World Health Organization.
30. Michael, Maggie. (2007). Egypt Officials Ban Female Circumcision. The Washington Post. (pp. 29).
31. UNICEF. (2007). Fresh progress toward the elimination of female genital mutilation and cutting in Egypt. Cairo: UNICEF.
32. UNFPA. (2008). National Legislation, Decrees and Statements Banning FGM/C. Egypt: UNFPA.
33. Egypt Demographic and Health Survey 2000. (2001). Cairo, Egypt: Ministry of Health, El-Zanaty and Associates, and Macro International.
34. Shell-Duncan, Bettina. (2001). The Medicalization of Female ``circumcision'': Harm Reduction or Promotion of a Dangerous Practice? Social Science & Medicine, 52, 1013-028.
35. Moruzzi, Norma Claire. (2005). Cutting through Culture: The Feminist Discourse on Female Circumcision. Critique: Critical Middle Eastern Studies, 14.2, 203-20.
36. Derby, C. N. "The Case against the Medicalization of Female Genital Mutilation." Canadian Woman Studies 24.1 (2004): 95-100.

Field Notes

Understanding Family Planning in San Ignacio, Belize

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Abstract

This study focuses on women's decisions and experiences related to family planning in San Ignacio, Belize. The authors sought to identify family planning resources available in San Ignacio, as well as barriers to accessing these resources. Furthermore, this study explored how local barriers affected the use of contraception in San Ignacio. The first author traveled to San Ignacio and carried out four semi-structured interviews and one focus group with local women. She also conducted nine semi-structured interviews with community leaders. Women discussed their own knowledge and use of contraceptive methods, barriers to contraceptive use, the value of planned pregnancies and their pregnancy experiences. Community leaders reported that contraceptive methods were available but also admitted to the existence of perceived barriers to contraceptive use.

Women stated that planned pregnancies were desirable, but often unachievable because of religious beliefs, cultural norms, the opposition of family members, lack of knowledge of contraceptive methods and male partners seeking control over women. Community leaders reported that men are often unsupportive of contraceptive use and that religious groups often seek to discourage contraceptive use. Both women and community leaders stated that in San Ignacio, women are expected to have families and that local religious groups discourage the use of contraception.

Use of contraceptives among women in San Ignacio is thus not solely determined by the availability of contraceptives. Organizations that aim to promote family planning must implement multilevel initiatives that address the needs, desires and perspectives of community members, promote healthy relationships and challenge gender inequitable social norms.

Background

In 1934 Aldous Huxley wrote, "If the world had any ends, British Honduras would certainly be one of them," citing the region's isolation and small population as reasons it is "the end of the world."[1] Eighty years later, women living in this area can still be described as being at the end of the public health world. Little is known about their health needs or the social and environmental factors contributing to these needs. A search in the NIH/PubMed database using the terms "Belize" and "women" returns only 24 articles, only eight of which have been published in the last ten years.

The past British Honduras is now the nation of Belize, a Central American and Caribbean country that is approximately the same size as the state of Massachusetts. Although small in size,

Belize is characterized by ethnic diversity. The major ethnic groups are Mestizo (Spanish-Amerindian, 48.7% of the population), Creole (Afro-European, 24.9% of the population), Maya (Amerindian, 10.6% of the population) and Garifuna (Afro-Amerindian, 6.1% of the population), while the remaining population includes people of Chinese, Indian, and German ethnicity.[2] Yet the nation's gender norms traverse all ethnicities and shape women's lives in areas including gender-based violence, unequal job opportunities, dependence on men's financial assistance, child-raising and women's ability to decide if and when to become pregnant.[3]

Gender norms in Latin America and the Caribbean create expectations that "masculine" men have many female sexual partners and that women have a limited influence on the situations in which they have sex.[4,5] "Marianismo" is the cultural ideal that women will be obedient, pure, modest and dependent on their spouses. Its male counterpart is "machismo," the notion that men are dominant, independent, knowledgeable, aggressive and promiscuous. These gender norms contribute to a lack of communication between partners about sex and also result in women being hesitant to seek sexual health services.[4,6]

The most well-known work on women in Belize is anthropologist Irma McClaurin's 1996 book *Women of Belize: Gender and Change in Central America*, in which she discusses the importance of gender in Belizean culture. She elaborates on how gender roles are ingrained in children: from a young age, girls are discouraged from outdoor play activities and chores and instead are taught to focus primarily on domestic chores, while boys are encouraged to play separately from girls and to imitate their fathers. This distinction is maintained throughout life, and women are viewed as "different" or "less than" men. Because of cultural and social expectations that women should focus on the home, they are often economically dependent on men, which leads to poverty and a greater vulnerability to sexual harassment, as well as physical and mental abuse.[3]

These gender norms contribute to a lack of communication between partners about sex, and also result in women being hesitant to seek sexual health services.

In the prologue of her book, however, McClaurin states "[c]hange in Belize is ever-present."[3] One of the most important changes that occurred in the last decade is the rise in girls' accomplishments in secondary school attendance and graduation.[7] Anderson-Fye (2010) has observed that girls are increasingly pursuing secondary school as a means of gaining independence and avoiding gender-based maltreatment. Other changes include national government efforts to promote women's equality. In 1999, Belize ratified the Convention to End All Forms of Discrimination Against Women, an international agreement that sets standards for the protection of women's rights in all areas of life.[8] The Belizean government has also promoted women's wellbeing by sponsoring gender policy analysis and creating a government agency specifically for promoting women's equality—the Women's Department.[9]

Despite this progress, gender inequitable norms continue to persist in Belize. The World Economic Forum's gender gap index is a measure of gender equality based on women's economic participation and opportunity, educational attainment, health and survival and political empowerment. In 2012, Belize was ranked 102nd out of the 135 countries included in the index.[10] Guatemala was the only Latin American or Caribbean nation to score lower than Belize. Recently, the Belizean National Women's Commission conducted an analysis of the status of women and found that women are recruited and promoted at lower rates than men and receive lower salaries and fewer employee benefits than men in the same positions. The report also stated that teen girls are often expelled from school when they become pregnant, while males who impregnate female students do not receive any sort of disciplinary action.[6] In Latin American and Caribbean nations, women's sexuality is expected to be restricted to procreation and childrearing within common-law unions or legal marriages.[5] Thus, women who engage in sexual activity outside of these boundaries often face severe social consequences, including being labeled as promiscuous or immoral.

Fieldwork in Belize

This study explored one aspect of women's lives in San Ignacio, Belize—their decisions related to family planning and use of contraception. Family planning was chosen as the topic of this study because the Cornerstone Foundation, the organization with which the first author worked, identified the issue as an important challenge for women in the communities where it implements programs. Family planning is an issue of great importance, as it can dramatically impact women's achievements in education and employment and is critical to the socio-economic development of women around the world. The ability to limit pregnancies and space the time between pregnancies allows women to pursue education and employment opportunities, thereby reducing both female and family poverty.[11] Moreover, use of contraception allows women to avoid pregnancies at both extremes of their reproductive years, when the risk of maternal mortality is highest. Contraception also improves infant birth outcomes by enabling women to space their pregnancies.[11] Short intervals between births are associated with higher rates of preterm births and low birth weights, a pattern which persists after controlling for factors such as the mother's age, race/ethnicity, prenatal care, mother's previous pregnancy outcomes and tobacco or alcohol use during pregnancy.[12] It is believed that the poor birth outcomes associated with closely spaced birth are the result of maternal stress and depleted nutritional reserves.[13,14,15]

The work presented in this article provides insight into Belizean women's experiences with decisions about contraception and family planning and explores the factors that influence these choices. The authors sought to understand the perspectives of both individual women and community leaders in San Ignacio, in order to construct a more complete picture of the context of family planning decisions and behaviors.

Cornerstone Foundation is a grassroots nongovernmental organization (NGO) located in San Ignacio that is actively working to serve and empower Belizean women. San Ignacio is the capital of the Cayo district, which is the largest district in Belize, and is the second largest population center in the nation. Because San Ignacio is the district capital and largest city in the district, many residents of other parts of Cayo travel there for commerce, healthcare and other needs. Cornerstone Foundation was registered as a non-governmental organization in the district of Cayo in 1999.[16] Since then, the organization has served the district as a community development organization. It currently has seven program areas: women, health, youth, HIV/AIDS, relief & aid, literacy and community service.[17] The program's activities include preparing meals for children and elderly in the community, computer classes for women, hosting a women's group, English as a second language (ESL) tutoring, HIV education and maintaining free condom boxes in San Ignacio.

The volunteer recruitment information on Cornerstone's website identifies unintended pregnancies, lack of knowledge about family planning and access to contraceptives as difficulties facing the women of Cayo.[18] In this paper, we use the World Health Organization definition of family planning:

> Family planning allows individuals and couples to anticipate and attain their desired number of children and the spacing and timing of their births. It is achieved through use of contraceptive methods and the treatment of involuntary infertility. A woman's ability to space and limit her pregnancies has

a direct impact on her health and well-being as well as on the outcome of each pregnancy.[13]

The purpose of this study was to identify both the family planning resources available in San Ignacio and the barriers to accessing these resources. The authors also sought to understand how local barriers affected the use of contraception in San Ignacio.

Research Process

The first author lived and worked in San Ignacio during July 2010 to investigate the questions posed in this paper. Before the first author left for San Ignacio, all authors collaborated to develop survey and interview instruments for the study. The authors sought to triangulate data from a variety of sources in order to develop a more accurate understanding of the context of family planning in the San Ignacio area.[19] Because of the exploratory nature of the research questions, the authors chose to use a primarily qualitative approach. By using qualitative methods, they were able to engage in an in-depth exploration of participants' perspectives and experiences.

Four sets of questions were ultimately developed: a structured questionnaire for conducting surveys with adults (ages 18-60) in San Ignacio, an open-ended guide for in-depth interviews with women (ages 20-50) about their personal experiences with family planning, a focus group guide for women (ages 20-50) and an open-ended guide for in-depth individual interviews with community leaders about their perceptions of family planning and contraceptive use. All study activities took place in English, the national language of Belize. The authors used a convenience sampling strategy to identify survey participants and then a combination of convenience and snowball strategies to identify focus groups and individual interview participants.[20]

> She stated that she did not learn about contraceptives until after completing childbearing.

The structured survey questionnaire was intended to provide a broad snapshot of social norms and attitudes towards family planning held by Cayo men and women. In-depth interviews with individual women were used to learn about their personal experiences with contraceptive use. The focus group was used to gain a greater understanding of women's perspectives on factors influencing family planning and contraceptive use in their community. Individual in-depth interviews were carried out with community leaders in order to learn about their observations of local trends and challenges in family planning, and to get their opinions on the reasons for these trends and challenges. While men's perspectives are critical to these issues, the authors were limited by the fact that the first author was a young woman traveling alone. One cultural norm in Belize is that many Belizean men choose to supplement their income through romances with female tourists.[21] The authors felt that at best this cultural norm would make it unlikely that men would share honest information about sensitive issues with the first author and at worst could place her in a compromising or dangerous position. Some male perspectives were included in the study through men's survey responses and interviews with male community leaders; however, the preponderance of female respondents is an important limitation of the study.

The authors chose to conduct semi-structured interviews based on an interview guide with individual women and community leaders because this approach provided an appropriate balance of structure and flexibility. Semi-structured interviews ensured that all participants would be asked the same standard set of questions, but also allowed the interviewer freedom to probe for additional details when the interviewee directed the conversation in an unexpected and potentially illuminating direction.[22]

After the first author arrived in San Ignacio, the Cornerstone staff reviewed all questions to ensure that they were culturally and locally appropriate. The staff approved all questions with the exception of the demographic questions on all instruments, which were altered to be more representative of the local population. Two changes were made to the demographic questions: East Indian was added as a response option for ethnicity and common-law, as well as an open-ended "other" category, were added as response options for marital status.

Throughout July 2010, the first author conducted surveys with men and women at parks, bus stations, local businesses, the open-air market and the San Ignacio hospital. For the qualitative component of the study, the first author conducted additional open-ended, in-depth individual interviews with women and community leaders and held a focus group with Cornerstone Foundation's women's group (see Table 1 [available online] for a summary of study activities and participants). The women who participated in the focus group were enthusiastic about the project because they considered it extremely relevant to their community, so they volunteered to assist with recruiting survey participants. In order to recruit participants, the first author (and occasionally focus group participants) approached bystanders who appeared to have no pressing obligations and asked if they would be willing to participate in a brief survey. The first author read the survey questions aloud to the participants and handwrote their responses.

Findings from the interviews and focus group have been combined because of the commonality of themes. Themes emerging from both the open-ended interviews and the focus group include women's knowledge and use of contraceptive methods, barriers to family planning, the value of planned pregnancies and individual experiences with family planning and pregnancy (both personal and secondary accounts). The primary themes from interviews with community leaders were the variety of contraceptive methods in San Ignacio and the local barriers to contraceptive use.

Findings from surveys with men and women

Due to space constraints and the small sample size, survey results are not discussed in detail. However, selected findings are worthy of mention because they provide additional context for the qualitative data. Out of 24 survey respondents, 12 were unable to provide a definition of family planning when asked (common reactions included "What is that?" and "I don't know"). When asked whether their first pregnancy was planned, approximately equal numbers of survey respondents reported planned and unplanned first pregnancies—a pattern that was consistent for both men and women. These findings are intriguing because they suggest that some men and women are able to overcome barriers in order to use local family planning resources, while others are not. Further research needs to be conducted with a larger sample size in order to document the rates of planned and unplanned pregnancies among the population of San Ignacio.

