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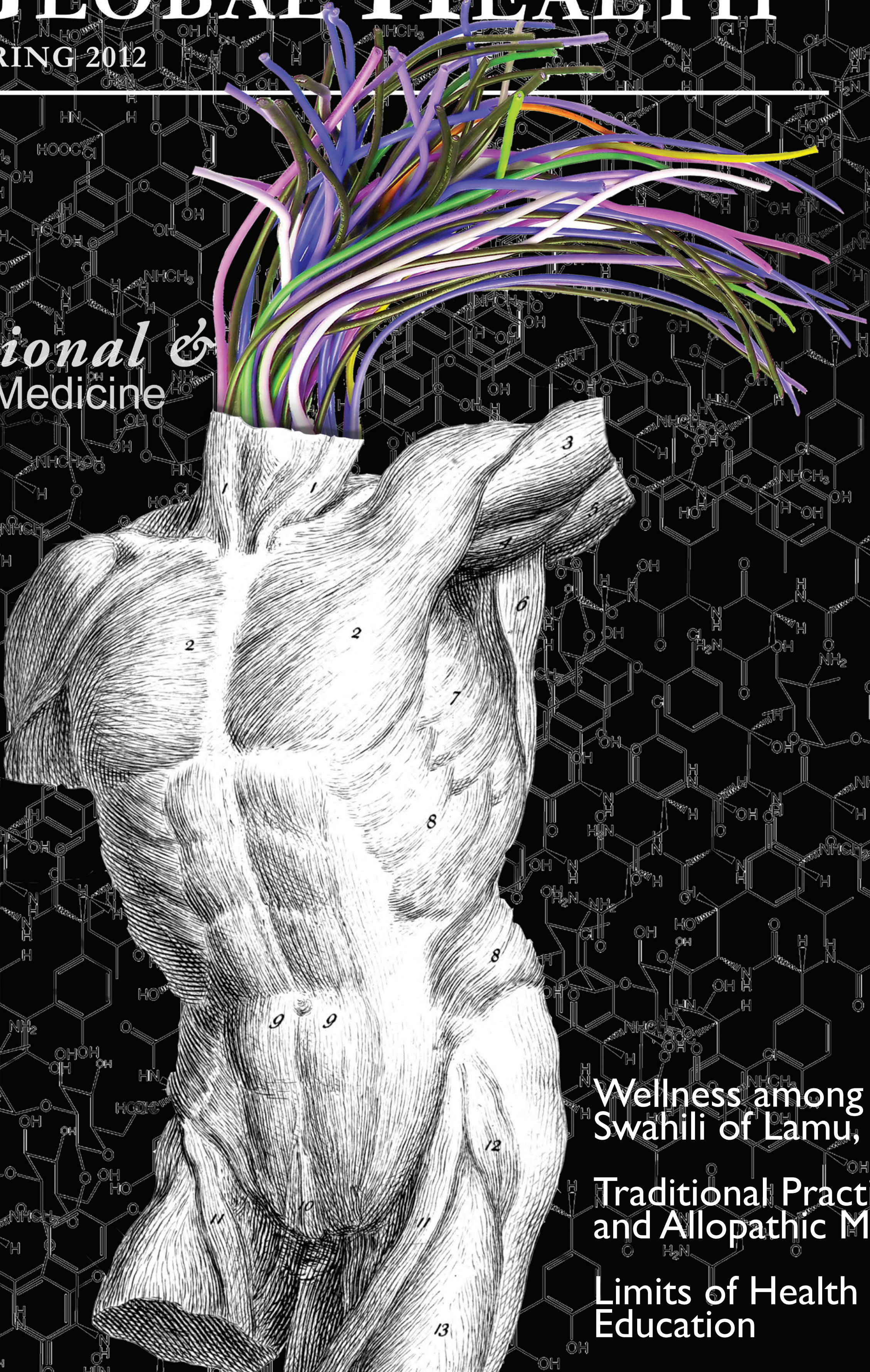

Wellness among the Swahili of Lamu, Kenya

Traditional Practices and Allopathic Medicine

Limits of Health Education

JGH

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Reconciling Western & Traditional Medicine

The *Journal of Global Health* seeks to provide students with a medium to facilitate public health dialogue in an increasingly interconnected world, a world that both greatly enables and poses new challenges to the study of human health. In a globalized world, we sometimes lose sight of the most fundamental and critical component of global health: health, in and of itself. We urge you to reflect on the meaning of the word "health." What does it mean to be healthy?

Health provides humankind with the conditions necessary to exercise their individual agency and the ability to live life to its fullest and, in doing so, derive a sense of lasting satisfaction. In this issue of JGH, we ask you to consider the challenge of integrating complementary and alternative medicine into the modern protocols of Western medicine, two distinct and prolific fields all too often viewed as irreconcilable universes of discourse in spite of their fundamental, shared objective of promoting human health. A lack of mutual understanding between two medical communities has led to the emergence of a culture of stigma that we feel is counterproductive, harmful and fundamentally unhealthy.

We often equate "health" with "healthcare," but we do not realize that the biomedical side of "health" constitutes a very small sliver of the entire spectrum of what it means to be "healthy." In order to truly understand "health," we must consider all of the factors that provide humans with the conditions that allow them to thrive. These factors run the gamut from the biomedical, economic and scientific to the anthropological, sociological and historical.

To explore the incredibly multifaceted nature of "health" in an increasingly interconnected world is the objective of JGH. Our Columbia-based team has recently launched a podcast called "What is Global Health?" (WiGH?), which seeks to examine the moral quandaries faced by public health researchers and scientists at the decision-making level and whether these dilemmas are the same ones faced by people involved in entirely different fields of discourse. Through WiGH?, we hope to bring together the voices of prominent scientists, activists, thinkers and student leaders representing the humanities, social sciences and natural sciences. By fostering greater interdisciplinary dialogue on the fundamental moral questions in health, we hope to synthesize cross-curricular and cross-cultural solutions to major public health problems in a globalized world.

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Editor-in-Chief

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Spring 2012 Editorial

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Gerard Bodeker, Ed.D, M.Psych. (Department of Clinical Medicine, Division of Medical Sciences, University of Oxford)
Yemeng Chen, L.Ac, FICAE (President of the New York College of Traditional Chinese Medicine)

What is Traditional Medicine?

Traditional medicines, which include herbal remedies, acupuncture and spiritual therapies, have been used for millennia by various peoples to treat acute and chronic illnesses. In many developing countries, they remain the most accessible and most commonly used form of medical care (WHO, 2002). While pharmaceutical medicines are commonly used in developed countries to treat a vast range of infectious diseases and chronic conditions, patients in developing countries continue to rely on traditional medicines for several reasons. For one, herbal medicines are a far less expensive alternative to pharmaceutical drugs in most regions of the world. This makes them the only feasible option for impoverished families who cannot afford to buy Western pharmaceutical drugs, even if they wanted to do so. In countries such as Ghana, where malaria is endemic, a single course of pyrimathine/sulfadoxine antimalarial drugs can cost several dollars, whereas traditional Ghanaian herbal medicines are considerably less expensive (WHO, 2002). There is also a discrepancy in many countries in the number of traditional medicine practitioners as opposed to medical doctors available to the public. In Uganda, the ratio of traditional medicine practitioners to the total population is between 1:200 and 1:400, but the ratio of doctors to the total population is 1:20,000 (WHO, 2002). This limited access to Western medical professionals and pharmaceutical drugs necessitates continued use of traditional medicines in many countries.

Interestingly, in recent decades, traditional medicine practices have grown increasingly popular in developed countries where Western medicine has long been standard. These treatments, which include acupuncture, homeopathic treatments and natural products, are collectively known in Western countries as complementary and alternative medicine (CAM). The use of CAM therapies has become a significant medical trend in the United States: In 2007, four out of ten adults reported recent use of complementary and alternative medicines; acupuncture and homeopathic treatments were the most popular choices (Barnes, Bloom & Nahin, 2008). In an interview with The Journal of Global Health, Yemeng Chen, L.Ac, FICAE, president of the New York College of Traditional Chinese Medicine, explained that, in some instances, patients prefer to undergo acupuncture for head or body aches rather than take a prescription medication, for fear that the pharmaceutical drug may interact detrimentally with medications that the patient is taking for other conditions. The increase in the number of acupuncture clinics in the United States and concomitant rise in health insurance policy coverage of CAM clinics indicates increasing acceptance and desire for alternative methods of treatment (Y. Chen, personal communication, February 11, 2012). However, though the popularity of CAM therapies is on the rise in countries like the U.S., CAM is still not considered mainstream or wholly accepted by the scientific community. The evidence supporting the benefits of CAM is growing, but it is not yet nearly as robust as the evidence behind pharmaceutical drugs, and this has made CAM the target of much criticism.

A Sociological Phenomenon: Complementary and Alternative Medicine

At the root of the divide between alternative and Western medicines is a tension between the rising social demand for CAM treatments and the hesitance of the established medical community to integrate CAM into the spheres of medical research and clinical practice. Gerard Bodeker, Ed.D, M.Psych. of the Oxford University Medical School refers to this disparity as a "phenomenon of medical sociology" and points out that "the majority of the world's population practic[es] integrative healthcare, but their health services don't" (Chen, López, Cui, Gambina & Tanavde, 2012).

In South and East Asian countries, integration of traditional medicine systems into modern medical healthcare systems has been in progress for decades (Holliday, 2003). However, in many developed countries like the U.S., CAM therapies continue to face numerous barriers to recognition by the medical establishment, which is skeptical of the admittedly smaller evidence base for CAM therapies in the scientific literature. Nevertheless, the popularity of CAM in the U.S. has made its presence increasingly difficult to brush aside. The National Institutes of Health (NIH), among other research institutions, responded to this rise in popularity with the creation of the National Center for Complementary and Alternative Medicine (NCCAM) in 1991. The NCCAM has established centers for research at American universities on the effects of herbal medicines and acupuncture on pancreatic, autoimmune and Alzheimer's diseases, in addition to many others (NCCAM, 2012). However, critics of CAM, including Marcia Angell of Harvard University and Steven Novella of Yale University, criticize the NCCAM for being "more of an advocates' center" than a research institution (Aronson, 2003). Angell, former editor-in-chief of the New England Journal of Medicine, and Novella, who runs the popular blog "Science-Based Medicine," have both

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commented extensively on the need for more scientific evidence on the effects of CAM therapies. While their concerns are undeniably well-founded, they would do well to acknowledge that medicine is as much about human relations as it is about science. Given the high social demand for CAM therapies in the U.S., it would be medically irresponsible to discourage organizations that aim to uncover the science behind CAM from doing so.