Findings from open-ended interviews and focus group with women

Four women were interviewed individually, all at their places of employment. Because of the sensitive nature of the interview questions, Cornerstone Foundation staff referred the first author to women who they thought would be comfortable answering questions about their experiences with family planning (often their friends and family members). The focus group was carried out at a regular weekly meeting of the Cornerstone Foundation women's group, and three women participated. There was a broad range of ethnicities and ages represented among women who participated in the focus group and interviews. Demographic information for these women is found in Table 2 (available online).

Contraceptive Methods:

All women interviewed were familiar with at least one method of contraception. One of the older women (age 49) interviewed said that she had not learned about contraception until after her children were born. She was the only woman of the four interviewed who had never used any contraceptive method. The most commonly

mentioned methods of contraception were oral contraceptives, the "calendar" method (in which women count the days between their menstrual periods to estimate when they are ovulating), hormonal injections and the intrauterine device (IUD). Women perceived the "calendar" method as less reliable than the pill.

> "Well, about using the calendar, it's like not choosing the drugs, no? And you are clear of the drugs in your body but it's still not quite as safe as the pill." –Interview participant, Creole, 49.

One participant interviewed (Creole, age 46) stated that birth control pills and condoms should be used together because "you don't know who has diseases." Another participant commented that young people should use pharmaceutical contraceptives (i.e. injections or pills) because young people are not careful enough to use home remedies or the "calendar" method correctly.

Women also discussed their experiences with the IUD, birth control pills, condoms and emergency contraception. Perceived efficacy of contraceptive methods and side effects of the method were both factors that influenced women's choices about contraception. One woman (Mestizo, age 49) reported that birth control pills and injections made her "feel sick" and "get fat," ultimately causing her to switch to the IUD. The youngest woman in the group (Creole, age 24) stated emphatically that she did not like the pill and instead chose to rely on condoms and emergency contraception, because she believed them to be effective methods. She described her experience saying "Condoms can break. When it comes to the morning after, I think it's a safer method, because…it obviously works because I don't have any kids right now" (Creole, age 24). The third woman (Creole, age 46) explained that she had chosen the pill because she believed it was the most effective method and had never used any other form of contraception.

Barriers to Contraceptive Use:

Religion was the only barrier to contraceptive use identified by women in individual interviews. While no interviewees described lack of knowledge as a barrier, one interviewee stated that a lack of information prevented contraception use; she did not use contraception because she did not learn about it until after completing childbearing. Interviewees specifically reported perceiving that the Catholic Church teaches that contraception is sinful and that the Seventh Day Adventist church discourages the use of medicine. In the focus group, women mentioned religion but also described cultural expectations as another obstacle to family planning. They stated that parents, because of their own cultural backgrounds, pressure children to get married young and have children. When women discussed their own pregnancy experiences, they mentioned religious convictions of family members, their own lack of knowledge about contraceptives and the desire of others, such as relatives or partners, to control their family planning choices as the primary barriers to their own contraceptive use:

> "I have two of my daughters born in the same year, a week before one had a birthday, the next one was already born, and I was very unhappy, because it was my husband saying that I didn't have no rights to plan nothing, and he was the man and if I had any time to plan, it was because I was having an affair with someone."- Focus group participant, Mestizo, age withheld

Focus group participants reported that they were grateful that some religious groups teach men to be faithful to their wives, but complained that these same religious groups also teach men that the primary purpose of women is to have children.

> "[Faith-based groups] are also part of the problem that men find, that is why women are having children without planning, because they would believe that this is what our life is made for, this is what I want in my wife, because I want to have children. Doesn't matter how hard life seems to be, but that's a belief, it's a cultural thing also." -Focus group participant, Maya, age 33

Pregnancy experiences

When the women spoke about pregnancy experiences (whether of their own or that of their friends), they frequently emphasized the relationship between unplanned pregnancy and a consequently probable life as a single parent. One woman interviewed (Creole, age 49), described a pattern of unplanned pregnancies and unstable relationships—she gave birth to her first child at the age of sixteen and experienced a total of eight unplanned pregnancies with three different partners. She stated that she did not learn about the existence of contraceptives until after she had finished childbearing. Another interviewee (Creole, age 46) explained that after her first unplanned pregnancy, she decided to start using oral contraception because she could not manage more than one child as a single parent. Two women (Mestizo, age 49; Creole, age 46) reported a friend getting pregnant in spite of using the "calendar" method of birth control. The youngest woman interviewed (Creole, age 24) described her friends as being "scared" of unplanned pregnancies; these young women were fearful about how they and/or their partners would care for the child.

When women reflected on their own pregnancy experiences, they frequently spoke of the demands of having many children close together in age, in addition to the burden of single parenthood, as outcomes of their unplanned pregnancies. Two of the three women in the focus group had their first unplanned pregnancies in their teens; they described both their own and their family's reactions to these pregnancies. One woman expressed gratitude that her mother prevented her father from forcing her to leave the home when she became pregnant. In contrast, another woman in the focus group stated that when she became pregnant at age 19, she was pressured to marry the child's father. As a result, she spent many years in an unhappy marriage.

Value of Planned Pregnancies

Two of the four interviewees stressed the importance of planning a pregnancy. One woman (Creole, age 49) said that children are expensive and it is difficult to raise many of them. Another woman expressed fear that the male partner would leave as a primary concern in unplanned pregnancies:

> "I think most people should plan things rather than have that whole oops situation happening. Because I think most people when they're pregnant it's more of a scary situation, rather than joy[ful]…wondering what they're going to do and if the father's going to sustain a child." -Interview participant, Creole, age 24

In the focus group, women continually associated planned pregnancy with happiness. They felt that planning a pregnancy meant that a woman would be able to look forward to the birth of a child with anticipation, knowing that she had a stable relationship with her partner and that they had the resources to provide for a child. One participant focused on the joy of anticipating the birth of a planned child:

> "Because it's just like when you are planning your birthday. And you say "I will plan my birthday, and you go and buy your stuff, when you say, I'm happy because I'll bring my friends and we'll have a good time. It's just like that, because this young lady, she is like [the woman who planned her birthday celebration]. She's happy because she has planned it." -Focus group participant, Mestizo, age withheld

Women felt that planning a pregnancy enables both the mother and the father to prepare for parenthood. They stated that women should not have children in their teens because "a child cannot raise a child" (Focus group participant, Mestizo, age 45). Some women in the focus group suggested that a woman should wait until she is "maybe 22 or 30" (Focus group participant, Mestizo, age withheld) and knows what she wants. Another participant objected, saying that she had her first child at 22 and was not prepared—she did not have a home of her own and did not have the resources to provide for a child. The desire of the women in the focus group to plan a pregnancy emphasizes the perceived importance of being able to provide a good life and an education for one's children.

> "I was 22 when I had my first child, and I did not feel prepared. First of all, I didn't have a home of my own, I didn't have economical, it was very hard. I think that we need to have means to have things for a child, prepare before we have children. It's very hard to deal with education, with feeding,

with whatever." -Focus group participant, Mestizo, age 45

Another participant said that she had initially discouraged her daughter from marrying and having children young. She went on to express approval of her daughter's husband and his commitment to their children.

> "I have a daughter, she's 23 now, she has her second child. I didn't actually want her to get married or have children. It was her decision…She has her home, and he's very responsible and it's very important for them to have a responsible husband on their side, because if you make children, you have equal rights, and equal responsibilities to take care of children." -Focus group participant, Mestizo, age withheld

Most of the women in this study were unable to plan their own pregnancies according to their personal desires due to factors outside of their control. However, despite this lack of control, these women felt that avoiding unplanned pregnancy is an important strategy against single parenthood and financial hardship. Women reported that they strongly encourage their own children and other young people with whom they interact to learn about contraceptives and avoid unplanned pregnancies. Several women stated that it is now more difficult to financially support a large family than when they gave birth to their children. For these women, being able to ensure a good life for one's children was more important than conforming to a cultural ideal and existing gender norm.

Focus group participants agreed that even though their unplanned pregnancies caused unhappiness, they were joyful about the births of their unplanned children. Once the child was born, they wanted and loved him or her. They felt that this was an important component of conversations about planned and unplanned pregnancies.

> "You don't plan that child, but [when] that child comes into the world, and you look on it and say "I not plan you, but I love you, and I want to keep you," that make[s] you be happy, because even if you don't plan it, then you give birth to it, you can't give it away. So the child make[s] you happy at the time, you see? At the end." -Focus group participant, Mestizo, age 45

While women loved their unplanned children, this love did not erase the challenges they faced. In both the interviews and the focus group, women talked often about how they wanted their children to avoid unplanned pregnancies in order have better lives than they did.

Findings from Interviews with Community Leaders

Community leaders that were interviewed included both local healthcare providers (mostly physicians and pharmacists) and opinion leaders. Opinion leaders were identified by Cornerstone Foundation or other interviewees as influential members of the community. As can be seen from Table 3 (available online), these community leaders held a variety of positions in the community. Interviewees included providers of medical services (mostly physicians and pharmacists) and directors of local NGOs. Two interviewees (the herbalist and the retired maternal and child health nurse) were included because Cornerstone Foundation identified them as important pillars of the community (i.e. they had held leadership roles for many years and were trusted by many community members). Participants were identified through suggestions from Cornerstone staff, announcements in church bulletins, signs for local businesses and suggestions of other interviewees. All community leaders were interviewed at their place of employment in order to maximize comfort and convenience for them. Interviews focused mainly on the various kinds of contraceptive methods and family planning counseling that were currently available in the community, as well as what they perceived to be the main barriers to contraceptive use.

Family Planning Resources

Most of the community leaders that were interviewed held occupations directly related to family planning, and thus were providers of family planning resources. All practicing healthcare professionals, i.e., the general surgeon, both pharmacists and the nurse director of the Belize Family Life Association (BFLA), stressed the importance of providing counseling about contraceptive use in conjunction with pharmaceutical and medical services. Three community leaders–the general surgeon, a pharmacist and the director of the faith-based pregnancy resource center—stated that their primary role was to provide women and couples with accurate information about contraceptive methods and to allow them to choose for themselves.

Community leaders identified a wide variety of contraceptive methods available in San Ignacio, and some interviewees described their own roles in providing contraception. One interviewee commented that "[e]verything's on the market …the contraceptives and condoms. And the Belize Family Life has a section, and [the hospital has] oral contraceptives, injectables, the IUDs" (OB-GYN, male). The pharmacists and the BFLA offered oral and injectable contraceptives. One pharmacist mentioned that her pharmacy only provided hormonal contraception and emergency contraception to adults, "because we don't want to take a risk on a minor" (Pharmacist, female). This pharmacist went on to express frustration that teenagers try to "get away with murder" by coming into the pharmacy asking for emergency contraception, saying that their mothers sent them to get it. Condoms are available in the BFLA office and both of the pharmacies. Additionally, the BFLA and an obstetrician-gynecologist (OB-GYN) performed tubal ligations, a surgery in which a women's fallopian tubes are tied and cut to prevent eggs from travelling through them.[23] The faith-based pregnancy resource center offered fertility appreciation awareness and instruction in natural family planning. In this approach to family planning, couples rely on a woman's fertility signs, primarily waking temperature and cervical fluid, in order to identify when she is ovulating and time intercourse appropriately either to avoid or to achieve pregnancy.[24] This organization discouraged condom use because of its stance that sexuality is a gift which should only be expressed by committed married couples and that "in order for [sex] to bring fulfillment in the couple, and to achieve its final purpose…it must be open to life" (Director, faith-based pregnancy resource center).

Barriers to Contraceptive Use:

Community leaders reported that the cultural norms around expectations for women and their male partners impacted contraceptive use in several ways. They stated that the dominant attitude in Belizean culture is that if women are married or in a common-law union, they should have children. One pharmacist described how women's perception of community expectations influences their use of contraception.

> "I think maybe a barrier that they have is that they will be judged for using contraception…They have some reservations about coming. Maybe they don't want people to know that they are sexually active. And for the married women, I think a lot of them believe that once you're married, you really shouldn't be on a contraceptive, you should be having a family." -Pharmacist, female

During interviews, community leaders reported that many men are often unsupportive of contraceptive use, but that a number of women use contraceptives without telling their husbands. One interviewee stated that Belizean men take pride in having a large number of children. Several of the leaders interviewed complained about the unfair burden women face because all of the responsibility for contraceptive use falls on them. In the words of one interviewee:

> "It's women, women, women. She gets pregnant, she minds the baby, she has to take care of herself not to get pregnant. But I always tell the patients that whenever they have to go through a process of family planning, it's always the woman carrying the load, in a nutshell. Do I agree with it? No. Do I promote it? I wouldn't like to. But at the end of the day, we're looking to better women's health." -General surgeon, male

Another interviewee stated that contraceptive methods that rely on periodic abstinence are not practical options for Belizean women because their male partners do not cooperate. Similarly, she claimed that Belizean men are resistant to using condoms.