Moreover, as many scientists and medical professionals have continued to view CAM and pharmaceutical medicine as irreconcilable systems of healthcare, the result has been the emergence of a culture of stigma for patients who access CAM therapies in addition to their typical Western medical care. Gerard Bodeker points out that "[one-]half to three-quarters of people who have been taking some form of a complementary or traditional medicine actually don't tell their doctors […] they don't want to be criticized or judged" (Chen et al., 2012). It is especially worrisome that the culture of stigma appears to overlap with racial and ethnic categories and exists in both Western and CAM treatment. Notably, though they comprise less than 6% of the U.S. population, Native Americans and Asians account for the majority of CAM use in the U.S. (Humes et al., 2011; Barnes et al., 2008). A 2008 study from the American Psychological Association found that Chinese Americans perceived greater community shame when accessing Western psychiatric services, as opposed to traditional Chinese medicine, for a mental disorder (Yang et al., 2008). The lack of communication and mutual understanding between the CAM and Western medical communities has resulted in a failure to address the varied medical needs of U.S. patients, who ultimately bear the consequences of such shortcomings.

CAM and modern medicine undoubtedly possess disparities in their approaches to wellness; in general terms, the former tends to advocate a holistic approach to treating and preventing illness, whereas the latter targets specific biological factors that lead to conditions of illness or health. However, these characterizations need not be mutually exclusive. Novella's "Science-Based Medicine" blog argues in its mission statement that "all of science describes the same reality, and therefore it must […] all be mutually compatible" (Science-Based Medicine, 2008). Given the sociological phenomenon of CAM's popularity, it seems clear that there is a need for CAM and western medicine to be mutually compatible, not only on scientific terms, but on cultural terms.

The Challenges of Building an Evidence Base

Unquestionably, there remains a vast body of research that must be undertaken to ascertain the safety and efficacy of many CAM therapies. But, as Dr. Bodeker explains, "It's no longer defensible to say there is no evidence [supporting herbal medicines]. In fact, anybody who says there is no evidence is saying, 'I haven't looked for the evidence.' It's a statement about themselves and their prejudices rather than a statement about the evidence" (Chen et al., 2012). Moreover, as WHO Director-General Dr. Margaret Chan has stated, traditional medicine "needs to be respected and supported as a valuable source of leads for therapeutic advances and the discovery of new classes of drugs" (Chan, 2008). Dr. Bodeker, who heads the WHO-affiliated Research Initiative on Traditional Antimalarial Methods (RITAM), is confident that the active ingredients from traditional medicines have the potential to serve as effective pharmaceuticals. With regard to herbal medicines, he notes that "the vast majority of antimalarials in the past century or two have all come from plants" (Chen et al., 2012). In particular, he cites Cinchona tree bark, used by ancient Peruvian peoples to treat fevers, and the antimalarial drug artemisinin, derived from the Artemesia annua plant used by traditional Chinese healers, as examples of breakthroughs that traditional herbal medicines have brought about in pharmaceuticals research (Chen et al., 2012).

Both Dr. Bodeker and Dr. Chen acknowledge that researching herbal medicines and acupuncture is a difficult and lengthy process, given the challenges of conducting controlled clinical trials on so many types of CAM and traditional medicines. However, it is crucial that researchers conduct falsifiable studies of these treatments in order to determine the most beneficial ones, so that a broader range of healthcare options for both developing and developed nations can be established. Many institutions now recognize that studying all aspects of healthcare procedures is an imperative, as demonstrated by the NCCAM and the World Health Organization's Traditional Medicine Strategy. These organizations, along with RITAM and other institutions around the world, are helping to establish a more concrete evidence base in support of traditional, complementary and alternative medicines. As more evidence accumulates, strategies for regulation and implementation of these treatments at the national and international levels will be more straightforward and less controversial to establish, and at that point the sociological divide between pharmaceuticals and traditional medicines can be minimized.

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Academic Research

Reducing inequalities in doctor distribution

Literature review, Thai case study and policy recommendations

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Abstract

This paper seeks to examine the various schemes that have been used to address the global problem of inequitable distribution of physicians between urban and rural areas. A literature review and case study illuminate past strategies that have been successful as well as the strengths and weakness of one particular program.

Evaluation of the studies available and examination of the case study suggest a multidimensional, mixed methods approach, which combines rural recruitment and education, financial support and incentives and a strong social support network. The case study of the Thai Medical Women's Association's (TMWA) Rural Scholarship Program combines these aspects by recruiting women from rural backgrounds, supporting them financially by funding their medical education and living expenses and including them in an extended national and international network of women physicians to foster social and professional support. The case study offers valuable insights from all parties involved in the scholarship program, including the TMWA members, the scholarship recipients and the Thai Ministry of Health. While future research—especially longitudinal (for data on retention), context-specific and experimental studies—on this subject is still required, the educational, financial and social support methods identified can be recommended already, as they have been successful in the recruiting and retention of rural physicians thus far. These recommended strategies can be facilitated and strengthened by the combination of governmental and non-governmental programs, as is the case with the TMWA Rural Scholarship Program, where women are recruited from the pre-existing Collaborative Program to Increase Production of Rural Doctors (CPIRD), run by the Thai Ministry of Health. Policy recommendations will be made that may be useful to the TMWA, the Thai Ministry of Health and any other governments or organizations that are in need of strategies or programs to increase the recruitment and retention of rural doctors in their setting.

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Introduction

While the problem of inequitable distribution of healthcare professionals has existed for many years and contributes to the "gross inequality in the health status of the people particularly between developed and developing countries as well as within countries" (International Conference on Primary Health Care, 1978), there have been few successful schemes addressing the issue. The problem is compounded by the fact that the rural populations are often lower socioeconomic groups and are subsequently at higher risk for poor health (Marmot, Friel, Bell, Tanja & Houweling, 2008). One method of addressing this inequality in health is to address the inequitable access to physicians. A systematic review in the United States found that increasing "primary care physician supply was associated with improved health outcomes, including all-cause cancer, heart disease, stroke and infant mortality; low birth weight; life expectancy; and self-rated health" (Macinko, Starfield & Shi, 2007).

Though the asymmetrical distribution of healthcare providers exists worldwide, low- and middle-income nations often experience a more extreme skew than their more developed counterparts. In the United States, for example, the population is 80% urban, and 91% of physicians practice in urban areas (Grobler et al., 2009). In Thailand, however, only 34% of the population is urban (WHO, 2011a), yet 96% of medical doctors work in urban areas (WHO, 2011b). This leaves the vast majority of the population with very few healthcare providers.

Because there are so few healthcare providers in rural areas, those that do work in these areas are often overworked and understaffed relative to the large demographic areas that they serve, making the option of working in an underserved area even less desirable to the newly graduated doctor. In order to break this cycle and provide equitable access to healthcare for the vast rural population, external strategies are needed to recruit and retain rural healthcare workers.

Thailand has used a variety of strategies to attempt to combat the problem of skewed physician distribution. Most of the strategies identified in the literature review have been applied in Thailand with limited success, and few have been rigorously evaluated.

The most significant regulatory measure was taken by the Thai government in 1968, requiring all students who attend public medical schools—which are highly subsidized and comprise 11 of the 12 medical schools in Thailand—to serve the public in rural areas for three years upon graduation (Wibulpolprasert & Pengpaibon, 2003). Although these new physicians are still permitted to practice privately, they are encouraged not to by a special allowance of about 250 USD per month to keep them focused on the underserved, rural populations (Wibulpolprasert & Pengpaibon, 2003). In addition to developing the rural health infrastructure, the Ministry of Public Health in 1994 responded to the "internal brain drain"—the exodus of physicians to the cities from other parts of the country—by introducing a ten-year project called the Collaborative Project to Increase Production of Rural Doctors (CPIRD) (Wibulpolprasert & Pengpaibon, 2003). By recruiting 2,982 students between 1995 and 2006, the program has reached 99.4% of its admission target (Lertsukpresert, 2008). The program has graduated 1,096 students during the academic years of 2000 to 2006, with just 44 students or 1.4% dropping out (Lertsukpresert, 2008). By recruiting students at the provincial level and training them in regional and district hospitals, the CPIRD program has increased the proportion of rural medical students from 23% in 1994 to 31.5% in 2001 (Lertsukpresert, 2008). The program has been equally successful in terms of retention. Of the 815 graduates from 2000 to 2005, 613 (75%) are working in rural community hospitals, and 152 (19%) have been working there for more than the required three years (Lertsukpresert, 2008). Only 50 (6%) graduates have broken the contract requiring them to work in rural areas, which is substantially less than the national average of 50% (Lertsukpresert, 2008).

In addition to these regulatory and educational strategies, professional replacement strategies (task shifting, training of paramedical staff), financial strategies (voluntary scholarships, fines for breaking compulsory public service, direct financial incentives) and social strategies (recognition, satisfaction, the Rural Doctor Society support network) have all been used in attempts to increase the number of physicians practicing in rural Thailand (Wibulpolprasert & Pengpaibon, 2003). The TMWA scholarship program combines these strategies, providing educational, financial and social support systems for aspiring rural doctors.

The TMWA Rural Scholarship Program fully funds women to attend medical school in return for a commitment to return to practice in the rural areas from which they came. The recipients are selected from the CPIRD program by the TMWA in consultation with the Rural Health Department of the Ministry of Health and Welfare. The program is only five years old and has produced 15 scholarship recipients thus far, averaging about three per year. It was developed ad hoc, in part as a response to the devastation of rural areas after the 2004 tsunami. While some recipients have already graduated and returned to work in their local rural areas, the majority of the recipients are still in medical training. There have been no previous formal evaluations or write-ups of this particular scheme.

In order to better understand the program, qualitative interviews were conducted with three student scholarship recipients, six senior TMWA members and two affiliated members from the Ministry of Health. Although more time is necessary to fully examine the outcomes of the program due to the long-term nature of medical education and retention data, the program's strengths and weaknesses can be analyzed in the context of the existing body of research on similar schemes that are illuminated in the literature review.

Materials and Methods

A comprehensive literature review including government and non-governmental sources serves to contextualize the research and policy arena for this particular issue. Databases used in the review include the Cochrane Library, Global Health/Global Health Archive, Web of Science, Medline, IMSEAR (Index Medicus for South-East Asia Region) and other WHO regional databases. The same terms "Rural Health Services" and "Thailand" were used as a first-level search for each source to maintain consistency, and then narrowed down with the second-level search terms including "recruitment," "retention," "manpower," "supply," "distribution," "human resources" and "human resources for health." Combinations of these terms were also employed using Boolean operators. The review was refined specifically to schemes including the retention of rural healthcare workers as a main outcome or objective. In addition to the results of the database review, the references from relevant articles were also searched, resulting in the identification of three further articles. This wide method of review was used in order to thoroughly examine all possible relevant articles and documents and to allow for the best grasp of the scientific context.

The case study interviews took place with three scholarship recipients, six TMWA members and two key informants from the Ministry of Health. The interviewees were selected based on availability and convenience, with the assistance of the TMWA to facilitate meetings. The individual interviews of the TMWA and Ministry of Health personnel took place in the interviewees' offices, and those of the scholarship recipients were held in a neutral hotel location near to where they studied or worked to avoid inconvenience. Confidentiality was ensured by conducting interviews in quiet, private locations and by concealing the names of the interviewees in the transcripts and analysis. The interviews were originally conducted as an internal audit of the TMWA Scholarship Program, and permission for further research was obtained retroactively by contacting the head of the TMWA as well as interview participants to obtain informed consent. This research process was reviewed and approved by the London School of Hygiene and Tropical Medicine Ethics Committee.

There are seven individual interviews and three focus group discussions. Each interview lasted approximately 45 minutes and was semi-structured, focusing on motivations for and details of the project as well as perceived strengths and weaknesses. The semi-structured style of an interview was chosen to allow the conversation to be guided by the priorities of the respondent and to allow for an individual, more private perspective as opposed to that of the social setting of the focus groups. Each focus group discussion lasted approximately 75 minutes and was used to explore differences that arose in individual interviews (many of the participants were involved in both) and to observe how respondents interact in their respective organizations or affiliations. This was accomplished using pre-existing groups to create a more natural environment; for example, a group of TMWA members or scholarship recipients. The interviews were recorded and transcribed. All but two were conducted in English; the remaining two were conducted in Thai with the aid of a translator.

The interview data was examined using a framework analytical approach and thematic analysis, which was performed by reviewing and coding transcripts and comparing interviews for commonalities and differences between accounts. The interview data and subsequent thematic analysis was managed manually without the use of computer software.

Literature Review

The studies in the literature review identified three main types of strategies employed to address the asymmetrical distribution of rural and urban doctors: 1) recruiting based on student characteristics—most notably those of rural background; 2) financial incentives—including scholarships, loan repayment and allowances; and 3) educational strategies—including the use of rural schools, increasing rural rotations and requiring rural health modules.

Student Characteristics

This body of literature examined the relationship between a physician's rural background and likelihood to enter and/or stay in rural practice. It is important to note that some of these studies (four out of 15) were prospective, examining the correlation of students' stated intentions of working in rural areas with their rural or urban background, rather than the students who were presently working in the rural areas (Feldman et al., 2008; Girasek, Eke & Szocska, 2010; Guion, Mishoe, Campbell & Taft, 2005; Pasley & Poole, 2009). Because of the possible discrepancy between intention and outcome, as well as possible reporting biases, these studies were not considered to be as rigorous as those that followed up on students' stated intentions or those that examined physicians actually working in the rural areas.

Of the studies that assessed whether rural background increased the likelihood of physicians actually practicing in rural areas, almost all studies found a positive correlation or predictive effect (seven out of eight studies). Included in this group is a rigorous systematic review examining the literature from the United States, Australia and Canada, which found a two-fold increase in the likelihood of rural practice among those of rural background in all three settings (Laven & Wilkinson, 2003).

It is important to note, however, that some studies defined rural background as rural upbringing, and others also included those with past rural exposure (during medical training or otherwise). While both definitions of rural background were found to increase the likelihood of rural practice in various studies, the one study that examined the differences in the definitions found that only rural upbringing had a predictive effect on rural practice (Owen, Conaway, Bailey & Hayden, 2007). The lack of cohesion in the definition of "rurality" is a limitation of this body of literature in general and is explicitly discussed in an editorial which calls attention to the possible implications of this variation on results (Hutten-Czapski, 2009). These studies would become more generalizable if a universal, or at least region-specific, definition of "rurality" were to be applied; such standardization would better facilitate comparison and meta-analysis. Authors should explicitly state how they classify "rural" and what constitutes rural background, which was often not done in the literature.

Of the remaining four studies on characteristics, two examined physician satisfaction, suggesting that satisfaction level amongst rural physicians may predict longevity of rural practice. The first study, from Malawi, used a quantitative survey as well as qualitative interviews and suggested that areas of particular dissatisfaction for the rural physicians surveyed included "what they perceived as unfair access to continuous education and career advancement opportunities as well as inadequate supervision" (Manafa et al., 2009). This study suggested that these issues contribute to rural physician demotivation and thoughts about leaving rural practice. The second study, which took place in the United States and also used survey data, similarly concluded, "Retention was independently associated only with physicians' satisfaction with their communities and their opportunities to achieve professional goals" (Pathman, 1996).

Two studies, one from the United States and one from India, examined the "temperament and traits" of rural doctors, attempting to illuminate those traits which are more common in rural versus urban doctors; these traits included "novelty seeking" (Eley, Young & Przybeck, 2009) and the "willingness to change or try something new" as well as an "attitude, aptitude, desire and dedication to adapt to a setup that is not as sophisticated as that in the cities" (Stephen, 2007).

Financial incentives

Another common theme in the literature was the use of financial incentives to increase the number of doctors in rural areas. Types of incentives that have been used include scholarships, loan repayment and direct financial incentives or allowances. This variety of financial support has had variable levels of success. One of the main issues that arises in making comparisons between programs is that each study or setting used different monetary values, which have different implications depending on the income level in the setting. A more rigorous study using data such as cost-effectiveness or purchasing power parity adjusted data may be more appropriate for global comparison, but this was not present in the literature.

Because of the aforementioned difficulty in comparing these studies, the most useful results are systematic reviews that examine the studies on a larger scale, drawing conclusions from a meta-analysis. A large systematic review examining 43 studies on financial incentives in return for service in rural areas concluded, "Existing studies show that financial incentive programs have placed substantial numbers of health workers in underserved areas and that program participants are more likely than non-participants to work in underserved areas in the long run" (Barnighausen & Bloom, 2009). The studies included in the review, however, were all observational, so causality cannot be assumed. Another limitation of this otherwise comprehensive review is that the studies are largely in high-income settings (all but one) and may have limited applicability to other economies which may not have the capacity to offer or support such schemes. There are also large variations in the monetary value of the incentive, which could also lead to variations in results if a dose-response relationship exists.

Another systematic review examined ten studies on financial incentives in exchange for return-of-service commitments using the "highest level of evidence available" and concluded that while "[t]he majority of studies reported effective recruitment," the programs were less successful with retention, offering limited long-term impact. This study does note, however, that "multidimensional programs appeared to be more successful than those relying on financial incentives alone" (Sempowski, 2004). The application of this review to a middle-income setting such as Thailand should proceed with caution as many of the studies rely on high buyout rates, which may not be possible in a lower-income setting. The review also notes that increasing tuition and debt burdens among medical students may have contributed to the financial scheme's success, but due to the subsidized tuition in Thailand's public medical schools (Jindawatthana, MilintangKul & Rajataramya, 1998), these issues may be less relevant to Thai medical students. The study concluded that even within the ten most rigorous studies, "the quality of the evidence was low and of limited applicability" (Sempowski, 2004). Applicability to Thailand is particularly limited, as all of the studies came from high income countries (USA, New Zealand and Canada).

Educational Strategies

The final type of strategy that emerged from the literature was the use of education-based initiatives including increasing the application and admission of rural students to medical schools, establishing more rurally based schools, expansion of rural internships/rotations, introducing a required rural health module and providing more training and continuing education for those working in rural areas.

The major limitation of this group of literature is that many of the articles simply detail proposed schemes without any follow-up or observational and experimental evidence regarding their effectiveness. Many of the initiatives have also been introduced fairly recently, and results are still pending. Some of these studies will require a long follow-up if they are reporting on rural physician retention, which in the context of this project is a particularly important objective.

Of the articles that did report on outcomes, many reported only on increasing students' interest or that they claimed to have positive experiences, which has limited relevance, as it may not translate into actual rural practice.

Two articles out of the four that report on medical schools designed specifically for rural doctors and situated in rural areas reported significantly higher percentages of their graduates working in rural areas as opposed to non-rural schools (Inoue, Matsumoto & Sawada, 2007; Longombe, 2009) but only one reported increasing long-term retention (Inoue, Matsumoto & Sawada, 2007).

Of the two articles reporting on outcomes of rural medical education programs within medical schools, one reported that the students were more likely than students not in the "rural medical education program" to work in rural areas (Wheat, 2005), and another reported "no association between exposure to rural practice during undergraduate or residency training and choosing to practise in a rural community” (Easterbrook et al., 1999). Neither study reported on retention.

Though few articles reported on relevant outcomes and even fewer reported on retention over an appropriately long follow-up period, all of these articles still proved valuable as a review of the different methods that have been proposed and implemented.

Mixed Methods and Review Conclusions

The most populous results category in the literature review comprised programs that used a mixed methods approach. Many studies suggest that a strategy that approaches the problem from multiple angles will offer the most appropriate and comprehensive response and may offer the best chance of success. However, while this makes sense intuitively, across all of the categories of the literature review, few studies were experimental in design, and even fewer reported on appropriate outcomes using rigorous methods. In fact, a comprehensive and systematic Cochrane review on “Interventions for increasing the proportion of health professionals practising in rural and other underserved areas” from 2009 finds no well-designed or conclusive trials. The authors state that “[w]hile some of these strategies have shown promise, this review found no well-designed studies to say whether any of these strategies are effective or not” (Grobler et al., 2009). The review concluded that more “[r]igorous studies are needed to evaluate the true effect of these strategies to increase the number of healthcare professionals working in underserved areas” (Grobler et al., 2009). The result of the systematic review is therefore consistent with this smaller, policy-oriented literature review.

TMWA Scholarship Program

Because many of the results from the literature review were inconclusive—based on study designs that were less than rigorous or contexts that were not applicable to low- or middle- income settings—we will now consider a case study of the TMWA scholarship program and examine its strengths and weaknesses to make locally relevant recommendations and to assess the appropriateness of replication and expansion of this type of program as a method to address rural physician shortage.

The TMWA was initially established as a chapter of the Medical Women’s International Association to support female doctors as well as advocate for women’s health issues.

Thematic analysis of the interview transcripts yielded the following eight themes: 1) the role of women; 2) the importance of a social support network; 3) recognition; 4) spirit of service; 5) recruitment and selection based on rural background and characteristics that make a good rural doctor; 6) follow-up; 7) strengths; and 8) challenges. These themes will be explained and expanded upon using illustrative quotes from the interviews, which will be identified only by the participant’s affiliation to preserve anonymity.

Role of women

The TMWA was initially established as a chapter of the Medical Women’s International Association to support female doctors as well as advocate for women’s health issues. The TMWA Rural Scholarship Program advocates the importance of supporting aspiring female doctors; while “Thai people have equal rights in terms of education, and no discrimination … [fewer] women have the high positions” (TMWA, personal communication, 2009).

It was noted in the interviews that “in [the] past, 80 to 90% of rural doctors were men” (TMWA, p.c., 2009). Interviewees suggested that this may have been due to the fact that a “higher percentage of medical students were men” (TMWA, p.c., 2009) and that “management in rural areas was difficult in terms of safety and security” (TMWA, p.c., 2009). Multiple parties, however, observed that the rural health infrastructure and safety had increased in recent times.

In discussion of the goals of the scholarship program, one participant noted that the group “want[s] to encourage more young girls to come into medicine, especially in rural areas” (TMWA, p.c., 2009) and that they “try to cultivate a good image of women in medicine” (TMWA, p.c., 2009).