> "Men here in Belize, no. Don't believe in abstinence. If they want to have relationship, they will have a relationship. I think men are becoming more and more conscious of using condoms because of the spread of AIDS. But before AIDS

was so rampant, men would go without using any type of contraception. Even though you [are] telling them about the condom, they don't want to know." -Pharmacy assistant, female

Surgical sterilization of women has long been a major component of family planning in Belize. In 1999 (the year of the most recent Family Health Survey), female sterilization was the most commonly used contraceptive method in Belize, accounting for 18% of all contraceptive use.[25] In this same year, reported vasectomy use was so low that vasectomies were not even reported as a separate category in the Family Health Survey report—they were combined with other rarely used methods such as diaphragms, jellies, foam and lactational amenorrhea to form an "other" category. Approximately 2.1% of women and 3.5% of men surveyed reported using one of these "other" methods.[25] Both physicians interviewed felt that surgical sterilization of men should be integrated into family planning in San Ignacio because of the lower rate of complications from vasectomies compared to that of tubal ligations; tubal ligations are 20 times more likely to have major complications than vasectomies and 12 times more likely to result in death.[26,27] The general surgeon complained that in spite of his own interest in vasectomies, no local men were willing to undergo the surgery. In his words:

"I would love to promote male family planning. And vasectomies. I haven't done a vasectomy, that's just to tell you how different it is. The OB/GYNs end up doing a lot of tubal ligations, and I'm still waiting for my vasectomy." -General surgeon, male

Community leaders have observed that Belizean men often either do not get involved in family planning decisions or that they actively create barriers to women's use of contraception. This is congruent with the women's descriptions of their partners' opposition to family planning.

Like the women who participated in the study, community leaders mentioned religion as a barrier to contraceptive use. They expressed concerns that religious groups try to discourage their members from using contraceptives and may distribute incorrect information about contraception. According to one participant:

"One of the challenges that we usually encounter would be the religious groups. For example, the Catholic Church, where they are against family planning. To them, family planning is abortion and they will tend to discourage their women from coming." -BFLA nurse, female

It is a basic human right to be able to make decisions about one's reproduction, including whether to have children, how many children to have and when to have children.

One pharmacist interviewed also stressed that the Catholic Church is not the only religious group that is opposed to artificial contraception, and that there are many Christian groups which create barriers to contraceptive use. In her words:

"I know we give the Catholics a hard time, but I think we have a very high, high population that is practicing Christian faith in many [churches], so sometimes the information that is out there from these groups that are anti-artificial contraception really gives the wrong information as well." -Pharmacist, female

Community leaders reported that the ability to effectively access and use contraception varies with education and socioeconomic status. In particular, they felt that people who are poor, people with only a primary school education and people who live in villages have the greatest unmet need for contraception. This perspective is consistent with findings from developed nations that show a relationship between low literacy rates and lower levels of utilization of health information and services.[28] The U.S. Institute of Medicine defines health literacy as:

The degree to which individuals have the capacity to obtain, process and understand basic health information and services needed to make appropriate health decisions.[29]

While community leaders did not explicitly use the term "health literacy," the difficulties they described clearly fall into this category. In the interviews, community leaders explained that lack of education is a barrier that prevents individuals from seeking information and services related to family planning and that a lack of education also makes it more difficult for individuals to understand information they do receive. One pharmacist described her experiences trying to counsel women with low levels of formal education about contraceptive use:

"I really don't think that a woman who doesn't have a lot of formal education can understand the complexities of her biological makeup. Even for women that have [a university education], but maybe [are] not educated in biology, sometimes I'm sitting here . . . I am telling the women 'well you know you have a cycle' . . . and then sometimes I'm talking an hour, and they pop me a question which tells me they didn't get it." -Pharmacist, female

Overall, the community leaders felt that sufficient contraceptive methods and information are available in San Ignacio, but they are underutilized. Both community leaders and the women who participated in the study identified the same sorts of major barriers to contraceptive use, i.e. religious teachings, difficulties with male partners and cultural gender norms. Because women are unable to effectively use the family planning services in San Ignacio, many are unable to make informed and independent choices about the number and timing of their pregnancies.

Conclusions

It is important to note that the present work is a small, qualitative pilot study with a convenience sample. Therefore, these findings are not representative of every Belizean woman's experience. The strength of the study's qualitative approach is that it allowed participants to identify and describe the barriers to family planning that they observed in their own lives and communities. The authors believe that the lived experience of Cayo residents is an invaluable resource for understanding the context in which family planning occurs in this community. The findings of this study have the potential to shape further research and interventions around family planning in this community, though further research is needed to understand Cayo men's experiences with family planning and contraception. Additionally, quantitative studies exploring the prevalence of the barriers identified in this work and their varied effects on different ethnic and age groups are important next steps.

It is a basic human right to be able to make decisions about one's reproduction, including whether to have children, how many children to have and when to have children.[30] In order to exercise this right, couples and individuals must have access to contraceptive methods and must also be able to make informed choices about their use.[31] Therefore, contraceptive services and education must be both present and accessible for these rights to be supported.

Additionally, family planning provides significant health benefits for both women and infants. The use of contraception reduces maternal mortality by decreasing pregnancies and limiting the need for unsafe abortions.[11] Modern contraceptives are highly effective when used properly; however, not everyone who could benefit from modern contraceptive technology is able to utilize it.[32] In order to reduce the unmet need for contraceptives, healthcare providers and family planning NGOs must better understand why contracep-

tives are not presently utilized. The United Nations Children's Fund (UNICEF) reports that the prevalence of contraceptive use in Belize dropped from 56% in 1999 to 34.3% in 2006.[7] Almost one-third (31.2%) of women in Belize wishing to avoid pregnancy were not using contraceptives in 2006, the most recent year from which these statistics are available.[7]

The focus groups and interviews summarized above suggest that the unavailability of contraceptives is not the driving factor behind patterns of contraception use in Belizean women. Instead, culturally defined gender norms shape women's decisions about family planning—particularly the beliefs of their male partners, religious community and family. These findings can be better understood using McLeroy et al.'s social ecological model, which depicts five levels that influence behavior: intrapersonal, interpersonal, organizational, community and societal. This model highlights that determinants of health include not only individual behavior but also larger socioeconomic and political factors such as family, community, laws and policies. By doing so, the model reminds researchers and practitioners to create health promotion interventions that will address the multiple dimensions and determinants of health behavior.[33] For women seeking to avoid unplanned pregnancies in San Ignacio, intrapersonal factors include their own knowledge about contraception, experiences with side effects and belief in the effectiveness of contraception. Interpersonal factors include women's relationships with their partners, family members and health care providers. Two organizations that influence women's family planning are presented in this paper: the BFLA and the local faith-based pregnancy resource center. The BFLA provides counseling, condoms, hormonal contraception and surgical sterilization for women, while the faith-based pregnancy resource center supports family planning by encouraging men to respect their female partners and educating couples about their fertility. However, staff at the resource center discourage the use of modern contraceptives and reinforce cultural expectations of established gender roles. At the community level, the authors found that community gender norms, religious teachings and expectations about family size impact women's choices about family planning. Participants stated that some religious groups describe the use of contraception as "sinful," distribute misleading information about artificial contraception and lead men to believe that women exist in order to care for their children and home.

Solutions

Efforts to promote family planning should consider interventions that go beyond change on the individual level, such as improving knowledge and awareness about family planning, to include change at interpersonal, community and societal levels as per McLeroy's model. Examples include promoting healthy relationships and challenging gender inequitable social norms. The latter could be accomplished through media campaigns, in which messages about gender equality and contraception are embedded in entertainment, microfinance programs, and educational interventions.[34,35,36,37] These approaches would help to promote Belizean women's equality and empowerment through outreach to entire communities—women, men, girls and boys—rather than simply targeting individual women.

In order for family planning services to be delivered effectively, it is important to understand the context in which they are delivered. Many of the women who participated in this study survived tremendous challenges: some had raised over half a dozen children, some were single mothers and some had left abusive partners. After overcoming so much, these women look forward to a time when their daughters, sisters and friends would have better lives–lives in which women can make their own choices unconstrained by the demands of partners and expectations of society.

References and tables available at **JGH Online, www.ghjournal.org**

Birth in Those Days

Tamil Women's Critiques of Agriculture Globalization

Morgen Chalmiers
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As the rickshaw sputters along the dusty path, I brace myself against the cool metal side panel, stretching forward to get a better view of the vibrant green fields that surround us. My journey to Tirukarai, a remote village in the Indian state of Tamil Nadu, has lasted nearly an hour now, but the scenery has remained largely unchanged. The narrow road meanders through paddy fields that stretch to the horizon. Swathed in this endless sea of green, clichéd notions of a timeless rural India seem rather convincing. Despite appearances, however, much has changed in these fields over the last few decades.

I originally traveled to Tamil Nadu to conduct ethnographic research on rural women's experiences of pregnancy and birth. In nearly all of my interviews, women expressed a conviction that childbirth today has become more dangerous than ever before. Specifically, women suggested that a decline in the variety of foods available to poor women in Tamil Nadu and the increased use of agrochemicals in the region has rendered their bodies weaker and unable to give birth safely. Though my initial interest had been in childbirth, I found myself focusing increasingly on the women's perceptions of recent dietary shifts and the consequences these changes were having on their health. My conversations with these women convinced me that their condemnation of their modern diet and its implications on their health was not simply a reflection of their collective, self-embodied knowledge. It also expressed a profound and critical understanding of the negative impact that agricultural policies promoted by the Indian state and powerful international forces have had on their lives. Though the majority of women I spoke with had little schooling and had rarely, if ever, heard the term globalization, I argue that their narratives demonstrate a nuanced understanding of the deleterious effects the process has on their lives. While statistics contradict women's assertions that birth is more dangerous today than in the past, the physiological effects of dietary change that these women describe are very real and merit further consideration.

In foregrounding the narratives of poor, rural women of the Global South, my research contributes to a growing body of transnational feminist scholarship that grounds itself in the realities of women's lived experiences. Historically, Western academia has privileged particular ways of understanding the word—the quantifiable, the empirical—and, in doing so,

> "assumes a universalistic, neutral, objective point of view. Historically this has allowed Western man…to represent his knowledge as the only knowledge capable of achieving a universal consciousness, and to dismiss non-Western knowledge as particularistic and, thus, unable to achieve universality."[1]

Feminist epistemologies counter this discursive hegemony by beginning our "inquiry from the experience and perspective of poor Third World women who make up the majority of the world's poor and suffer economic, social, and gendered forms of domination." By centering our analyses on poor women of the Global South whose "lives embody the micro and macro structures of neoliberal globalization" we listen for voices that are often marginalized.[2] These voices speak to the multiple realities of globalization as they are experienced every day by women of varying race, class and national origin.

Little consensus exists across, or even within, the many disciplines that have taken up the study of globalization regarding its defining qualities or chronological starting point. The term is here used to refer to the unique climate of unequal transnational exchange of technologies and ideologies that arose along with the neoliberal state in the late 1970s. This system is the capitalist globalization described by social theorist David Harvey, resulting from "the implementation of the rule of the market via the restructuring of policies and standards across the nation-state system."[3]

In this piece, I consider the association that the women of Tamil Nadu make between the region's changing agricultural practices and the decline in their health. Thus, this project attempts, as described by Mittelman,

> "to elicit beliefs embedded in the agents' own consciousness about their conditions of existence…not just [by] observing what is out there but in part constructing propositions about hidden or subsurface phenomena, some of which may belie common sense."[4]

I begin by presenting the direct results of my own fieldwork—discussing women's conceptions of birth in the past and contrasting these with their descriptions of birth today. I then provide a brief summary of the essential political context in which these narratives must be understood. Next, I consider the ways in which women themselves may implicitly assign responsibility for the decline in women's health that they describe. Finally, I integrate perspectives from the disciplines of medicine, economics and environmental science to provide empirical evidence that supports the women's claims. Throughout my analysis I support my arguments with (translated) quotes from the women I interviewed, referred to as informants, as is typical in ethnography.

The Chronology: Diet in "Those Days"

According to the women with whom I spoke, nearly everyone in Tamil Nadu ate food that was naturally grown and pesticide-free until a few decades ago. Many see a direct relationship between the quality of this food and the ease with which they believe women were able to give birth. I spoke with a traditional birth attendant whom, like my other informants, I refer to by a pseudonym, Malai. As Malai explained to me,

> "[In the past] everything was very natural. There are no pesticides added in the food, there are no chemicals added in it. Everything is natural and everything gives strength to the female. We ate rice and we used to taste the chili. That is what our strength is all about. We used to pluck all the green leaves and we used to eat all those things. There were no pesticides added in the food that we [ate] previously. But nowadays what happens, whatever food we are eating, everything is pesticides. Everything chemical fertilizers are added. There's no strength for the female. She's not eating proper food nowadays. Previously that was not the case. We never had anemic women, all those things. So when we don't have anemic patients, delivery will be very easy for us. So in these cases we can deliver a baby very successfully. That time all these problems are not there. Then we deliver a baby in a very good manner."

The vast majority of my informants expressed similar sentiments. They characterized the food women ate in "those days" (a phrase often nostalgically employed to refer to their idyllic past, as opposed to their more troubled present) as natural and beneficial to women's strength and health.

On the other hand, women overwhelmingly described today's diet as "chemicalized" or "full of pesticides and fertilizer." One woman criticized the increasing consumption of "hybridized" plants, which she believes do not provide the strength that was once found in "natural" diets.Anthropologists working with Tamil women have noticed the same perceptions among their informants. Elizabeth Finnis observed a "lingering longing" among her informants for the millet varieties that were once a staple food in their diets, but have now been abandoned in favor of rice, which they eat at almost every meal. [5] Like the women I interviewed, the women she spoke with saw recent dietary changes—in particular, the abandonment of millet production and consumption—as ones detrimental to their well-being. They voiced concerns about health problems they believe to be the result of pesticide and fertilizer use. They spoke nostalgically about the ways in which eating millet had strengthened women's bodies and prevented illness and worried about the effects the current lack of dietary variety may yield on their health.[6,7]

The Change: A Lack of Variety and Increased Use of Agrochemicals

Chirapathi, with whom I spoke in her village outside Madras, also associated the current lack of variety in diet with a decline in Tamil women's health, particularly with the modern woman's lack of strength, a pattern that was described by many of my informants. She provided very specific examples of the ways in which food in "those days" was healthier for women's bodies. She explained that in the past "they ate meat of the fox, meat of the wild animals, and millet, and lots of pulses," emphasizing the *variety* of foods available to women in the past as compared to that available to women in the present who, according to Chirapathi, "only take rice." Indeed, scholars have documented and expressed concern about the reality of the dietary change Chirapathi describes, specifically the dramatic reduction in the consumption of legumes and pulses, which are essential sources of vegetable protein in the Indian diet.[8,9,10]

The introduction of fertilizers and pesticides and decline in dietary variety are only two of many obvious changes that have accompanied globalization's penetration of rural communities throughout the state.

I also spoke with a doctor of Ayurveda, one of the three main systems of indigenous medicine in South India. Dr. Peeraswami elaborated on the positive effects of a varied diet and the negative health consequences of one that lacks variety. She described the main components of the traditional South Indian diet, which consisted of wheat, rice and a type of millet called raggi, which are, in her words, the "three pillars of good food," since they contain "starch, carbohydrates, fat, vitamins, *everything*." In addition, she placed significant emphasis on the importance of raggi for women's health during pregnancy: "Raggi has all the strong nutrition. The main thing is the bone power and muscle strength. Even though [women] will eat [it], they will never increase their weight so much that it will [cause] complications." Here the doctor contrasts the benefits of consuming raggi with the harm she believes arises from regular consumption of large amounts of potatoes and other white starches, namely, the rise of obesity, which increases the risk of experiencing complications during pregnancy and delivery.

The lack of variety was not my informants' only concern regarding the food available to Tamil women today. Women frequently expressed their disapproval of farmers' widespread use of pesticides and fertilizers, which they often referred to simply as "chemicals." Geerthi, a woman from the outskirts of Madras, illustrated her concern, saying, "nowadays we are eating pesticides and that is why [women have more complications during childbirth than in the past]. These people [in the past] never had chemical foods. Now every food we eat is actually a chemical food."

Dr. Peeraswami similarly suggested that environmental pollution from fertilizers and pesticides has affected women's ability to bear children safely. According to her, "the world we are living in, it is full of toxins here. The environment, the vehicles, the pollution, the food and everything is toxins, and it is going inside our body. Automatically it will give complications [during pregnancy and labor]." This sentiment reflects both an awareness of the very real, measurable effects environmental toxins can have on women's health and a more subtly expressed critique of the forces that have led to the increased presence of these toxins in women's daily lives.

The Context: Nutrition Transition and the Green Revolution

The dietary changes to which these women refer are characteristic of a phenomenon observed throughout the developing world, known as the nutrition transition, a process characterized by a shift from pre-industrial eating habits to a diet high in sugar, fats and refined carboyhydrates.[11] These changes are usually accompanied by the adoption of a more sedentary lifestyle, which results in increasing rates of chronic diseases like diabetes and obesity, as seen over the last few decades in India.[12] Anthropologists Pelto & Pelto view the nutrition transition as a result of agricultural delocalization, the transportation of crops grown in one country to another nation, perhaps thousands of miles away, for consumption. They note that this movement has had very different effects in Western nations than in developing nations. One of the most detrimental consequences of this shift in developing countries has been a significant reduction in the variety of foods, especially whole grains, available for consumption by the general population.[13] In India specifically, the reality of the nutrition transition has been demonstrated by large amounts of data that reflect an increase in the consumption of sugars and fats, accompanied by a clear decline in the consumption of pulses and legumes, which have long served as essential sources of protein in the traditional Indian diet.[14,15,16] The lack of dietary variety and use of pesticides to which my informants refer are thus very real, observable phenomena, which must be historically and contextually explained.

An explanation of these changes begins by examining the Green Revolution policies of the 1970s, which are discussed in greater detail in the following section. At the time, the Revolution was promoted as a means to dramatically increase food production and alleviate world hunger. Today, economists and development workers supportive of Green Revolution policies claim that their adoption has established food security for hundreds of millions of the world's poor.[17] Others, however, assert that these policies only serve to further enrich Western corporations that sell seed and agrochemicals. Yet most agree that an indisputable result of Green Revolution policies has been a massive increase in the production of wheat and rice at the expense of other crops.

The Critique: Assigning Responsibility

Anthropologist Cecilia Van Hollen sees Tamil women's emphasis on the ways their lives and bodies have changed for the worse since "those days" of the past as "fundamentally a critique of modernity."[18] I find her analysis to be further supported by my own fieldwork. I would like to go a step further and ask why so many women choose to express such a critique in terms of dietary changes. The introduction of fertilizers and pesticides and the decline in dietary variety are only two of many obvious changes that have accompanied globalization's penetration of rural communities throughout the state. So how can women's very specific focus on food and diet be explained?

To explore how women assign responsibility for the decline in health that they describe, I reconsider Chirapathi's comments regard-

ing the poor dietary pattern of today's women. After describing the variety found in the diet of previous generations, she noted, somewhat indignantly, that this same variety is unavailable to women today because of the state's restrictions on hunting:

> "Women then were much stronger because of the wild food that they eat. Earlier they were free to hunt, but these days the government doesn't allow them to hunt. And normally that's the way of living, but right now the government is banning these things, so they don't eat the meat of these things, they eat chicken and such things, which are fatter, since the chicken are not naturally fed. So they don't feel stronger."

She sees the "wild" quality of the food women ate in the past as an integral element of its strength-providing properties. She feels that chicken meat is no longer as healthy as it once was because the chickens are no longer "naturally fed." Now that the government has banned hunting, which, according to Chirapathi, is an essential aspect of the traditional tribe's "normal way of living," women no longer have access to the beneficial qualities of "wild food." Van Hollen describes women's emphasis on the differences between life in "those days" and the present as a critique of what her informants believe to be "the degrading effects of modernity on women's bodies".[19] Here Chirapathi extends this critique to apply to what she sees as the harmful consequences of the state's disruption of the community's way of life, specifically its ban on hunting.

Many of the dietary changes discussed by the women I spoke with, such as the decline in dietary diversity and the increased use of pesticides, are, in fact, largely the results of interventions by the state government and multinational organizations like the WTO, which intensified during the Green Revolution. These interventions often took the form of incentives encouraging farmers to adopt "more modern" agricultural practices by subsidizing the purchase of fertilizers and pesticides or granting loans to those wishing to invest in these alluring new technologies. Such strategies have left many rural farmers with huge debts that they cannot pay now that government support for these farmers has been withdrawn in the name of the free market, again at the urging of the World Trade Organization.[20] These circumstances are the result of the Indian government's collaboration with international coalitions promoting global trade liberalization.

Though they may be unaware of the WTO's existence and unable to define what is meant by neoliberal economic policy, rural Indian women possess a deep, intuitive understanding of the state's collusion with the larger economic forces responsible for the destruction of local ecologies and livelihoods. Such understandings are not often explicitly expressed but are implied in women's frequent and adamant condemnation of globalization's harmful effects on their bodies. Their critiques refer specifically to dietary changes that are the direct result of policies that multinational corporations and international financial institutions, like the IMF and World Bank, have designed and enforced.

Maheena**,** a woman who lives in a poor neighborhood outside a large city in Tamil Nadu, did explicitly connect the socioeconomic changes of globalization and trade liberalization promoted by government policy with the current state of women's bodies:

> "Earlier they used to take porridge of cereals, especially millet…[In] those days it was available, these days it's not, because everything is exported. And the women in India they don't get it. It's become very expensive, even for the farmers. Earlier the farmers had all those things in their hand, but now they also have to earn more so they can send it to the market, so it can be sold at a high price for that. That's another thing that agriculture changed now, it changed the body of women."

Environmentalist Vandana Shiva decries the impact of the liberalization of export and import policies that occurred in 1991. She suggests these policies are "destroying the fragile fabric of ecological security, livelihood security, and food security, creating ecological devastation and deepening hunger and poverty".[21] In the name of the free market, these policies allow foreign produce to be imported and sold to the Indian public for consumption. When this produce comes from rich countries like the U.S. that provide large subsidies to agribusiness, locally grown and unsubsidized crops cannot lower their prices enough to both compete with imports and make a profit. Given these conditions, more and more farmers have been forced to switch to growing crops for export in order to make a profit.

As Shetty notes, "globalization of trade encourages [farmers to grow] cash crops for export and the resultant movement of important micronutrients, which are now not available to the local population".[22] Maheena furthers the connection between the increasing agricultural exports and the lack of dietary variety available to poor Tamil women through her suggestion that these phenomena have "changed the bodies of women," a comment that was further explained by another woman I spoke with, Pargavi.

Pargavi elaborated on the specific ways in which these policies may have affected women's bodies by linking women's poverty to complications during pregnancy and birth. She remarked,

> "These days [women] live in fear, because they are weak and food is different and [doctors] recommend to eat greens, fruits. They go to the doctor. The doctor recommends these things during check ups and [women] do this if they can afford it now and then. What if the family is poor? These days women are anemic. They weren't in those days. Sometimes women who are pregnant even get jaundice and in those days it didn't happen."

Her question "What if the family is poor?" is particularly poignant when posed in the one-room home she shares with her daughter, granddaughter and husband. For many women throughout Tamil Nadu, paying for nutritious food during pregnancy on a regular basis is an economic impossibility, especially when they already have one or more children to feed. Pargavi's words emphasize the relationship between poverty and poor health, specifically women's diminishing ability to safely bear children. She locates the source of this problem not in some inherent defect of the female body, but in a particular weakness caused by the harsh economic realities of rural women. These realities, as Maheena makes clear, are not unfortunate accidents; they result directly from the neoliberal policies enforced by corporate giants and powerful nations with a keen economic interest in access to India's markets.

But how do such policies impoverish rural communities? Since the vast majority of these communities in Tamil Nadu depend on subsistence agriculture, the story begins during the Green Revolution. Aggressive marketing schemes appearing in the 1980s lauded the increase in productivity made possible by new hybrid seed strains. Many farmers saw these seeds as an opportunity for investment, not just in new technologies, but in the promise of a better life.[23] All over India, farmers took out massive loans to purchase hybrid seeds, in addition to the fertilizers and pesticides these varieties required in order to flourish.

As promised, these seeds did indeed produce abundant yields.[24] However, such yields were only possible under a very specific set of circumstances; in general, the seeds were far less resilient than past local varieties and needed more water in order to thrive. Thus, many farmers were forced to take out more loans to pay for the irrigation technologies these strains required. Even after this investment, high yielding seeds remained vulnerable to droughts, which could destroy a whole season's worth of crops. In addition, these varieties were also more susceptible to pests and necessitated continual investment in pesticides.[25] Any number of circumstances could cause these vulnerable crops to fail, leaving farmers indebted with no foreseeable return on their costly investment.

Despite all this, before the liberalizations of the early 1990s, the Indian government provided some assistance for farmers that fell on hard times. Prices for crops were stabilized to an extent through government interventions. However, in 1991 conditions of a World Bank structural adjustment program stipulated a reform of the agriculture sector: the adoption of free market principles and ideology.[26] In addition, the government was required to drastically reduce funding for the public assistance programs that were so essential to farmers' well-being. Since the removal of government safety nets in the 1990s, farmers who fall deeply into debt have nowhere left to turn. Out of options, many resort to suicide. Most do so by drinking the very pesticides they went into debt to purchase.[27] Conservative estimates suggest at least 150,000 Indian farmers committed suicide between 1997 and 2005 alone.[28] The widows they leave behind struggle daily to provide for themselves and their children.