Importance of professional/social support network

As mentioned in the literature review, it seems again in this case study that support networks play a large role in the retention of rural physicians. By including the scholarship participants in their association, the TMWA attempts to link them to their preexisting national and international social support network by regular newsletter updates, invitation to annual meetings and financing travel to these meetings.

One member observed that “recipients become junior members of the TMWA as students…. Formerly it was just MDs…. This may help in creating invested interest” (TMWA, p.c., 2009).

Referencing the recipients’ membership of the TMWA, another member observed that the “scholarship ties students to mentors … and instill[s] values and encourag[es] them to reach out to younger generations” (TMWA, p.c., 2009). In this way, it was asserted that they are “supported not only in a financial but [also in] a professional and emotional sense” (TMWA, p.c., 2009).

Discussing the network of the TMWA, one member described the association as a “network all over the country” (TMWA, p.c., 2009). The wide-reaching nature of this network is particularly important for new doctors who may not have many contacts in the field and especially for those working in rural and removed settings, who may have fewer chances to interact with their professional peers.

In terms of interaction with the scholarship recipients, one TMWA member noted, “Many [recipients] come to us for advice” (TMWA, p.c., 2009). One TMWA member summarized the goal of including the recipients in the group’s meetings as to “inform scholarship recipients about TMWA’s purpose, activities and objectives” (TMWA, p.c., 2009).

The subjects of discussion at the annual meeting include a variety of topics such as the “difficulties women doctors face,” “ways to facilitate managing family and career” and “international linkages” (TMWA, p.c., 2009). These international linkages occur at “meetings in Asia and other parts of the world” (TMWA, p.c., 2009). Members of the TMWA are always represented at the Medical Women’s International Association (MWIA) meeting which occurs every three years, where “people from other countries share experiences” (TMWA, p.c., 2009). The types of experiences which are shared at the forum mirror those discussed at the TMWA meetings and include personal and professional issues faced by women doctors as well as lectures and discussions of current health topics specifically related to women’s health (Medical Women’s International Association, 2011).

When discussing the importance of having a strong social support network, a member of the TMWA stressed that “medical doctors cannot do it alone” (TMWA, p.c., 2009), highlighting the importance of the association to their profession and the scholarship recipients who are about to enter this field.

Recognition

In addition to the inherent recognition of the recipient’s dedication to rural health by the awarding of the scholarship, the association also strives to acknowledge the successes and accomplishments of its many members. This usually occurs at the annual meeting where the association will “select the best lady doctors who served in rural areas and give awards” (TMWA, p.c., 2009). A member of the association also proudly noted that even on a larger, national scale, TMWA “members receive many awards for best doctors” (TMWA, p.c., 2009).

Many additional social and economic benefits of rural medical practice were raised by the interviewees, including the ability to “move up levels in the civil service very quickly … [one] can quickly become level nine [out of 11], or the same as deputy government director or provincial director” (Ministry of Health, p.c., 2009). Other social benefits observed in the interviews included recognition by the King for outstanding rural service. Such social advantages of rural practice will, the TMWA hopes, be recognized by scholarship recipients and encourage retention in a rural setting. This type of recognition is critical, as suggested by the literature, to cultivate greater job satisfaction, which often leads to higher retention rates.

Spirit of service

The general spirit of service came across as an important theme in almost every interview, and the scholarship program attempts to foster this spirit in each recipient.

In defining the goals of the TMWA, one member stated that the organization aims to "contribute knowledge and services to [the] underprivileged and marginal population" (TMWA, p.c., 2009). The member went on to explain that the organization has run clinics to treat women's health issues and to "provide service to women and the elderly" (TMWA, p.c., 2009). In terms of treating marginalized populations or issues, the organization also "approach[es] sex workers to help" with sexually transmitted infections and general health issues.

One member noted that the original president of the TMWA coined the motto, "To train the mother is [to] help the whole family," noting that the "founding members inspired us to help people" (TMWA, p.c., 2009).

A member of the Ministry of Health characterized the politics of the time period during which the TMWA was established (1960) as a time of "nationalism" and "strong social movement," when there was a "motivation to work in rural areas, to give back to the country, to serve the country" (Ministry of Health, p.c., 2009). There seemed to be a predominant belief in the medical community that graduates "have had privileges to go to university and have to give back" (Ministry of Health, p.c., 2009).

A member of the Ministry of Health stressed that it is important to "try to create a personal incentive for [scholarship recipients], an internal motivation rather than external—this is more challenging but also more sustainable" (Ministry of Health, p.c., 2009). In terms of passing this spirit of service on to the younger generations, one TMWA member noted, "We try to instill objectives of the TMWA in the scholarship recipients" (TMWA, p.c., 2009). Another TMWA member elaborated, "Not only do they receive financial support, but [they] also have a chance to learn about big picture issues, serving the poor, the country and giving back" (TMWA, p.c., 2009).

Interviews indicate that these sentiments have resonated with the scholarship recipients. In response to a question about their motivations for pursuing medicine, one responded, "In my province they have very few doctors because [it] is very far away, close to Laos; I wanted to help people" (Recipient, p.c., 2009).

> Such social advantages of rural practice will, the TMWA hopes, be recognized by scholarship recipients and encourage retention in a rural setting.

Recruitment/Selection Characteristics

By selecting the scholarship recipients from the CPIRD program, the TMWA ensures that the candidates are from rural backgrounds and "ensures that candidates actually need the money" (TMWA, p.c., 2009). The scholarship does "not support medical faculties in Bangkok or those with previous funding…. We choose very in-need students" (TMWA, p.c., 2009).

In selection interviews of the candidates who are eligible for the scholarship, the TMWA looks for characteristics that they feel are important for success as a rural doctor. When asked about the personal characteristics that are prerequisites to successful rural practice, one member of the Ministry of Health referred to Thailand's Fourth National Medical Education Conference, which called for "good clinical skills—with heart as well as skill to tackle problems without much help due to the lack of supplies and lack of specialists in rural areas" (Ministry of Health, p.c., 2009). A second identified selection criterion was that the student should be a "good primary healthcare supporter," because, with "so little staff, doctors have to even do accounting" (Ministry of Health, p.c., 2009). The third criterion was that the student should be a "good teacher" as they "have to train community health workers and village volunteers" (Ministry of Health, p.c., 2009). Finally, it was suggested that the student be a "good manager as they may immediately become district hospital director" (Ministry of Health, p.c., 2009).

In addition to practical skills, a member of the Ministry of Health expressed the opinion that "one good doctor is better than ten to 20 average doctors and will derive happiness from this process" (Ministry of Health, p.c., 2009). This observation is particularly applicable to the TMWA scholarship program, which, while small in numbers, aims to sponsor candidates with the most "passionate commitment" (TMWA, p.c., 2009).

Retention

While there only been two graduates of the TMWA Rural Scholarship program thus far, the issue of follow-up and retention was discussed in multiple interviews. One member of the TMWA noted that because the recipients are "select[ed] from their rural home town, they want to go back" (TMWA, p.c., 2009). Though the recipients are bound to serve in the rural community for three years as a result of their CPIRD contract, one member of the Ministry of Health said that they "do not expect doctors to stay in rural areas forever; we have to be practical" (Ministry of Health, p.c., 2009). When asked about the possibility of adding a clause to the scholarship program which would require recipients to serve in the rural areas longer, a member of the TMWA responded that they "don't want to tie the scholarship recipients to work in rural area[s] forever…. After learning and serving in the communities for five or ten years, they should move and use their experience at the district level to support policy making and planning, having had experience first" (TMWA, p.c., 2009). This belief is reflective of the goal of the TMWA to support and produce future leaders in the healthcare profession as it has with its many successful members in the past.

Strengths

The TMWA Rural Scholarship Program has many strengths which were identified by interviewees. One TMWA member expressed gratitude that past recipients have served as strong examples for future recipients and the future of the program, describing the early recipients as "happy to help, good advocates" of the program (TMWA, p.c., 2009).

In terms of effectiveness in increasing retention of rural physicians, one member of the TMWA speculated that the program has been and will be "effective, especially in the Ministry of Health, who are looking for doctors to fill district hospitals all over the country" (TMWA, p.c., 2009). A member of the Ministry of Health also illustrated such optimism, stating that "in five or six years, a director of a hospital will be from this program" (Ministry of Health, p.c., 2009).

There are also many inherent advantages of recruiting from rural areas. Avoiding regional cultural barriers is a primary example: "Rural people are more familiar with rural culture, language, etc., so they often choose to settle down there" (Ministry of Health, p.c., 2009). Likewise, the hometown placement aspect of the program is "helpful in encouraging, ensuring that people will go back and work in rural area if they are from that area…. [It is] also helpful because they are used to the local customs, which can often vary greatly, even [in] language" (TMWA, p.c., 2009). A member of the Ministry of Health noted that many rurally-based students "often settle down in rural areas—the appeal is that it's a simple life" (Ministry of Health, p.c., 2009). This sentiment is echoed by the scholarship recipients themselves: "I prefer rural area[s] because I'm from a northern province and don't think I could adapt to city life [due to] cultural differences" (Recipient, p.c., 2009). Another recipient enjoyed the hometown aspect of the rural placement simply because "I like to be close to my family" (Recipient, p.c., 2009).

By selecting candidates from the pre-established CPIRD program, the TMWA scholarship program has the additional benefit of leveraging the existing governmental infrastructure. This includes the "special budgetary support" earmarked for the expansion of rural hospitals in the program, including the "lump sum operating budget of 8,000 USD [per student] each year, [which] goes to the medical schools to help with increased operating budget with increased students" (Ministry of Health, p.c., 2009). The students of this program are also therefore under the same "special contract to work with Ministry of Public Health after graduation" (Ministry of Health, p.c., 2009). Because the CPIRD program has been so successful, there is now a firm "commitment of the government to rural development in terms of budget support" (Ministry of Health, p.c., 2009).

Challenges

One of the most vexing challenges concerns the question of medical specialization. Yet the question of specialization did not yield a consistent response from the interviewees. One member of the Ministry of Health stated that "if you become [a] specialist, it is hard to go back to rural areas" (Ministry of Health, p.c., 2009). Another said that there is "no contractual obligation after specialty training, but if students come from rural provinces, they usually stay there" (Ministry of Health, p.c., 2009). One scholarship recipient observed that "many doctors leave after their required three years to specialize, but this is not so much of a problem because we receive new doctors from medical school as soon as the old ones leave to maintain that there are always doctors here [in rural areas]" (Recipient, p.c., 2009). However, this phenomenon often creates instability of doctors in the rural hospitals: "Of the three doctors here [a district hospital], one has been here for three years, one for three months and one for two months" (Recipient, p.c., 2009).

Interestingly, two recipients who were interviewed while they were still in medical training both stated their intentions to stay in the rural areas past their three year obligation but simultaneously stated intentions to specialize; neither acknowledged the potential conflict of these intentions.