These suicides are a tragic result of the high levels of poverty found among farming communities in rural India, even in the comparatively wealthier state of Tamil Nadu, poverty that is the result of neoliberal trade policies and globalizing market forces. As my informants sug-

gested, the effect of this poverty on women's bodies is manifested in the prevalence of diseases largely caused by diet: iron-deficiency anemia, obesity and diabetes. The effect of socioeconomic status on the occurrence of these three conditions has been examined repeatedly. In today's global economy, the less nutritious, processed, sugary foods and starches that Dr. Peeraswami discussed are often all women can afford to purchase in addition to the daily staple of white rice. Foods that are rich in iron such as leafy greens, legumes and meat proteins have become prohibitively expensive and rarely consumed. Accordingly, poverty is widely recognized as one of the most important causes of iron-deficiency anemia, a prevalent and potentially serious condition, especially among pregnant women. As Dr. Peeraswami suggests, a diet high in white starches and processed foods contributes to the rise in other non-communicable diseases such as diabetes and obesity, which are discussed at length in the literature on the nutrition transition.[29]

My assertion that women's claims about the effects of these dietary changes and pesticide use on their health can indeed be read as a critique of the neoliberal processes of globalization, one that is strengthened by the empirical evidence that supports their perceptions. For instance, a traditional birth attendant I interviewed described "leg swelling," often caused by preeclampsia. There is indeed evidence for a potential link between pesticide exposure and hypertensive disorders in pregnancy like preeclampsia.[30] Though this connection is far from definitively established, another important relationship—that between dietary habits (specifically iron intake) and anemia—has been long recognized by the biomedical community.[31,32] Moreover, Finnis studied the abandonment of millet cultivation in favor of rice and the effects of this dietary shift on iron intake. Millets are rich in iron, some having two, three or even nine times the amount of iron available in the same quantity of cooked rice.[33] The decrease in iron consumption that results from shifting from a millet-based to rice-based diet very likely contributes to the extremely high rates of anemia present among poor women in Tamil Nadu. The fact that women overwhelmingly see recent dietary changes as the primary cause of their most serious health problems reflects Finnis' assertion that "villagers recognize [the] health implications [of such changes], even if they do not have access to nutritional charts and nutrient analyses."[34]

The Conclusion: Valuing Women's Knowledge

Over the last twenty years, the government of Tamil Nadu has aggressively promoted institutional delivery as necessary for women to give birth safely in an attempt to reduce maternal mortality. State rhetoric emphasizing the dangers of home delivery, which has increasingly prevalent in the last two decades, is interpreted by many women as a suggestion that they are no longer strong enough to give birth unassisted. This implication has great significance in the Tamilian context, where it is believed that women derive their ability to survive the intense pain of childbirth from their *sakti*, their divine, female power.[35] A woman's endurance during labor and birth is seen as one of the most central, defining characteristics of her femininity.[36]

During her fieldwork, Van Hollen noticed a common perception among her informants that the processes of modernity have drained women of their *sakti* so that women today no longer possess as much *sakti* as their mothers and grandmothers.[37] Similarly, the women I interviewed implied that they too had lost some of this strength and were no longer strong enough to give birth like their grandmothers had. However, by attributing such weakness to the lack of nutritious, chemical-free food available to modern Tamil women living in poverty, my informants implicate both the state and powerful, multinational groups like the World Bank and World Trade Organization in the creation of conditions – through the promotion and implementation of neoliberal agricultural and trade policies – that continue to impoverish the women of Tamil Nadu. Assertions about dietary changes and their impact on both pregnancy and birth therefore can be interpreted as a powerful critique of the larger forces of globalization, a critique grounded in women's experiences of the effects these processes have had on their own bodies. Global health policymakers must recognize the legitimacy of such critiques if they hope to design successful programs that truly address the fundamental causes of maternal mortality and morbidity.

Many heath policymakers in India and other underdeveloped nations continue to place undue emphasis on cultural or behavioral factors in their explanations of maternal deaths and malnutrition. Such explanations encourage the design of health programs that focus on modifying women's behavior rather than remedying the underlying structures of poverty and class inequalities that ultimately lead to poor maternal health. For example, Van Hollen noticed a tendency among maternal and child health development workers to blame cultural beliefs and practices or rural women's supposed ignorance for the prevalence of malnutrition.[38] Similar attitudes are found in a 2009 WHO publication discussing maternal health in Tamil Nadu. In their analysis of the causes of maternal mortality, the authors emphasized women's lack of awareness and failure "to appreciate the seriousness of the risks" inherent in pregnancy and childbirth as well as their "unwillingness to seek appropriate medical assistance in time" as reasons for poor maternal health outcomes.[39]

The validity of explanations that attribute ill-health to indigenous culture, women's behavior, or "lack of awareness" has been repeatedly called into question by a variety of scholars and health professionals. Medical anthropologist Paul Farmer criticizes this "victim-blaming" model of global health that "place[s] the problem with the poor themselves…[claiming] that these people are backward and reject the technological fruits of modernity".[40] Furthermore, UCSF Professor Vincanne Adams similarly condemns the underlying ideology of global health interventions that imply "ignorance is the real cause of disease—ignorance of truths that arrive via international health programs".[41] Like Farmer and Van Hollen, Adams considers structural, not cultural, factors of poverty and inequality to be the most important determinants of health.

The Tamil women I interviewed are acutely aware of the importance of diet and nutrition during pregnancy. Interventions that focus on health education or behavior change but ignore the structures of poverty and inequality, which are intensified by globalization, fail to address the root causes of poor maternal health in this state and others like it. Furthermore, framing culture and ignorance rather than socioeconomic factors as the principle explanation allows the Indian government and transnational actors like the World Bank or WTO to avoid blame for creating the very conditions that lead to the prohibitively high costs of nutritious food for pregnant women. Professor Barbara Cooper makes a similar argument about discourses in Niger that draw on the "trope of the bad mother" to construct the problem of child malnutrition as cultural rather than socioeconomic. She argues that "invoking cultural causes seems to be primarily a way of deflecting responsibility off of the state and other established institutions and onto 'those cultures out there'".[42]

Rural Tamil women assign the responsibility for their poverty and lack of access to affordable, healthy foods to the state and international agencies like the WTO through their critiques of the globalized food system. These critiques reflect knowledge gained through women's own lived experiences. This form of knowledge has been historically discounted and undervalued by policymakers and politicians across the globe, but today, some global health professionals are attempting to remedy this error by listening for the long-silenced voices of the marginalized. Paul Farmer calls this practice "listening for prophetic voices."[43] If they hope to be successful and sustainable, maternal health interventions must not ignore the knowledge of the women for whom these programs are designed. Obstacles to maternal health must be examined through a feminist lens that centers its analysis on women's own lived experiences and knowledge. The research presented here describes Tamil women's poignant critiques of agricultural globalization as part of a larger argument that asserts the inherent value of women's knowledge and advocates for a new global health paradigm that values this knowledge to a greater extent.

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References available at
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Observations on Eye Care in Lamu, Kenya

Overlooked Needs and Proposed Interventions

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Introduction

These notes draw attention to the underserved eye care needs of residents of Lamu, Kenya. They are comprised of observations that we, Rebecca Gearhart, an anthropology professor at Illinois Wesleyan University (IWU) and Erick Henderson, an IWU biology and pre-optometry major and president of the Optometry Club, made while volunteering at a clinic in Lamu, Kenya during the summer of 2011. Plans to establish a temporary eye clinic emerged after Rebecca discovered that Erick was an optometric technician who might use his portable optometry lens set to fit residents of Lamu Town on Lamu Island for glasses and teach them about eye health. We spent ten days volunteering at the Lamu Center of Preventative Health (LCPH) assisting the Center's director, Munib Abdulrehman, in performing reading evaluations and glaucoma checks for 340 patients and distributing 450 pairs of reading and sunglasses.

Lamu is an island that encompasses 63.6 square miles and is situated in an archipelago that lies just off the northern coast of Kenya, 150 miles north of the coastal city of Mombasa. With a population of 18,382, Lamu Town is the largest population cluster in Lamu County, which occupies 3,831.8 square miles and is home to 101,539 residents.[1] The 2011 Human Development Report ranks Kenya 143 out of 200 countries with comparable data on multidimensional poverty.[2] In coastal Kenya, 69.7% of people live in poverty, about twice as many as those in the capital city of Nairobi.[3]

There are six health facilities in Lamu Town, none of which provide eye care services. The Lamu District Hospital provides emergency care including surgical procedures, diagnostic care and inpatient care. Among the five smaller clinics, one specializes in maternal health, another is focused on pediatrics, and the other walk-in clinics provide basic care for common illnesses, such as malaria and respiratory infection. Also located in Lamu Town is the Lamu Center of Preventative Health (LCPH), which was established in 2009 by Munib Abdulrehman, a Lamu native and American-trained nurse practitioner and doctoral student. LCPH provides free screenings for, and education regarding, chronic illnesses, such as diabetes and hypertension. The Center also focuses on filling other gaps in preventative healthcare in the community, such as providing free malaria and HIV/AIDS testing and counseling. Other preventable eye conditions such as cataract and glaucoma can be detected early, yet the healthcare personnel required to perform the testing are often unavailable in rural Kenya. Providing free screenings and distributing appropriate eyewear to prevent blindness among Lamu residents fits squarely within the LCPH mission statement, making LCPH a natural site for the temporary eye clinic. [4]

In the sections that follow, we provide a context for understanding the eye care challenges faced by coastal Kenyans like those who visited the temporary eye clinic at LCPH. We discuss the facilities and interventions that are currently available to such patients and present case studies based on the patients we met, whose stories highlight these issues on a personal level.

Olusegun Yayi

State of Eye Care in Kenya

In sub-Saharan Africa, the ophthalmologist-to-person ratio is 1:1,000,000, representing a significant challenge to eye health that is particularly formidable in remote areas like rural Kenya.[5] To address the healthcare disparities in Kenya, the World Health Organization (WHO) and the International Agency for the Prevention of Blindness (IAPB) have implemented an eye care initiative known as "VISION 2020: Right to Sight." This worldwide program began as an effort to support organizations working to end avoidable blindness throughout the world. The program targets the prevention and treatment of cataract, glaucoma and diabetic retinopathy to curb blindness and is poised to have a significant impact on

the population of Kenya if properly implemented. Currently, in Kenya, the VISION 2020 program relies heavily on the training of ophthalmologists at the University of Nairobi's Department of Ophthalmology.

Since approximately 80% of the conditions that lead to blindness are preventable, an increase in the number of eye care specialists as well as improved technologies that make eye-care procedures cheaper and easier will undoubtedly benefit Kenyans.[6] For example, prior to the 1990s, cataract repair in Kenya typically required the surgical removal of the natural lens and the production of an extremely thick pair of aphakic glasses to compensate for the lack of focusing power previously provided by the eye's natural lens. With Intraocular Lens (IOL) implant technology, an artificial lens is inserted directly behind the iris in place of the damaged lens and only the surgery is necessary, eliminating the need for the costly production of aphakic glasses.[6] In spite of this improved technology, however, the lack of eye care specialists trained to perform IOL surgery prevents its use among the general Kenyan population. In 2000, Karimurio identified cataract as one of Kenya's leading eye health issues and suggested that the need for eye care specialists in Kenya was evident in the high prevalence of cataract among the population. Based on the number of patients suffering from cataract who visited the temporary eye clinic in Lamu, we believe that cataract remains an undertreated eye condition.

Current statistics point to the prevalence of eye care problems among Kenyans in general as well as among coastal Kenyans, particularly in remote areas of the country. In 2010, the Kenya Society for the Blind provided eye care services to over 25,000 Kenyans through stationary and mobile clinics in remote rural areas of the country.[7] Another organization that is engaged in similar work is The Lighthouse for Christ Eye Centre, which is based in Mombasa and provides eye care for 25,000 patients annually. The Lighthouse focuses its services on prescribing eyeglasses and performing cataract and glaucoma surgeries, even to those in remote areas of the Coast Province. In 2012, 2,786 patients were seen at temporary eye camps sponsored by The Lighthouse to reach underserved populations in rural areas of the Mombasa hinterland.[8] The Kwale District Eye Centre, located south of Mombasa along the coast, is the only other clinic specializing in eye care in coastal Kenya. Between January and June of 2012, the Centre provided optical services to 12,053 patients at the base hospital and at community screenings, and performed 822 cataract and 48 glaucoma surgeries. [9]

Based on self-reported patient censuses from these eye care facilities, as well as the 340 Lamu resident visits at LCPH during the ten-day eye care clinic we assisted, it was evident that there is great demand for eye care in coastal Kenya. This is especially true for populations in Lamu County, where there is a lack of regular eye care services or professional eye care specialists. This assertion is not to suggest that residents of Lamu County have greater incidence of eye problems compared to other Kenyans, but that due to their remote location, the eye problems of Lamu County residents go untreated due to the limited availability of optical services. The lack of eye care makes long-term eye care, including post-operative treatment, unlikely for these residents. This could have possibly contributed to the preventable complications, such as corneal scarring, and pathologies that we saw.

Olusegun Yayi

Presbyopia

In addition to cataract and glaucoma, research conducted by Patel and West specifically argues that functional presbyopia (near vision impairment) is a primary health challenge in East Africa that the WHO needs to address more adequately.[10] Presbyopia is a condition in which the eye is no longer able to focus on near objects. Although this condition affects approximately 85.4% of the rural Kenya population, only 5.4% use corrective lenses.[11] This is compared to 39% of Brazilians and 84% of Australians with presbyopia who use corrective lenses.[12,13] Presbyopic correction is often taken for granted in the developed world because improving one's vision is as easy as purchasing a pair of reading glasses from a local convenience store. In rural Kenya, however, such glasses are largely unavailable. Even if they were available, however, there are very few optometrists who can prescribe the proper corrective lenses to those who need them.

While presbyopia in the developed world is commonly associated with an inability to focus on printed text, illiteracy among coastal Kenyans is high (62.9 %) and thus other consequences are more pressing.[2] Most coastal Kenyans who suffer from presbyopia require near-vision correction not for reading, but rather to complete tasks such as threading a needle, wood carving and mending fishing nets. The majority of female patients we saw specifically complained of an inability to read the numbers on their cell phones. Patel and West's finding demonstrates that women in low- and middle-income countries have a higher prevalence of presbyopia; this supports our observation that female patients sought treatment for near vision impairment in greater numbers than did male patients.[10] A common complaint from older women was that they were having difficulty sewing *kofias*, the intricately hand-sewn caps worn by Swahili men. These caps are extremely detailed and often take months to complete. The high price they fetch sustains the women and allows them to be financially self-sufficient.

Though the need for reading glasses in developed countries is commonly associated with increasing age, the prevalence of presbyopia among young people in Africa is higher than it is among those of the same age bracket in Europe and North America.[10] Patel and West also point to studies that correlate early onset of presbyopia with latitude and hotter climate, which may help explain the number of young people at the Lamu clinic who suffered from near vision problems.

In order to highlight some of the eye care issues faced by residents of Lamu Town, we offer case studies of three of the patients we saw during the ten-day period during which the eye clinic was open at LCPH. The names of these patients and any identifying characteristics them have been changed to protect their anonymity.

Case Studies

Faraj

As seventy-year-old Faraj carefully felt his way into the eye screening room by following the wall with his hand, it was apparent that he was suffering from severe vision problems. After performing a visual field evaluation by hand, it was determined that Faraj had lost the majority of his peripheral vision. Faraj's intraocular pressure (IOP) was checked first; then his optic nerve was observed with an ophthalmoscope. The normal IOP of a healthy eye is 10-20. The pressure in both of Faraj's eyes was over 50, indicating that he was suffering from glaucoma. Since

Erick Henderson

Faraj's vision had deteriorated so much and so little of his sight remained, no remedy could be suggested. Though Faraj was disappointed that no treatment was available to correct his vision, he left the clinic with a deeper understanding of his condition, which had never before been explained to him.

Amina

22-year-old Amina explained right away that she had never been able to see very well and that, as a result, her schoolwork had suffered throughout her childhood. Performing a preliminary vision screening helped determine that she was suffering from myopia, a condition more commonly known as nearsightedness. (Amina tried on pair after pair of lenses of increasing strength to try and make out the letters on the vision chart on the wall across the room.) Eventually, when the lenses reached a power of -5.00 diopters, she was able to accurately see the symbols on the chart. A pair of donated spectacles that matched this power was a perfect fit for Amina's needs. As she placed the glasses on her nose, Amina closed her eyes. When she opened them and looked around, she let out a sigh of relief and gleefully declared that she could see everything clearly for the first time in many years.

Omar

When we asked Omar what had brought him to LCPH the day he visited, he explained that his eyes often irritated him and complained of the buildup of a white film on one of his eyes. Upon inspection, Omar's condition was diagnosed as a pinguecula, a tissue deposit that often develops on the conjunctival layer of the eye as a result of excess ultraviolet (UV) light exposure. Once a pinguecula has formed, it cannot be reduced in size. As a young man in his early twenties, Omar was alarmed at the diagnosis. When it was explained that the condition was caused by exposure to sunlight and other environmental irritants, Omar told us that he had fished for a living since childhood. Though he had owned a few pairs of sunglasses throughout his life, he often lost them while fishing and thus stopped wearing them a few years ago. Omar was given two pairs of sunglasses, one to keep as a spare in case he lost the other. Wearing the sunglasses would help protect Omar's eyes from future environmental damage and slow further growth of the pinguecula, preventing the future need for surgery.

Analysis

It is significant to point out that the reading chart, the lens kit and the glaucoma testing equipment (a tonometer pen) that Erick brought with him to Lamu are rare in most clinics in Kenya. Since the test that measures intraocular pressure, often referred to as the "puff of air" test, has been routinely offered to patients in the U.S. since the early 1970s, it is startling to discover that the test is largely unavailable in Kenya. The absence of such basic examination tools is due to both cost (a tonopen costs approximately $3,000) and a lack of trained eye care specialists.[15] If patients such as Faraj, Amina and Omar had received routine eye examinations throughout their lives, many of the impairments from which they now suffer could have been avoided. Faraj told us that his visit with us was the very first time he had ever had an eye exam, even though his vision began to fail him many years ago. If an eye care professional had detected the warning signs of glaucoma earlier, the damage to Faraj's optic nerve could have been reduced, if not prevented altogether.

Pingueculas and pterygiums were apparent in over a quarter of the men we saw at LCPH. Both of these conditions are characterized by growths that form on the conjunctiva, the thin tissue covering the white of the eye.[16] These conditions are directly related to exposure to ultraviolet radiation, dust and wind—all extremely prevalent in Lamu.[17] While they typically only generate cosmetic symptoms, such as discoloration and buildup, these conditions can cause irritation and vision problems if the growth continues to develop towards the cornea. The prevention of these growths is easy and relatively inexpensive, namely, wearing sunglasses with UV protection. This is especially critical in Lamu, just two degrees below the equator, where the sun shines twelve hours per day, from 7:00 a.m. to 7:00 p.m.

These case studies offer a glimpse into the lives of Kenyans who suffer from untreated, but easily preventable visual impairments. In Kenya, where the average life expectancy of 58 makes seventy-year-old Faraj much older than most, fellow Kenyans may understand his blindness as a natural consequence of aging rather than the preventable disability that it is.[18] In a country where the unemployment rate is 40%, the fact that young people such as Amina and Omar are unemployable because they have visual impairments may not seem as alarming in Kenya as it might in another context. We wonder if dismal statistics such as these prevent Kenyans from realizing the impact visual impairment has on quality of life and deter them from demanding improvement in eye care.

Perhaps the most disturbing situation we encountered in Lamu was that the majority of those who had undergone cataract surgery complained of dramatically reduced vision and, in some cases, complete blindness. The lack of post-operative eye care available to patients in Lamu County has far-ranging implications, but without documented patient histories or medical records, it is challenging to determine the exact cause of the vision loss. The tales of botched surgeries that we heard reflect negatively on healthcare providers and clinics, especially in small communities, and are a substantial barrier to effective health care delivery.[19] Briesen et al. suggest that claims of botched eye surgeries in Kenya are nothing but rumors communicated among misinformed people who do not understand that the eye surgery is safe. However, because community members often hear stories of how people in rural areas are used as fodder for medical students, such rumors can be detrimental to legitimate healthcare interventions.[19] Since there are no reports available that provide statistics on the success or failure of eye surgeries in Kenya, it is difficult to determine the actual prevalence of botched eye surgeries.

Looking Ahead

Our experiences working with patients in Lamu, Kenya over a ten-day period in the summer of 2011 revealed significant eye

problems among people in poverty-stricken communities with inadequate healthcare. Concomitant factors that contribute to eye diseases among Lamu residents include living close to the equator, where damaging UV rays are a danger, and constant exposure to environmental irritations, such as sand and smoke from stoves and burning trash. While outdoor work, such as fishing, exposes men to the damaging rays of the sun, women are exposed to smoke from charcoal stoves, putting members of both sexes at risk for eye problems. Directing local public health education programs to focus on eye health and the training of public health officers, nurses, clinical officers and primary care physicians on how best to prevent and treat common eye problems and provide post-operative eye care would greatly improve patient care in Lamu. Since eye health is an understudied area of research in Kenya generally, more medical research needs to be conducted to further evaluate the scope of the conditions we observed among Lamu residents.[20] If significant improvements in eye care for Kenyans are to be made, the needs of underserved populations, like those in Lamu, need to be reevaluated and taken seriously.

Improving eye care and enhancing the general health of the people of Lamu will require time, effort, creativity and resources. Although the VISION 2020 program has been providing support services for the prevention of blindness throughout Kenya, it also needs to direct resources to fight presbyopia, a contributing factor to functional blindness.[5] The scope of the problems caused by presbyopia warrants attention and the condition is relatively inexpensive to address. Thus, eradicating presbyopia in Kenya should be an immediate goal, and the prevention of cataracts and glaucoma should be a longer-term goal of any vision-focused intervention in the country.

Spectacles to correct presbyopia cost approximately U.S. $1.00 (75 KSh) per pair, a sum that the average American can easily muster, but is quite formidable for the average person in Lamu.[11] The average monthly income for a resident of coastal Kenya is 3,117 Ksh ($41.56).[2] Since the cost of food-per-capita, per month, costs nearly half of the average monthly wage, just over $20 is typically left over to cover all other expenses.[2] In this light, the purchase of a pair of reading glasses, though inexpensive in some parts of the world, is not feasible for those in Lamu. The high cost of vision testing equipment is also an obstacle in Kenya, though new technology developed by researchers at MIT provides hope for the future. The Near-eye Tool for Refractive Assessment (NETRA) is a portable lens that attaches to the face of a cell phone and costs just one to two US dollars to make.[21] Such innovative and appropriate medical technology presents itself as a silver lining in an otherwise discouraging situation.

We challenge Kenya's VISION 2020 program to aim for the eradication of functional blindness in Kenya by making properly prescribed reading and sunglasses available to all citizens who need them. If we were able to distribute four hundred and fifty pair of glasses in ten days, we believe that the Kenyan government could implement a campaign throughout the country to do the same, starting with those with least access to such services. With momentum gained through the eradication of easily treatable vision loss, more difficult eye care problems, such as cataracts and glaucoma, can be addressed. With improved public health education, early detection and prevention and better access to eye care professionals, the future will be brighter for Kenyans like Faraj, Amina and Omar.

References available at **JGH Online, www.ghjournal.org**

Agroforestry in the Shadow of a Green Monster

The Politics of Confronting Hunger in the Northern Cauca, Colombia

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When driving through the northern Cauca, a state in southwestern Colombia, it is difficult to see anything beyond the fields of green that extend far into the distance, which finally dissolve into the *Cordillera Occidental* and *Cordillera Central* mountain ranges that border the Cauca River valley. This sea of green, often known as the *monstruo verde* (green monster), is composed of vast expanses of sugarcane, a crop that the *ingenios* (sugarcane processors) own and harvest for national biofuel production. Sometimes, as you drive quickly along the gravel side-roads, a patch of oasis appears in the tall cane. Looking closer, you will notice fruit and plantain trees nestled in around the short brick houses. These little patches are remnants of the type of agriculture that used to characterize the valley – a sort of agroforestry called a *finca tradicional* (traditional farm), one that only exists today in small fragments.

These traditional farms are integrated systems of forest, crop and livestock management that have been forced into obscurity in recent decades by the arrival of sugarcane *ingenios*. As the *ingenios* have bought up or rented out the lands of struggling farmers in this region over the past half century, many residents have been forced to leave the area for work in cities. In the northern Cauca, 14.5% of the entire population experience chronic malnutrition.[1] Food insecurity, broadly defined as a lack of physical, social and economic access to a food supply that meets nutritional needs, is an even greater problem: 43% of households are food insecure.[2,3] This situation is emblematic of a global phenomenon in which biofuels and land grabs are threatening food security.

In this essay, I will explore some of the current food projects aimed at alleviating hunger and malnutrition in the northern Cauca, first by explaining the root causes of global hunger, then by contextualizing the region and, finally, by tracing the origins of 'alternative' approaches to international development have manifested in the region. Some of these projects label themselves as working for "food sovereignty," an approach that asserts the right of individual communities to determine their own food systems or processes, ranging from food production to consumption. However, the use of this term obscures a vast diversity of approaches to food systems present in the region. I suggest that applying a newly theorized "food regime/food movement" framework may help elucidate a variety of approaches to hunger in northern Cauca.[4]

The Problems with Food for Profit

Around the world, agroindustry, land grabs, the consolidation of land ownership and the menace of agrochemicals and biofuels threaten the health and nutrition of local populations. These phenomena suggest the impossibility of truly addressing issues of food and nutrition without addressing people's lack of power in determining their own food system. For scholars of international development, this idea is well established. Amartya Sen (1983) showed that a household- or individual-centric approach to food scarcity ignores the importance of addressing the political forces that determine the abilities of groups to access food. Thus, an emphasis on endowments of land and labor; on the conditions of exchange, such as employment, wages and prices; and on changes in social protection are crucial lenses for understanding – and ultimately combating – hunger and famine.

In the 1970s, countries in the developing world began a process of agricultural development that depended on cheap imports to feed workers and on agro-exports to boost national GDP.[5] This policy shifted developing countries from importing almost no grains in the first half of the century to importing half of the world's grains by 1971.[5] Models of economic development suggest that the incomes that result from such specialization should translate to more and better food for all, but unfortunately this has not been the case: incomes have often not translated to increased food access, both because they were increases for only a select few and because the increases were insufficient. In many instances, such food exports have occurred in the face of widespread malnutrition. Food insecurity usually only makes headlines when food prices skyrocket and riots break out, but it is an under-the-radar, daily reality for much of the world.

Hunger in the developing world is partially rooted in the creation of a system in which development institutions such as the World Bank export industrial models of agriculture, which involve high inputs of petrochemicals and machinery use. Traditional economics proposes that agricultural productivity growth is the driving force of economic development, but this perspective is highly flawed. Most economic growth models, such as the foundational Harris-Todaro model, define agricultural productivity growth as allowing workers to exit the rural agricultural sector and enter the urban, "modern" sector.[6] Such models assume that the true goal of economic development is to draw workers out of food production and into manufacturing in order to create economic wealth, ignoring the role that smallholder agriculture[1]* can play in creating livelihoods for the rural poor.