Multiple interviewees expressed concern over the risks involved in rural practice for young women, both physically and legally. A member of the TMWA noted that "some provinces in the south are very dangerous with terrorism" (TMWA, p.c., 2009), and a recipient who has graduated and is currently working in one of these areas observed, "It becomes difficult to serve people [due to their] religious affiliation" (Recipient, p.c., 2009). A member of the Ministry of Health also pointed out that "doctors in rural areas [are] at a great risk of [law]suits because they do not have well-supported staff, making it easier to do something wrong" (Ministry of Health, p.c., 2009).

When asked about ways the scholarship program could be improved, multiple respondents noted that candidates should be made aware of the opportunity earlier. One recipient recalled, "Before I received the funding, I had applied for bank loans" (Recipient, p.c., 2009). A member of the Ministry of Health said, "The TMWA scholarship program helps the social inequality, but it would be better if we could help them even in high school or primary school to be able to continue education to go to medical school" (Ministry of Health, p.c., 2009). A recipient echoed this sentiment, suggesting that the TMWA should "probably go through high school, because otherwise [candidates] don't know they can have the option to even pursue medical school" (Recipient, p.c., 2009). Another recipient agreed: "The earlier the better—so people will know to study hard to inspire them to strive to pursue medicine" (Recipient, p.c., 2009).

One TMWA member expressed concern that the annual meetings and newsletters may not be enough in terms of support for the recipients, and that there is still a "need to get them more involved, to empower [them]" (TMWA, p.c., 2009). However, when asked about the support received from the TMWA, one recipient noted that the "TMWA secretary calls many times" and that the "meetings are fine right now; [we] can call them directly if we need to" (Recipient, p.c., 2009).

Discussion

Although the Cochrane Review did not find conclusive experimental evidence for any particular strategy to address the disequilibrium of physicians in rural and urban areas (Grobler et al., 2009), many of the strategies which were identified as anecdotally successful in the literature review are also present in the TMWA Rural Scholarship Program.

In terms of strategies related to physician characteristics, the literature review found a strong predictive effect of rural background leading to rural practice. The definition of rural background varied from rural upbringing to rural exposure during training, with the former found to be more predictive than the latter. The TMWA Rural Scholarship should therefore train recipients, all of whom have rural upbringings, by supporting rural exposure during medical training, thus satisfying both definitions of "rural background."

Another set of studies found that physician satisfaction was predictive of rural retention. One such study highlighted the importance of "continuous education and career progression strategies" (Manafa et al., 2009). According to the interviews, it is apparent that members of both the TMWA and the Ministry of Health, which runs the CPIRD program, seek to avoid the stagnation of the recipients' careers and do not expect them to remain in the rural areas ad infinitum. Interviewees in all three categories (TMWA, Ministry of Health and Recipients) mentioned specialization and moving up in the healthcare system. The second study, which reported on the relationship between satisfaction and retention, reported similar findings: "Retention was independently associated only with physicians' satisfaction with their communities and their opportunities to achieve professional goals" (Pathman, 1996).

By recruiting students from rural areas and encouraging hometown placement, a desire also expressed by the recipients, the TMWA scholarship seems to facilitate and encourage this kind of satisfaction with the community. However, there also appears to be a tension between the desire to achieve professional goals and long-term rural retention. The two objectives seem to be most at odds when physicians leave the rural areas to specialize, leaving the question of their return open-ended. This dilemma was acknowledged by TMWA members as well as scholarship recipients; however, it was not considered a threat to the program, as TMWA does not expect that the recipients will necessarily work in the rural areas for their entire careers. Indeed, TMWA encourages recipients to attain their highest possible professional status with the hope that their accomplishments—including their rural service—will provide a role model to aspiring physicians seeking the highest levels of professional recognition, as well as facilitate better judgment as recipients attain higher policymaking positions later in their careers. However, this leaves the potentially negative consequences on rural hospitals and rural healthcare of the turnover, which results from physicians leaving the rural areas after their three-year contractual obligation, unaddressed.

The final set of studies on characteristics discusses gender differences in rural doctors, noting that most rural physicians tend to be men. One study concludes that "family and community ties played a key role in influencing practice location…. Recruitment efforts should focus on candidates from rural areas and not underestimate the impact of family in decisions about work location" (Lindsay, 2007). The rural recruitment and hometown placement of the TMWA Scholarship Program ensures that the candidates, who also consistently observe that they prefer to be close to their families, are able to do so.

In addition to recruiting students on the basis of their rural characteristics and background, which is at the heart of the TMWA Scholarship strategy, many of the educational strategies identified as successful by the literature review included increasing rural internships and rotations as well the number of rurally based medical schools. While all of the TMWA scholarship recipients complete rural internships and rotations (which occur in the second half of the six-year medical education in Thailand), perhaps a clause should be introduced into the scholarship to ensure that the recipients receive their training at rural medical schools for the first three years as well allowing for an earlier exposure to rural practice and lifestyle in their medical training. At present, the students receive medical training at a variety of different institutions depending on their geographical origin, but not all of these institutions are rural.

The disparate strategies related to financial incentives, of which the scholarship program is but one, are difficult to summarize and generalize. The two most rigorous studies, both systematic reviews, found that while financial incentives were successful in recruiting rural physicians, they had less success with long-term retention. One of the reviews did, however, report that "multidimensional programs appeared to be more successful than those relying on financial incentives alone" (Sempowski, 2004). Given the rural recruitment, hometown placement and strong social support network of the TMWA Rural Scholarship Program, it would certainly seem to fall under the category of a "multidimensional" program which provides much more than simply financial assistance for its recipients. However, several interviews indicated that information regarding the scholarship program should be provided earlier so that students in high school who otherwise would not have been able to consider a medical career could take the necessary steps to achieve this goal. This may also create additional incentive and motivation for students and may, in turn, increase the number of rural applicants.

The importance of the social support network aspect of the scholarship program should not be underestimated. While the number of women doctors in Thailand remains fairly equal to the number of male doctors, the TMWA contains many of the most successful physicians in the country, with its members proudly over-representing the number of women in the highest possible positions. The TMWA has about 1,520 members, which comprises 10.3% of all women doctors in Thailand. While women typically do not hold the highest positions in the medical profession in Thailand (and many other countries), many members of the TMWA have had extremely successful careers and are beginning to outnumber their male counterparts in many esteemed academic, governmental and clinical appointments.

Though it is too early for proper evaluation on retention, having combined many different successful strategies identified in the literature, it seems that the TMWA represents a promising prospective program. Because the strength of the program relies heavily on the vast social support network of the organization and because this is one of the distinctive aspects of the program, it would be crucial to identify a similar social support network, in addition to the existing infrastructure, if the program were to be successfully replicated elsewhere. The prerequisite infrastructure for replication should include a governmental commitment, which includes recognizing the shortage of rural doctors as a problem, a financial commitment to remediating the problem and a preexisting rural health infrastructure—including rural hospitals, accessibility and transportation—as well as strong medical education centers and training programs for aspiring rural students. In addition to these structural elements, cultural and gender-related factors should also be explored and considered in other possible settings. A prospective program may have the greatest potential for success and impact in venues where elevating the status of women who struggle to gain equal recognition and opportunity is artificially or traditionally constrained, but it is important to keep in mind that a prospective program may face difficulties in places where women are unable or forbidden to gain education, medical or otherwise.

Policy Recommendations

The results from this report may influence policy at three distinct levels: the TMWA, the Thai Ministry of Health and beyond in terms of expansion and replication elsewhere.

TMWA

- Selection of candidates can become more rigorous by the identification and use of standardized positive traits
- Encourage recipient involvement in TMWA social support network through workshops, activities and mentorships
- In addition to recruiting girls from rural areas, the TMWA should consider sending recipients exclusively to rural medical schools
- Consider recruiting, or at least informing students, about the scholarship earlier

Ministry of Health

- Maintain and expand programs to support rural physicians
- Increase fines and consider other penalties for breaking contractual obligation to work in the rural areas to adjust for inflation
- Re-evaluate the current "lazy allowance" as this may have the unintended consequences of facilitating and encouraging physicians to break their contracts by paying off fines
- Expand and encourage rural medical schools as well as rural rotations and internships
- Encourage future research in Thailand to allow for context-specific, rigorous evaluations

Expansion beyond Thailand

- Ensure appropriate infrastructure to facilitate such a program, such as transportation, safety, security, etc. as well as good rural medical schools
- Evaluate governmental and/or Ministry of Health programs and support
- Identify social support networks—foster relationships by connecting people who have had similar experiences and involve the new scholarship recipients in these networks
- Develop and apply a standardized, rigorous and transparent selection process

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Limits of health education

Barriers to oral rehydration use among Ghanaian mothers

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Abstract

Childhood diarrhea is one of the leading causes of childhood morbidity and mortality in West African communities. In the Ejisu-Juaben region of Ghana, oral rehydration solution (ORS) sachets are provided by the district hospital by nurses working in surrounding communities and by community drugstores to combat diarrhea and replenish electrolytes that have been depleted as a result of diarrhea. Previous research from the Ejisu-Juaben region, part of the Ashanti region, found that 92% of mothers had heard of ORS and 86.6% could describe its preparation, but only 28.4% had used ORS to treat their child's last episode of diarrhea (Kendell et al., 2009). The purpose of this study is to determine potential barriers to the use of ORS in these communities.

Qualitative interviews were conducted with 91 mothers, eight public health nurses, five community volunteers and five drugstore owners in the Ejisu-Juaben region. Additionally, focus groups were held with mothers.

Mothers knew where to obtain ORS, could correctly demonstrate its preparation and identify it as an effective treatment. The primary reasons given for not using ORS were its expense and use of alternative treatments. The latter includes herbs boiled in water, herbal enemas, sand enemas and innocuous foods; the primary reasons for choosing these treatments over ORS include availability of home remedies and adherence to tradition.

While public health education is vital to improving overall health in developing countries, education does not always predict compliance with medically proven health practices. This is particularly true when cost and tradition are barriers to behavioral change. A diarrhea treatment that bridges traditional and modern methods while mitigating cost barriers could potentially increase use, thereby decreasing the morbidity and mortality of diarrhea.

Leah Rothchild

Introduction

Diarrhea accounts for about 1.8 million deaths per year among children under five years of age, making it the second most common cause of child mortality worldwide, following acute respiratory infection and excluding perinatal diseases that occur within seven days of birth (Petri et al., 2008; WHO, 2002; UNICEF/WHO, 2009). In addition, recent evidence has documented the morbidity of recurrent episodes of diarrhea leading to long-term problems for these children (Guerrant et al., 1999; Dickson et al., 2000; Moore et al., 2001; Niehaus et al., 2002; Patrick et al., 2005; Lorntz et al., 2006).

Oral rehydration therapy (ORT) was officially introduced by the World Health Organization (WHO) in 1979 and rapidly became the cornerstone of programs for the control of diarrhea (Victoria et al., 2000). ORT consists of oral intake of a sugar and salt solution, providing an inexpensive and effective method of fluid and electrolyte replacement. Annual childhood diarrheal deaths have decreased from approximately 4.5 million in 1980 to fewer than two million today. Dehydration accounts for 60% of these deaths, and the impressive reduction in childhood diarrheal deaths has been ascribed to ORT, an overarching category that includes both recommended home fluids (RHFs) and oral rehydration solution (ORS) (Bull. World Health Organ., 1984). Despite this accomplishment, morbidity and mortality in West African communities due to childhood diarrhea remain crucial public health concerns.