A system of food distribution has emerged since the 1970s that, while supported by institutions such as the World Bank, is increasingly condemned as both inequitable and ecologically unsustainable.[7,8] The economic liberalization of developing countries in the '80s and '90s, as part of widely promoted policies by development institutions, combined with developed countries' own trade protectionist measures, led to the import of environmentally malignant, Western-style monocultures (commonly defined as the practice of growing one crop over large areas) into developing countries.[5] This form of agriculture uses chemical fertilizers and pesticide-based, low-labor and highly mechanized farming processes of wheat, corn and soy, which deplete long-term soil quality. Moreover, they are associated with a number of health and environmental implications.[9] The system has also been criticized for contributing to food insecurity both by reducing the nutritional diversity of national food production to only a handful of crops and by making developing countries dependent on these exports, the prices of which fluctuate with newly-liberalized markets.[7,10] Treating the problem of malnutrition as a mere production problem ignores the fact that issues of malnutrition and food insecurity are rooted in unequal power dynamics. This problem is created by the concentration of monopolistic political and economic powers among a select few corporations (often multinationals) and the lack of democratic control of much of the food system.

Consequently, dealing with problems of food necessitates the reconceptualization of food systems through the lens of power dynamics. As the movement for "food sovereignty," a term coined by the

* Smallholder agriculture refers to family farming that occurs on relatively small plots of land.

international peasants' movement, La Vía Campesina, points out, home-grown solutions to food insecurity are needed. When food systems are left to the forces of globalization, markets, and neoliberalism, the result is often food insecurity among the poorest.[9] The term "food sovereignty," as opposed to "food security," centers on the basic human right to food and to the control over access to food through the democratic control of agriculture, a right affirmed in the United Nations Universal Declaration of Human Rights.[4] La Vía Campesina has brought together 200 million peasants from multiple continents under this banner of food sovereignty.

The International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD) report in 2007 highlighted the agreement of hundreds of researchers on the necessity of a small-holder and agro-ecological approach to agriculture, one that recognizes agriculture's place in the broader ecosystem. Agro-ecology emphasizes the importance of conducting agriculture that is sensitive to the needs of the local ecosystem. The IAASTD establishes that integrated, smallholder agriculture is both more able to optimize long-term production and more ecologically sustainable than industrial agriculture, maintaining biodiversity and limiting the use of imported chemical fertilizers and pesticides. This kind of smallholder, agro-ecological production requires the use of local inputs, knowledge, and practices to thrive. Thus, intimate knowledge on the part of the farmer is used in place of chemicals in order to boost yields.[11,12] The implications of such recommendations support the need for food production that is returned to the hands of local smallholders, not large agro-business.

The history behind the growing food insecurity in the Cauca valley is tied to the gradual undermining of peasant agriculture, the consolidation of land tenure, and a state development agenda that favors businesses over people.

Introducing the Northern Cauca

The northern Cauca is a historically Afro-descendant area located a one- to two- hour drive from Cali, one of Colombia's major cities. In the past few decades, many residents of the northern Cauca have been forced to migrate to Cali because of lack of work. There is a high incidence of poverty in the northern Cauca; 42% of the population lives below the government poverty line.[1]

In the summer of 2012, I spent two months in the southwest of Colombia conducting fieldwork for my Masters of Philosophy in Development Studies. Much discourse regarding post-development and "alternatives to development" has emerged from this area.[13] Such new approaches, which are deeply skeptical of the standard growth-oriented, neoliberal approach to international development, are rapidly gaining traction: globally, social movements have begun to voice their alternatives, often through the World Social Forum. This growing discussion raises questions: to what extent can social movements challenge the economic and political systems that create poverty and hunger? And, to what extent can they formulate successful answers to these problems?

The history behind the growing food insecurity in the Cauca valley is tied to the gradual undermining of peasant agriculture, the consolidation of land tenure,* and a state development agenda that favors businesses over people. At the beginning of the 20th century, the region was characterized by many small farms run by the descendants of slaves who, once freed, had found livelihoods at the edge of plantations.[14] These populations developed a form of traditional agriculture, the *finca tradicional*. Over time, however, these farms began to disappear because of outside influences. A series of outside academic institutions (many from the US) and government initiatives facilitated a shift from traditional crops, such as plantains, cacao and fruits, to seasonal crops, such as soy, corn and beans, which were seen at the time as the best path to productivity growth.[14,15]

Many of the seasonal crops failed, and as peasants became indebted to the *Caja Agraria* (an agrarian government lending agency), they lost their lands.[15] Since the 1970s, partially as a result of this consolidation of land tenure, the predominance of seasonal crops has given way to monocultures as *ingenios* have bought up or converted previously rented lands for sugarcane production.[16] As a result, land tenure is highly consolidated and dominated by a few major landowners who produce sugarcane. The national biofuels mandate, which requires that all vehicles run on a certain amount of biofuels, has exacerbated this spread of sugarcane for biofuels production.[16]

Large-scale development projects and an industry-oriented development agenda have also contributed to the growing issue of food insecurity. In 1985, the CVC (the Cauca Valley Autonomous Regional Corporation) built the La Salvajina hydroelectric dam, aiming to protect sugarcane plantations from the flooding of the Cauca River and to produce energy for the city of Cali. The government and the CVC have not yet fulfilled their promise to use the revenue created by the dam to create development projects in the communities that were displaced by the dam. In addition to displacing more than 3,000 families, the project has altered soil quality and fishing conditions, and certain forms of agriculture have become more difficult. As a result, residents' livelihoods and food sources have narrowed.[16,17]

More recently, the 1995 Páez Law designed to incentivize business development through industrial parks was enacted in the Colombian states of Cauca and Huila. Through this law, the government encouraged the establishment of new businesses such as agricultural, ranching, industrial, touristic and mining projects via tax exemptions and tax holidays. However, because the northern Cauca's workforce lacks the proper qualifications for many of the jobs created by these projects, businesses have brought in outsiders to work at the parks.[1,8,19] Thus, while the enterprises created through this law have created employment opportunities and diversified the region's economic base, the law has failed to increase sustained employment in the region.[18]

A Turning Point: The Law 70 and Afro-Cultural and Territorial Rights

In 1993, the passing of Law 70 (the *Ley de Negritudes*), signaled a key turning point for Afro communities in Colombia and brought the concept of "food sovereignty" into the national agenda. The law gave Afro-descendent groups the right to cultural and communal territorial rights. For example, it designated improvements to education, training, credit access and other issues for black communities and gave lands to Afro-communities in the Pacific region of the country.[13] The Afro-Colombian social movement, *Proceso de Comunidades Negras* (PCN), emerged from these mobilizations to push not only for these defended cultural and ethnic rights, but also for the rights to collective land. An important part of this Afro-Colombian rights discourse centers on "food sovereignty," echoing the term coined by Vía Campesina.

However, other factors have prevented food sovereignty from gaining significant traction among the PCN in the northern Cauca. While other historically Afro areas in Colombia received collective land titles from the government, the northern Cauca was not one of these regions;[2]* because of this, the PCN in the northern Cauca continues to mobilize predominantly around land. In particular, it focuses on keeping mining titles from multinational corporations, such as AngloGold Ashanti, so that the corporations cannot push community members off their lands. The struggle over mining rights comes in addition to regular human rights violations

* Because the mobilizations were led by activists in the Pacific region, the Afro-Colombian social movement put forward a version of 'blackness' centered upon the riverine, rural cultures of the Pacific region, and did not include the northern Cauca, the population of which is seen instead as peasant or semi-urban. [20]

(such as kidnappings of activists) and violent conflict between guerillas, paramilitaries and the Colombian army.[16] Perhaps because of this plethora of issues, the PCN has not been able to focus specifically on promoting food sovereignty.

In addition to the PCN, a plethora of NGOs and development institutions have emerged to address issues of poverty and hunger in the region, focusing on supporting the Afro populations identified and protected under Law 70. These organizations have adopted the label of "food sovereignty" for much of their work and have approached the issue from diverse perspectives. For example, the regional development corporation VallenPaz, whose name literally means "valley in peace," was founded by business owners in the region to keep *coca* production and its associated violence out of the region, and sees its work on promoting traditional farming and nutrition as necessary to that larger aim.[21] The NGO Asociación Cultural Casa del Niño, on the other hand, supports traditional farming for a different purpose: to offer livelihoods for the many formerly local residents who have been forced to leave the region.[22] Such NGOs, many of which have strong ties to Afro social mobilizations, have undertaken projects to restore traditional farms in the region.

"Food Sovereignty" and "Food Alternatives": A Diversity of Approaches

Among social movements and development institutions alike, various self-proclaimed "food sovereignty" projects are currently being implemented. The PCN Project Solstice is the only example in the northern Cauca of a community that has successfully gained collective territorial rights. Residents farm this land according to agro-ecological principles. Other NGOs, as mentioned above, support similar traditional farms, but these are individually, not communally, owned and managed. While communal ownership can help levy the market power necessary for participating in value chains, it does not allow residents to access private credit if desired.

A consortium of domestic and international organizations has piloted a project called *Territorios Étnicos Productivos,* or "Productive Ethnic Territories," aimed at helping farmers develop traditional farms that place extra emphasis on intercropping* cacao for export. The regional development organization, VallenPaz, has a traditional farm project as well, although many of the project participants I spoke with expressed skepticism about the effectiveness of VallenPaz's help, noting that its training sessions were often unnecessary and that the purpose of credit was more effective in helping farmers purchase inputs for production.

While many of the projects aim to support *fincas tradicionales,* each of these projects is rooted in different visions of development and attitudes toward the importance of an Afro-oriented social movement. This variety shapes each project's approach to re-envisioning the northern Cauca food system. Variety can be seen in the projects' approaches to the environment, to knowledge forms and transmission, economic growth, community work, land and their different organizational structures. For example, while some emphasize collaborative community work, others place emphasis on the individual. Some see the incorporation of farmers in the research process as necessary, while others use outside experts to transfer new technology forms to farmers. Land is an especially important issue; only some organizations directly assert the importance of land redistribution in order to push for food sovereignty. Most of them do not, instead focusing solely on helping traditional farmers increase productivity.

Even among the PCN organizations there is great diversity in terms of the understandings of food sovereignty. Through "Project Solstice," (*Proyecto Solsticio*), the PCN has established a traditional farm in which approximately 40 families collectively own and farm the land, producing a variety of agroforestry crops that hark back to the agriculture of their ancestors: plantains, citrus, livestock and other foodstuffs. The PCN branch in the urban area of Puerto Tejada does not have traditional farms, but instead defines "food sovereignty" as backyard garden projects, in which women grow tomatoes, cilantro and onions for household consumption. In La Toma, although the PCN's women's group has a collective plot that they tend, the group does not apply the same agroforestry traditional farming principles as in other groups. Instead, it utilizes farming fields of plantain monocultures and occasionally uses pesticides. The PCN La Toma also has a plantain- and cacao-processing factory, which was built with funds from a Spanish coalition. The variety of PCN projects raises the question: if a project does not address issues of land tenure and choice over foods and products, is this project really a "food sovereignty" program? Does it present a truly "alternative" perspective on hunger and poverty, one that re-envisions the power relations implicit in hegemonic development?

The variety of projects under the banner of "food sovereignty" and "food alternatives" do not seem to reflect the initial goals outlined by the Afro-Colombian mobilizations that introduced them. Rather than presenting alternatives to development, many of the projects appear to use these labels to promote quite contradictory approaches. This variety can be seen in the differing attitudes of the projects: for example, those that endorse export-oriented economic growth rather than livelihood sustenance, and those of top-down knowledge diffusion rather than bottom-up knowledge creation. Thus, despite the transformative nature of the term "food sovereignty" as it was originally conceived, the projects described as "food sovereignty" initiatives often do not share the same political orientation or goals. This indicates the potential for co-optation present in the various manifestations of "food sovereignty." Does food sovereignty mean territorial and political autonomy, or ecological sustainability, or does it simply mean extra fresh produce?

A Possible Framework for Assessing the Transformative Potential of Food Systems Alternatives

My goal here has not been to prescribe one correct way to alleviate hunger and malnutrition, but rather to argue for the importance of understanding these approaches as intrinsically political phenomena. In finding solutions, it is crucial to be cognizant of the variety of political projects that underpin any general approach to food systems.

In dealing with such complexity, I suggest that Holt-Giménez and Shattuck (2011) offer a possible framework for analysis. They assert that we can understand approaches to hunger as proposing two general solutions. The first, a "food regime" approach, urges a continuation of a corporate model of hunger alleviation, while the second sees this model as at the root of the problem itself. Holt-Giménez and Shattuck argue that only the second, a "food movement" approach, truly identifies and addresses the underlying roots of hunger. They divide this food movement approach into two categories: "progressive" and "radical." Progressive approaches aim to empower communities marginalized by the current system. These emphasize the right to food and social protection, as well as more sustainable, agro-ecological forms of production. Radical approaches, on the other hand, aim not just to empower populations, but to also reassert their entitlements to the land and natural resources. In the northern Cauca, "food regime" approaches tend to ignore the role of inequitable land tenure and big agribusiness in contributing to hunger. On the other hand, "food movement" approaches do not aim just to alleviate hunger, but also to succinctly identify a key cause of hunger: a regional development model that favors sugarcane producers over local residents.