ORS is a specifically measured solution of necessary electrolytes. This paper examines ORS usage in diarrheal treatment efforts in the Ejisu-Juaben region of Ghana. Nurses' campaigns in this region have focused on encouraging mothers to buy ORS sachets, which become functional ORS when mixed with water. Global health education programs aim to facilitate parental administration of ORS to their children (Coreil & Mull, 1988). However, these education campaigns do not always bring about behavioral changes; social, political and health-related cultural nuances often impede health interventions (Kaler, 2009; Briggs, 2003; Rutenberg & Watkins, 1997). Data from 68 UNICEF priority countries indicate a median use of ORS in only 38% of diarrhea episodes (Bryce et al., 2006).

Every year, an estimated nine million episodes of diarrhea and 84,000 diarrhea-related deaths occur among Ghanaian children under five years of age, at an estimated annual cost of 33 million USD (CWSA, 2002; Scott et al., 2007). A Multiple Indicator Cluster Survey (MICS) conducted in Ghana in 2006 found that of children under five years of age who experienced diarrhea in the previous two weeks, only about 29% received ORS and 9% received RHFs. The MICS showed similar data in the Ashanti Region, one of the ten administrative divisions of Ghana, with percentages of children who received ORS and RHFs, 26% and 7% respectively. In rural communities within the Ejisu-Juaben District, nurses from the district hospital have educated mothers in the surrounding communities about how, when and why to use ORS to treat their children's diarrhea. A study in the rural communities within the Ejisu-Juaben District in 2008 found that although 92% of these mothers had heard of ORS and 86.6% described the correct preparation of the solution, only 28.4% of mothers actually used ORS for their child's most recent episode of diarrhea (Kendell et al., 2009). This substantial gap indicates that awareness and education do not necessarily lead to improved health practices. The purpose of this study was to determine why ORS/ORT use is so low, even when it appears that mothers are adequately educated on the topic.

> Mothers value their villages' traditional remedies far more than they value an unfamiliar Western medicine, even though most understand how ORS works.

Methods

The communities involved in the study were: Juaben, Krofofrom, Nkyerepoaso, Odoyefe, Atia, Dumakwai, Apemso and Ofoase. Homes were chosen from different geographic areas within each community to provide accurate representation. Interviews were conducted with 91 mothers, each with at least one child under the age of five, in the Ejisu-Juaben District from July 9-22, 2009. The two authors of the study (Warren and Saltzman) conducted the interviews. Each community was visited twice, and different mothers were interviewed during each visit. Names of mothers interviewed in each location were recorded. Interviews were based on an oral questionnaire developed by the authors with input from medical staff from the University of Utah, USA, and Kwame Nkrumah University of Science and Technology in Kumasi, Ghana. A pilot survey was administered to three mothers in Dumakwai prior to beginning the research, but the data from those mothers' answers were not included in the final study results.

Open-ended questions investigated beliefs about the objective definition of diarrhea, treatment of diarrhea, knowledge of ORS and personal use of ORS. Some questions more directly investigated potential barriers to ORS including availability, cost, substitution with other treatments, unequal distribution and misunderstandings about the benefits of ORS and its correct usage. During interviews, responses were recorded directly on the survey tool or in a notebook and were later compiled in aggregate.

Translation was provided by community health workers (CHWs). CHWs are residents of each community selected by their peers and the nursing staff to mediate affairs between the hospital and community members. Well-trusted by fellow community members, CHWs proved necessary in the translation of the English questions into the local Twi language, as well as in assuaging community members' uneasiness about being interviewed by strangers. CHWs provided insight on the dynamics underlying the mothers' responses. While this provided cultural context for the researchers, CHWs' comments were not included in the mothers' interview data. One CHW accompanied each interviewer to the homes of interviewees to serve as a translator. As CHWs are trusted and familiar within the communities we studied, they also selected the mothers that were interviewed. CHWs were instructed to select mothers randomly in order to minimize selection bias. Randomness was also increased by visiting each community on two separate days and by selecting mothers from randomly chosen geographic areas. True random selection was not possible in this context, as CHWs are familiar with the communities. Using non-affiliated translators could have enhanced randomness; however, the mothers' trusting relationships with CHWs seemed more important for the accuracy of the study than did random distribution, given the short time frame and the qualitative emphasis of our study.

CHW-selected mothers were invited to participate in an interview about how they treat their children's diarrhea. Before beginning each interview, translators emphasized to the interviewee that interviewers wanted to learn about how they treat diarrhea, that no answer would be deemed as incorrect or inappropriate, that interviewees would not be identified by name and that interviewers wanted to hear answers only from the interviewee. No mother rejected the opportunity to participate. Interviews were conducted either in courtyards outside of the homes of interviewees or at common meeting places in the communities. A member of the research team also visited the drugstores in each of the communities that had one (five of the eight communities) to record whether the drugstore had ORS on hand and, if so, the advertised cost of the ORS. Interviews concerning the availability and distribution practices of ORS were conducted with drugstore owners, who were not forewarned of the research team's visit.

Interviews regarding diarrhea and its treatment were also conducted with the head nurse at the district hospital (called the Juaben Government Hospital), seven public health nurses and six CHWs. Nurse interviews were held in the local hospital and CHW interviews were conducted in the communities.

After completion of the interviews, responses were evaluated for trends. Mothers' responses were compared according to the "Child Health Records," a small booklet that contains recommendations for treating various diseases and a means of recording immunizations and the child's health status. This booklet is printed by the Ghana Ministry of Health and is distributed at "Child Health Clinics," where mothers come voluntarily to obtain immunizations and check-ups for their children. Mothers are given a copy during their first visit and are expected to bring it with them on each subsequent visit for the nurses to record the child's health status. We define "treatments recommended by nursing staff" as those printed in "Child Health Records."

There has been an ongoing collaboration between the University of Utah School of Medicine in Utah, USA, and Kwame Nkrumah University of Science and Technology in Kumasi, Ghana, for approximately ten years. As part of this collaboration, there was Institutional Review Board (IRB) approval for public health surveillance studies in rural communities near Kumasi, of which the Ejisu-Juaben region is part. This study received IRB approval as part of that pre-existing IRB approval.

Results

Interviews from 89 mothers, eight nurses and six CHWs were used for data analysis. A few additional mothers were interviewed, but the interviews were either incomplete or clearly biased (explained later in this paper) and thus were omitted from data analysis.

Data from Mothers

Top Health Concerns

When asked the open-ended question, "What are the top five health concerns for your children?" mothers' most common responses included proper nutrition, malaria, hygiene, breastfeeding, clothing, diarrhea, attending child welfare clinics and polio (Figure 1). At least 15% of mothers listed each of these as one of their top five concerns. Mothers listed an additional 13 health concerns, but because fewer than 15% of mothers mentioned each, they are omitted from the following table. Only eighteen mothers (19.8%) said that diarrhea was one of their top five health concerns for their children.

Health Concern	Mothers who reported this concern (N=89)	Percentage of mothers interviewed who reported this concern (%)
Proper Nutrition	43	47.2
Malaria	38	41.8
Hygiene	30	33.0
Breastfeeding	26	28.6
Clothing	19	20.9
Diarrhea	18	19.8
Attending Child Welfare Clinics	17	18.9
Polio	14	15.4

Prevalence of Diarrhea

Sixty-three mothers (70.8%) had at least one child suffer from diarrhea in the past year. Mothers reported different incidences of diarrhea, ranging from a five-year-old child who had diarrhea only once ever, to a child who had diarrhea 12 times in one year. Of these 63 mothers, 57 (90.5%) reported a frequency of a child's diarrhea between one and four times per year. Diarrhea was reported to last from one to ten days, with 57 mothers reporting it lasting one to four days. Mothers all defined diarrhea similarly, as the condition of having runny or loose stools at least four times in one day; this criteria is how the nurses define diarrhea in their education campaign.

Significance of Diarrhea/ORS Use

When asked what their primary health concerns were for their children, only 18 mothers (19.8%) reported diarrhea as one of their top five concerns. Eighty-five mothers (95.5%) stated that ORS should be used anytime a child has diarrhea, but only 17 mothers (19.1%) listed ORS as their most frequently used medical treatment for diarrhea. Of the 63 mothers with a child under age five who had diarrhea within the past year, 24 said they used ORS to treat the most recent episode, while seven said they had used a home-prepared "salt and sugar" solution for the most recent episode. (Although the previously mentioned "salt and sugar" solution is not in the "Child Health Records," the nurses sometimes suggest it to mothers as a substitute for ORS). The rest either listed no treatment or traditional remedies, which will be described shortly.

ORS Availability

Eighty women (89.8%) identified a correct location when asked where they could go to obtain ORS. These locations include the district hospital, drugstores, CHWs and Child Welfare Clinics (CWC), small morning clinics held weekly by the nurses in each community. Women who did not identify one of these four locations noted they did not know where to go to obtain ORS. Out of 80 mothers, 62 (77.5%) reported they would/did obtain ORS at a drugstore, 43 (53.8%) said they would go to the district hospital, nine (11.3%) would ask the CHW and two (2.5%) mothers stated they would obtain ORS from the Child Welfare Clinic. These responses were not mutually exclusive.

Nine respondents (10.1%) reported not being able to obtain ORS when they wished. This was due to the drugstore being closed (three responses) or a lack of availability in the store (six responses). Of the six who stated the drugstore did not have ORS available, five noted it was not the first time they were out of stock, and one noted that the store ran out three times in the past year. Of the nine mothers who could not obtain ORS when they wished, six reported they were able to obtain it from another location that day or the next day, and only three were unable to obtain ORS for that incident. Seven mothers (7.9%) reported having ORS in their homes.

Cost of ORS

When given an open-ended question that asked them to identify barriers to ORS use, 26 mothers (29.2%) said cost, 60 mothers (67.5%) said there were no significant barriers and three mothers (3.3%) had other responses. Each ORS satchet costs between 20-50 peswas (US $0.13-$0.33).

Use of Traditional Remedies

Fifty-eight mothers (65.1%) reported the regular use of alternate remedies not recommended by nursing staff to treat diarrhea as outlined in the "Child Health Records" booklet. Of these, ten (11.2%) used syrups and other medications obtained from drugstores or the district hospital. Importantly, 48 mothers (53.9%) treated their children with traditional remedies, defined in this study as treatments not supported by the district hospital or the nursing staff and using substances not provided by either. These remedies include various herbs boiled and given to children to drink, as well as sand and clay enemas. To our knowledge, the effectiveness of herbs grown naturally in Ghana as a diarrhea treatment has not been evaluated. Enemas can be innocuous to some children and dangerous for others, depending on preexisting health conditions (Moore & Moore, 1998; Dunn et al., 1991).