It is impossible to categorize certain food projects in the northern Cauca as clearly part of "food movements" or "food regimes." Instead, projects tend to have overlapping characteristics. For example, the PCN La Toma's plantain processing factory does not seem to exemplify the kind of agro-ecological production of "food movement" approaches. Yet, in other ways, the PCN La Toma's approach to social organization does fall into the "food movement" approach: the group's organization is largely non-hierarchical and emphasizes collective work, both features of a radical approach to food systems. Similarly, while Vallenpaz might be dismissed as a reformist institution, it contains elements that may be characterized as "food movement," for example by supporting agro-ecological production.

Such a framework offers the potential to understand which approaches to food systems challenge the industrial, corporate food paradigm, and which do not. It is surely a necessary question to re-emphasize in light of the divergent goals that food sovereignty projects currently pursue in the region. If food systems are truly to serve the interests of the communities of the northern Cauca, paying attention to the transformative power of different approaches to food sovereignty must be of central importance.

References available at
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Lessons from an HIV denialist in the hills of Thailand

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I spent a month volunteering with Dr. Mark,* a physician in the hill tribe villages of northern Thailand, in the summer of 2010. He was born in Myanmar, graduated from medical school in India and founded a small grassroots organization dedicated to the health of hill tribe villagers. He spent the last five years moving from village to village along the mountainous Thai-Burmese border, working on sanitation projects and seeing patients in makeshift clinics. He is hard working, humble and is known for his fluency in eight languages, including all six of the local hill tribe dialects. During my month with Dr. Mark and his organization, I helped build toilets, collect water supplies and run medical clinics.

Through this experience and my discussions about HIV/AIDS with Dr. Mark, I was exposed to the concept of HIV denialism: what it is, how it is perpetuated and what possibly led Dr. Mark to believe in it. I also reflected on the importance of fundamental science, research methods and epidemiology in the training of physicians, and how such topics affect their ability to engage with medical developments.

Our first conversation about HIV happened one night after dinner, after a long afternoon of shoveling cement. The topic came up during a discussion of the effects of prostitution in the hill tribe populations:

"HIV does not exist," Dr. Mark confidently declared. His words rang in my ears, and I was not sure what to say next. Questions and disbelief ran through my mind. On one hand, I was curious to know what he thought of AIDS, and what HIV-positive tests meant to him. At the same time, I was trying to understand how his HIV/AIDS denialism impacted the communities he was treating. His patient populations inhabit areas that are visibly affected by prostitution and drug abuse, in a country with the highest HIV prevalence rate in Asia.[1]

Throughout our discussions, Dr. Mark held tightly to his beliefs. He believed that HIV has not been successfully isolated by any laboratory, that HIV tests are erratic and that AIDS is caused by malnutrition, drug use and antiretroviral drug treatment. He cited his personal clinical experience, referring to cases of un-medicated HIV-positive patients who fared better than medicated patients and cases of patients whose HIV testing status changed from year-to-year. He also alluded to the apparent research fraud in the seminal 1984 Science papers of Robert Gallo, co-discoverer of HIV. Dr. Mark remarked that there existed handwritten proof by Dr. Gallo that the evidence had been falsified. He also pointed out that HIV did not fit into Koch's four postulates of infectious agents, a set of criteria that supposedly determine causation between an infectious agent and a disease. Moreover, Dr. Mark declared that he is so confident that HIV does not exist, that he is willing to self-inject with blood from an HIV-positive patient. I was astonished. I didn't think practicing physicians could subscribe to such outmoded beliefs.

Beyond my initial disbelief, my next reaction was to look into his ideas with the intention of providing evidence to the contrary. Denialism, a word first used in the context of Holocaust denialism, can be defined as the "rejection of scientific consensus, often in favor of a radical and controversial point of view."[2,3] It is important to distinguish between denialism and skepticism; while skepticism is an essential component of scientific thoroughness, denialism involves maintaining hypotheses that have been disproven by the scientific community. Further, denialist movements often go beyond science, becoming "a social movement in which large numbers of people come together and propound their views with missionary zeal."[3]

HIV/AIDS denialism itself exists in a spectrum, ranging from the rejection of the fact that HIV is a virus, to the denial of the causative relationship between HIV and AIDS. I read arguments from Dr. Peter Duesberg, a prominent cancer researcher, member of the National Academy of Sciences and a key voice in denying that HIV causes AIDS. I also read claims from groups like RethinkingAIDS, an international group of over 2,500 scientists, doctors and journalists "reevaluating the HIV/AIDS hypothesis."[4-6] In fact, AIDS denialists (including Dr. Duesberg) had influenced the South African president Thabo Mbeki to deny thousands of South Africans access to available anti-retroviral medications in 2000, citing that azidothymidine (AZT), the first antiretroviral treatment for HIV, was poison and instead encouraged treatment via garlic and lemon skin.[7] These policies are estimated to have caused over 330,000 preventable deaths.[7] Despite the ignored dangers of HIV abroad, I was surprised to learn that denialist thoughts are still present in the United States; a 2004 multi-city survey of 696 men who have sex with men (MSM) showed that 45% of MSM agreed "somewhat" or "strongly" with the statement that "HIV does not cause AIDS."[8]

I then looked for evidence against denialist claims; I read a multi-part *Science* feature published in 1994 replying to Dr. Duesberg, including evidence that HIV does indeed cause AIDS in the hemophilia population, and that AZT does not create an immune deficiency characteristic of AIDS (9-12). I found evidence that HIV does in fact meet Koch's postulates, though other common infectious diseases such as cholera and leprosy do not.[10,13,14] In reference to Dr. Mark's claims that Dr. Gallo had falsified evidence, I found that the National Institutes of Health had performed an investigation in 1993 and found insufficient evidence to support claims of scientific misconduct.[15] I followed the discussion between denialists and researchers as more evidence supporting HIV/AIDS accumulated over the next fifteen years, learning that the scientific community began to separate from Dr. Duesberg after he repeatedly disregarded evidence and published controversial work without peer review.[16,17]

Given this consensus among the scientific community, how are denialist ideas propagated so effectively? It has been proposed that denialist groups employ a variety of rhetoric mechanisms, including the use of unqualified experts, the misrepresentation of the opposing parties' views, the selective citation of evidence and the depiction of researchers as conspirators.[3] In my readings of denialist claims, I saw evidence of these techniques; for instance, denialists overplay the scientific misconduct accusations against Dr. Gallo as research fraud, and use them to undermine the entire HIV/AIDS model.[18]

After reading about Dr. Mark's claims, I printed out the most relevant articles and went back to the hills, armed with information. That week, we started working with several villagers on the construction of a water pipeline. I put my concerns about HIV aside as we worked on getting water to flow two kilometers without breaking the fragile PVC pipes. While asking Dr. Mark for insight into this problem, our conversation meandered into the realm of physics, including the gravity of falling objects. He confidently explained that a rock falls faster than a feather simply because the rock is heavier, a statement that is incorrect – it is air resistance that accounts for the

difference in speeds.

At that point, I realized how important fundamental science education is in the training of physicians. Pre-medical undergraduates suffering through five-hour-long titrations in their chemistry labs are often frustrated by the lack of evident connection to the actual treatment of patients. Doctors in all stages of training remember their first semesters of medical school spent memorizing (and often, quickly forgetting) metabolic pathways. It is true that the average physician will not need to recall the specifics of viral genetics, but they also cannot expect to understand the latest advances in medicine without knowing about the ones previous. While the physics of gravity may not be directly necessary to understand HIV, Dr. Mark's misunderstanding arguably signifies a gap in his knowledge of basic science.

Interestingly, Dr. Mark mentioned to me that fourth-year medical students from western countries who came to volunteer had little hands-on skills; for instance, we often could not give injections without help. Dr. Mark, on the other hand, had begun seeing patients and helping in the clinic from the first week of medical school. In addition, while his medical school education was largely similar to that received in a four-year American medical school, it began directly after high school, bypassing undergraduate-level biology, chemistry, physics and mathematics – classes that are generally required for medical school admission in the US. Instead, Dr. Mark received his fundamental science and math education in high school. He also mentioned that his medical school, a government-run school in western India, did not emphasize the fundamental sciences, and graduated clinic-ready doctors in five years, with the last year being a full-time internship in the school hospital.

> I thought ideas like these existed in chain emails, not in the minds of practicing physicians.

The example of Dr. Mark, albeit extreme, points out the importance of understanding basic science and research methods to practicing medicine. While a knowledge of disease and treatment may be adequate to treat patients at a given time, when a controversial new topic arrives (be it HIV and antiretroviral drugs, alternative medicine, a new diabetes medication, or electronic cigarettes), medical knowledge itself is no longer adequate; medical professionals need a knowledge of biology, study design, epidemiology and statistics in order to fully inform and treat patients. While I cannot speak fully to Dr. Mark's capabilities, his education did not emphasize these topics, and such training could have helped him understand the disagreement around HIV/AIDS rather than fixating on one side.

Currently in the United States, there is a push to shorten medical school to meet increasing healthcare demands. It has been proposed that a three-year curriculum is possible without compromising clinician quality, and the New York University School of Medicine is currently piloting its first class in its new three-year MD program.[19,20] There is also a trend among US medical schools to de-emphasize the basic sciences including biology, due to the growing body of clinical knowledge that must be covered, growing unfamiliarity of biology among faculty and a shift in the model of medical training from academics to apprenticeship.[2] While I do not disagree with these changes, we must proceed warily and ensure that physicians not only understand medicine, but also have adequate training in the topics that will help them make future decisions. For example, although cell biology in and of itself is not relevant to physicians while in the clinic, a basic understanding of how cells reproduce and communicate with each other is completely relevant to appreciating how cancer, viruses and many medications work. Likewise, statistics and research study design are directly applicable to physicians in determining whether a new medication is effective for a specific patient population, beyond the enticing advertisements seen on television. While discussing changes to medical education both in the US and globally, we must ensure familiarity with such topics (currently, both biostatistics and cell biology are topics taught in US medical schools and tested on the US Medical Licensing Exam). For this same reason, medical education must balance between hands-on clinical experience and classroom work, and recognize the importance and limitations of both.

The need for education in research methods and fundamental science is even more important in the age of the Internet. Many of Dr. Mark's misconceptions about HIV were likely inspired by online sources, as the ideas that he endorses are found on various denialist websites. These websites can be wildly convincing; in fact, a recent survey of 343 HIV-positive patients revealed that denialist beliefs were more often endorsed in those who more frequently used the Internet (although the study did not determine which internet resources were accessed).[22] For example, one website, "RethinkingAIDS," lists credentialed researchers who deny the "HIV/AIDS hypothesis" and cites quotes from books and documentaries stating that AIDS was born out of political and economic conspiracies.[4] Another website entitled "Virus Myth" brings up the claim that HIV has never been isolated from an infected host and even offers a cash prize to the first researcher who can meet specific criteria for isolation and purification – a convincing claim that requires some research to understand.[5] A literature search in peer-reviewed journals shows that the isolation of HIV from infected patients has been repeatedly demonstrated.[13] However, it is true that HIV isolation has never met the requested criteria; the virology community has deemed these criteria for isolation as unnecessarily stringent. For instance, they require that only intact viral particles be identified in the culture without contaminants, which is inherently difficult due to the parasitic nature of viruses. Many other viruses have not been identified in this way. Additionally, this is irrelevant as the infectivity of our current HIV isolates frightens researchers out of further investigation.[23,24,25] Taking a step back and looking at the big picture, in the past thirty years, we have not only isolated HIV, but have also identified HIV as the cause of AIDS, developed sensitive and specific tests for HIV and developed effective medications.[26] The point of this exercise is that individual resources can be misleading, and you cannot give them the benefit of the doubt. A basic understanding of biology (in this case, viruses and laboratory techniques) and the ability to perform and understand literature searches is necessary to recognize this.

Tackling denialism requires a complex approach, especially as some degree of skepticism is necessary to good science. Responsibility falls on many parties, including journals and mass media, which through responsible non-partisan journalism can help prevent the spread of unsubstantiated claims. In addition, researchers must consider all evidence, avoid misrepresenting data and take advantage of the peer-review process. Likewise, physicians must have the tools to pick apart controversial topics to help patients make the best clinical decisions; they need to be familiar with enough basic science to understand new medical advances and enough epidemiology and research skills to interpret evidence critically. The stakes are high; other examples of medical controversies causing harm include the belief that autism can be caused by the measles, mumps and rubella (MMR) vaccine, and the belief that second hand smoking does not cause health problems – both of which have been disproved, but have caused significant harm in the interim.[27,28]

Physician education in epidemiology and public health is important in situations like these to dispel misunderstandings. In fact, the survey that determined the high prevalence of denialist thoughts in the US MSM population also found that primary care physicians were cited by these men as their most trusted source of information about HIV/AIDS.[8]

In my last weeks with Dr. Mark, I decided to stop discussing HIV with him as I realized our conversations simply resulted in frustration for both of us. After we completed the water project, I left the village on good terms with him. As I left, I gave him the literature that I had initially printed, along with my contact information and an open invitation to discuss in the future. I am still waiting to hear from him.

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