Reasons given for using these traditional treatments were cost (though herbs may actually cost more than ORS), availability and convenience ("I can use herbs from my farm"), tradition ("the herbal methods were taught to me by a family member or friend") and functionality ("clay enemas immediately halt the diarrhea, but ORS does not"); these are direct quotes from mothers during interviews. In an interview, a woman in Dumakwai who sells boiled herbs to community members for the treatment of diarrhea reported that ten patients per day use her services, which cost one cedi or 100 peswas ($0.67) (recall that each ORS costs between 20-50 peswas). Both mothers and nurses reported the presence of other individuals who sell or give herbal treatments in other communities.

Data from Nurses

Barriers to ORS Use

Nurses reported the following as barriers to ORS use: cost, use of traditional medicine, inconvenience (having to walk to obtain ORS), lack of concern (the belief that diarrhea is not a severe condition) and inaction (waiting to see if a child improves). Most nurses said that the cost of ORS and the use of herbal remedies are the most important barriers. The nurses generally believed that the herbal remedies are not effective treatments, and many expressed frustration that the mothers continued to use herbs instead of ORS. Two out of the seven nurses reported inconvenience and waiting to see if a child improves as one of the most important barriers. One out of seven nurses reported lack of concern as a major barrier.

ORS Availability and Alternative Therapies

Two nurses reported that CHWs can provide ORS, while two reported that they cannot; it was clear from the CHWs that they only have ORS sporadically. Four nurses reported that "home fluids," as outlined in the "Child Health Records," could be used as a substitute treatment for diarrhea. The "Child Health Records" lists ORS, home fluids (rice water, porridge, coconut juice, etc.) and continued breast feeding as treatments for diarrhea, listed in order of importance. It appears the nursing staff interprets this to mean three different treatments as opposed to three steps in treatment. The nurses believe that ORS is the most important treatment and that the other two are less effective. Thus, nurses instruct mothers to use "home fluids" if they do not have ORS or cannot obtain it, and they teach the CHWs to provide the same instructions. Two nurses reported that ORS is not needed if home fluids are effective, while two other nurses suggested that ORS should not be replaced by any other treatment. One nurse said that mothers are instructed to have ORS in their homes to avoid a trip to the hospital if a child were to get diarrhea in the future, three nurses recommended mothers wait 24 hours before giving ORS, and two nurses suggested ORS be given immediately. The "Child Health

Records" is unclear about when ORS should be given, but it states that a mother should "report to the nearest clinic if a child's diarrhea does not stop in 24 hours." In addition, five out of the seven nurses said that a solution of salt and sugar (one tbsp. each) could be substituted for ORS if necessary, although this is not outlined in the "Child Health Records."

Data from CHWs

All CHWs reported having ORS provided to them at various times, and the head nurse at the district hospital confirmed that the CHWs receive ORS from various outside sources at irregular times. One CHW reported having ORS in stock two years ago, two CHWs mentioned ORS satchels were available within recent months (two to four months), and one currently had and distributed ORS, which were given to him by the district hospital. One CHW reported that he thought the use of herbs was the preeminent barrier to ORS use, and another stated that all mothers use ORS; he could not think of a reason why they would not. All CHWs stated that the drugstores never run out of ORS satchels, which diverges from the mothers' data about ORS availability in drugstores.

Data from Drugstore Owners

All drugstores had ORS on hand when visited by the interviewers. Each had between a three-week and a two-month supply of ORS. One drugstore owner reported running out of ORS satchels two to three years ago, and one reported rarely running out, perhaps a few times a year. All other owners stated they never ran out. These responses diverge from the mothers' appraisals of ORS availability in drugstores.

Discussion

Almost all mothers interviewed knew what ORS is, how to obtain it and how to use it, yet most mothers did not use ORS to treat their child's most recent episode of diarrhea. Instead, many mothers chose to use traditional remedies, including oral herbs and enemas. The sharp disparity between mothers' awareness of ORS and their choice to use it as a primary treatment for diarrhea indicates that although the nurses' education campaign has successfully reached an extensive number of people and communities, simply explaining how, when and why to use ORS is not enough to increase usage.

Limitations

One major limitation of the study is that different CHWs and nurses served as translators in different communities and had varying levels of English proficiency, as well as varied tones and thoroughness when translating questions to the mothers. Some translators understood the survey and the need for objectivity, but some had difficulty understanding the English questions, and others seemed to change the questions when translating them, potentially hindering attempts to avoid bias. Furthermore, both the nurses and the CHWs were invested in their ORS educational campaign, adding potential bias to the data collected from their responses about the effectiveness of the education program. Using these healthcare workers as translators was necessary because of their understanding of the issue and knowledge of the community, but these connections may have compromised objectivity. In a few instances, translators mentioned ORS before instructed to do so, and this mention heavily shaped mothers responses (these mothers named ORS as their first choice for diarrhea treatment, presumably because the translator mentioned it). These interviews were omitted prior to analyzing the data but similar situations possibly occurred in other interviews without researchers' cognizance.

The benefits of using the CHWs and nurses as translators were believed to outweigh this potential bias. The selection of more "objective" translators (i.e. people who spoke Twi but were uninvolved with the communities) would have sacrificed the trust that came with using insiders as translators. It was decided that for short-term public health research projects that utilize qualitative methods, establishing trust with study participants is the most important factor to consider. Trust is key in collecting data that is as thorough and accurate as possible, as well as in conducting an ethical study that avoids making study participants feel uncomfortable, confused or vulnerable. However, researchers aiming to conduct a study similar to ours could mitigate some of this bias by working with translators who are members of the community but who are not involved in the particular health campaign on which the study focuses. Yet this too could cause problems, as the translators would not have a thorough understanding of the research project and might be less able to translate health-related phrases or concepts.

The interview questions themselves created another study limitation. Open-ended questions seemed like the most objective way to approach mothers. As there was not enough preexisting data to identify the most likely reasons that mothers chose not to use ORS, a survey composed of "yes" or "no" questions would likely overlook important factors. For instance, if the interviews were conducted with "yes" or "no" questions, the role of herbs and enemas might not have emerged as clearly. However, the open-ended interview method presented some unforeseen limitations. Many mothers interviewed were illiterate, and open-ended questions were often difficult for them to answer, even though the questions were asked orally. A CHW explained the nature of this problem: illiterate women who did not receive an education have never answered open-ended questions similar to those in the interviews, and some women were unsure how to respond. For example, when asked, "What are the top five health concerns for your children?" one mother replied, "Pineapple," because she had overheard a previous mother using that word at a completely different point in the survey. The fact that mothers sometimes overheard previous interviews before their own interview is a limitation; however, this was avoided as much as possible.

Reasons Underlying Low ORS Usage

The role that cost plays in explaining lack of ORS use brings critical complexities to this study. Although mothers repeatedly mentioned cost as a barrier to ORS use, this issue is more nuanced. In many instances, mothers said the ORS satchels (20 peswas/0.13 USD) were too expensive but that herbs from the medicine woman (100 peswas/0.67 USD) were affordable; for some mothers, the herbs grew in their own yards and were free, but most mothers who used herbs paid around 100 peswas for them.

Furthermore, it is important to note that agriculture accounts for one-third of the Ghanaian economy and 55% of formal employment (Bureau of African Affairs, 2010). Most Ghanaian agriculture is small-scale subsistence farming (McNeill & O'Neil, 1998; Africa Rural Connect, 2009), in which many of the members of the villages surrounding Juaben participate. Thus, 20 peswas might hold different meaning for a family whose farming brings them adequate food and shelter without formal income, as it would for a family who works for money in order to buy food and shelter. There is insufficient information to discern exactly how interviewees' engagement in subsistence agriculture affects the ways in which they value money. Yet acknowledgment of this possible association, suggests that the meaning of money is culturally contingent rather than a neutral value, and that the accuracy and efficacy of public health research may improve when researchers look beyond a survey response to consider the culturally situated human being producing that response.

Some mothers did seem to accurately choose herbs because of cost. One mother interviewed said, for instance:

"First we use herbs…we wait three to four days. If the diarrhea hasn't resolved then we take them to the hospital. At the hospital you will be charged; here you can get herbs for free."

This mother recognizes that ORS, received at the hospital, is more effective than herbs, and she obtains ORS if other methods do not work. However, she first chooses herbs because they are free where she lives, whereas ORS costs money.

Interestingly, many mothers chose to buy herbs to treat diarrhea that actually cost more than ORS. One mother explained:

"I grind the leaves, mix them with water and give them to the child to stop diarrhea. I get herbs from the herbalist that I pay one cedi [100 peswas] for."

According to the nurses, even in the poorest communities, 20 peswas (the cost of ORS) is considered extremely inexpensive. This seeming incongruence suggests that some mothers do not value ORS nearly as much as they value herbs; they choose herbs even when the difference in cost is minimal. As one mother said:

"For diarrhea, first I use herbs from the farm. If that doesn't work I go to the hospital. I have a strong belief in the herbs, which is why I use them instead of ORS."

Therefore, the two main barriers to ORS use identified in this study—cost and tradition—are closely associated with one another.

Distinguishing between cost and value can help illuminate the nature of this cost-tradition relationship. Mothers value their villages' traditional remedies far more than they value an unfamiliar Western medicine, even though most of these mothers understand how ORS works. Thus, it is not always the numerical figure of cost that matters when predicting the effectiveness of a health education campaign, but, rather, it is the relationship between value and cost for a particular product. Value encompasses much more than just money: a mother may value herbs more than she values ORS that she is willing to pay 100 peswas for herbs, but is not willing to pay 20 peswas for ORS, because she perceives ORS as too expensive for its value.

Furthermore, to analyze the reasons inhibiting ORS use, it is important to remember that although diarrhea is the second leading cause of death in children under five years of age, the case fatality rate for any one small community remains relatively small, likely contributing to why mothers do not view diarrhea as a major health concern. Thus, traditional methods may appear effective when diarrhea subsides, regardless of their mechanistic efficacy, which, to our knowledge, has not been evaluated for the specific herbs in question. As a nurse explained:

"They think diarrhea is not [as important as] fever or malaria… they prefer to sit in their house and treat it."

This quote suggests that one reason for lack of ORS use could be that mothers do not perceive diarrhea as a major health concern. Although they know how to obtain and use ORS, they find that their children's diarrhea generally clears up without this treatment and that diarrhea does not seem to cause significant health problems when compared to illnesses such as malaria. From this perspective, using the most effective treatment may not be a high priority. Worldwide, diarrhea accounts for more child deaths than malaria (Black et al., 2003). Case-by-case, though, untreated malaria can be quite lethal; for example, one untreated malaria epidemic in Ethiopia had case fatality rates of 5-20% (Alles et al., 1998). It makes sense, then, that from a mother's point of view, malaria is more serious than diarrhea.

> Cultural nuances, even those that from a health researcher's perspective may seem unrelated to health, can limit the effectiveness of health education campaigns.

Apart from the fact that mothers value traditional, seemingly effective remedies more than foreign remedies like ORS, other nuances likely influenced their responses to survey questions. Mothers seemed very hesitant to admit use of traditional herbs and did not discuss it until the interview was underway for an hour or more, until they felt more comfortable with the interviewers and with the translators. Even though we emphasized that no answer was incorrect, mothers clearly knew that the district hospital nurses advocate ORS and likely assumed that as foreign researchers, we valued ORS more than traditional remedies. This clear trend suggests that it is likely that even more mothers use traditional herbs instead of ORS than our results indicate. Furthermore, the relationships between the nurses and the mothers have influenced both the educational campaign and the results of our survey. Information was insufficient to gauge the level of trust in these relationships or to determine how Western medicine is viewed throughout these communities. Nonetheless, the data collected demonstrate that mothers know how to use ORS, how to obtain it and are financially capable to purchase it, but they often choose to buy herbs instead.

A possible additional explanation for the relatively low use of ORS reflects a challenge that diverse public health campaigns face: cultural nuances. Even those that from a health researcher's perspective may seem unrelated to health, can limit the effectiveness of health education campaigns. In several other health interventions in sub-Saharan Africa, local symbolism, perceived power imbalance, mistrust of authority or of Westerners and other cultural complexities impeded the success of a health education campaign (Kaler, 2009; Briggs, 2003; Rutenberg & Watkins, 1997).

Specifically pertaining to ORS usage, research in developing countries has demonstrated that socio-cultural contexts are critically important to how a particular population perceives and treats diarrhea (Weiss, 1988; Kendall, 1984). For example, an anthropological study in rural Pakistan attempted to further understand mothers' concepts of childhood diarrhea (Mull & Mull, 1988). The purpose was to highlight culturally relevant information that might be missed by broader epidemiological surveys. Two findings with important implications for ORS use were:

1. Certain types of diarrhea were classified as signs of folk illnesses requiring traditional folk treatment rather than fluid replacement or other biomedical therapy.
2. Certain types of diarrhea were regarded as 'natural' and that these diarrheas should simply be tolerated rather than treated with therapies such as ORS.

While this study's interview questions pertaining to types of diarrhea were not specific enough to evoke reasons such as these, research sheds light on the possibility that additional causes contribute to the use of ORS among the study population (Mull & Mull, 1988). For any public health research project, and particularly for shorter-term projects, it is important to keep in mind that additional cultural perceptions about illness that were not identified in the scope of the research may still play a role in answering the research question. This study could be improved by increasing the focus on cultural perceptions of health; methodologies have been developed to elicit culturally relevant information, and these methodologies should be utilized in future studies. Hill et al. used a Rapid Anthropological Assessment (RAA) to explore childhood illness and traditional explanations with respect to care-seeking behavior in rural Ghana (2003). A similar study in the Ejisu-Juaben District would provide invaluable information for successful program implementation.

Certain aspects of the Ejisu-Juaben District Hospital's education initiative can be improved, such as greater emphasis on the fact that ORS does not halt diarrhea but rather treats the effects of dehydration and electrolyte imbalances. This misunderstanding was a major barrier to ORS use in rural North India (Bentley, 1988), and although many mothers in the Juaben communities seemed to understand that ORS alleviates dehydration, a clearer focus on this rationale could both increase the use of ORS and decrease the use of clay enemas (a treatment seen as a method of halting diarrhea). Although enemas can be innocuous for some children, they can be harmful to others, particularly to children suffering from an underlying illness. Both traditional and chemical enemas administered to children can cause respiratory distress, hypertonia, loss of consciousness, colonic and renal complications and even death (Moore & Moore, 1998; Dunn et al., 1991).

In addition, there were noticeable inconsistencies in the nurses' health education campaigns. As noted, individual nurses provided mothers with different information about the proper timing and amount of ORS usage. Some nurses told mothers to use ORS immediately after the child's diarrhea began, and others recommended waiting for a period of time before beginning ORS use. According to the Centers for Disease Control and Prevention (CDC), for acute diarrhea management, ORS should be used for rehydration after each diarrheal stool, as long as there are signs of dehydration (King et al., 2003). Although the variability in nurses' information indicates that the health education campaign was not streamlined as much as it could be and likely suggests that the nurses' own education about proper ORS usage varied, it does not appear to be a primary barrier to ORS use. Despite these inconsistencies, approximately 96% of mothers stated that ORS should be used anytime a child has diarrhea. Thus the mothers clearly understand the overarching aim of the education campaign: that ORS is the recommended treatment for diarrhea. Their reasons for refraining from ORS use cannot be attributed solely to inconsistent information about specific details of ORS use. It is certainly possible that the nurses' conflicting information decreased either confidence in the nurses' program or confidence in ORS itself, and this inconsistency could contribute to why mothers often chose to use traditional remedies instead of ORS. However, it definitely did not seem to impede mothers' understanding that the nurses uniformly recommend ORS as the treatment of choice.

The limited extent to which mothers value ORS, in spite of the nurses' education campaign, suggests that a new focus of education may be necessary. In a participatory research project in rural Sri Lanka investigating low usage of ORS, Nichter et al. found that, as in this study, diarrhea was not considered a major health concern (1988). To address this perception, he worked with villagers to keep a "village health diary," in which parents recorded their children's diarrheal episodes. He found that even after one to two months, villagers recognized that diarrhea actually appeared to be a serious community health problem. This sparked community-wide motivation for improvement, and perhaps a similar program could work well in Ghana. Yet Nichter emphasized that the translation of community motivation into effective change requires "a form of health education which begins with popular health culture and social values… [that involves] a learning process wherein the community takes increased ownership of health problems… At issue is not the worth of ORS, but the manner in which it is employed in the context of development. Technical fixes are resources, not solutions" (Nichter et al., 1988). While helping communities to take diarrhea seriously as a health problem would be a step in the right direction, it alone would probably not change fundamental attitudes toward ORS. Cultural perceptions of proper diarrheal treatment should be considered crucial, not peripheral, to health education campaigns.

Moreover, it is possible that ORS is not the best solution in these Ghanaian communities at this time. The most recent definition of ORT involves continued breast feeding alongside increased fluids, which can be either ORS or RHFs but should include salt, carbohydrates and water (Victora et al., 2000). Nurses could teach mothers how to mix the proper ratio of sugar and salt into their boiled herb water; oral rehydration and innocuous herbs do not have to be mutually exclusive. An effective solution in rural areas of Brazil was simply to add salt and sugar to a well-established traditional treatment (Nations & Rebhun, 1988), and a similar strategy could work well in the communities surrounding Ejisu-Juaben. However, there is a notable lack of information evaluating the effectiveness of RHFs (Munos et al., 2010), and a clinical trial to determine the efficacy of RHFs the efficacy of home-prepared sugar-salt solutions at different ratios, and the outcomes of these home treatments as compared to ORS would benefit communities worldwide.

Another potential solution is to work with local healers to reach an integrated plan for treating diarrhea in their communities. In Brazil, ORS interventions were most effective when patients and healers came from the same social class and sub-culture and local healers were open to combining traditional rituals and modern medicines (Nations & Rebhun, 1988). Although the nurses from the district hospital in Ejisu-Juaben understood the benefits of ORS and enthusiastically taught it to mothers in the surrounding communities, perhaps the mothers would better receive the same information from healers within their own communities. Despite the fact that both the nurses and the healers live in approximately the same area in Ghana, the relationships that the mothers have with the nurses are quite different from those that they have with people who actually live in their particular communities. As Kendall found in Honduras, successful ORS health interventions require detailed attention to local contexts and a willingness to work within the existing health system (1988). This study in Ejisu-Juaben exemplifies how in rural areas of other countries, integrating Western and traditional methods of healing could help overcome barriers to ORS usage, effectively lowering the morbidity and mortality associated with diarrhea.

An investigation conducted for the Bellagio Conference on Child Survival in 2003 concluded that two-thirds of deaths in children under five years of age could be prevented by interventions currently available and feasible for implementation in developing countries, but current systems for delivering these technologies are seriously deficient and their utilization is inadequate (Jones et al., 2003). According to the Department of Child and Adolescent Health and Development of the WHO, understanding the barriers blocking implementation, effectiveness and optimization of available interventions is a priority for research in the major causes of child mortality (Fontaine et al., 2009). A paper by Leroy et al. emphasizes the bias in the current research funding policy—ninety-seven percent of grants are for developing new technologies, which could reduce child mortality by only 22%—but this reduction is one third of what could be achieved if existing technologies were fully utilized (Leroy et al., 2007; Mohammed, 2009).

In his review of anthropologic research relating to diarrhea, Weiss proposes several questions that could be useful in determining further research to carry out in Ejisu-Juaben, including: "What factors determine a response to diarrheal illness that results in childhood malnutrition? In what ways might the culture of health professionals and planners be at odds with their stated objectives? What are the implications of health seeking in the context of political, economic and other macro-social forces? What criteria should identify those [traditional healers] with whom cooperation is appropriate?" (Weiss, 1998).

Conclusion

As demonstrated through interviews with Ghanaian mothers, Western-style educational campaigns may increase knowledge concerning ORS but do not ensure its widespread usage. Furthermore, public health campaigns in developing countries often focus on limiting the cost of a treatment. While this is important, the data collected indicate that cost and value are not necessarily synonymous. Rather than focusing on cost as a numerical value, public health campaigns might be more effective if they were to focus on the relationship between cost and value for a particular product. Current and future research must aim to understand the best ways to promote ORS use in poor communities around the globe, specifically in African communities, which bear a disproportionate burden of diarrheal disease. Health education campaigns should work within traditional treatment systems to promote solutions that effectively mitigate diarrhea within specific cultures.

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Safe male circumcision

Young men's willingness to undergo Safe Male Circumcision (SMC) decreases with increased educational attainment in some rural areas of Central Uganda

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Abstract

Safe male circumcision (SMC) decreases risk of HIV transmission (Weiss et al., 2008a). Mathematical modeling indicates that in order to yield significant declines in HIV prevalence in sub-Saharan Africa, wide adoption of SMC is necessary (Nagelkerke, Moses, de Vlas & Bailey, 2007). Therefore, research about trends and determinants of uptake of SMC among historically non-circumcising groups in this region is essential. This cross-sectional study explored the relationship between educational attainment and young men's willingness to undergo SMC in rural areas of central Uganda. Sub-counties were randomly selected in three districts (Mukono, Wakiso and Kiboga) and a standardized survey was administered to 297 male youths (aged 18-24). Focus group discussions were also held in each district to gauge attitudes towards SMC. Survey data was analyzed using stepwise logistic regression in STATA 11.0. Respondents with higher educational attainment had lower willingness to undergo SMC after adjusting for selected demographic variables [OR=0.20; p=0.0010]. In parametric path analysis, there was marginal evidence, p= 0.0597 (Goodman test), that awareness of SMC benefits is a partial mediator in the causal pathway between education and willingness. These findings indicate that willingness to undergo SMC in central Uganda decreases with increased educational attainment. This disparity could decrease the impact of SMC on HIV prevalence in Uganda.

Introduction

Uganda is often lauded as a success story in the fight against HIV/AIDS, having reduced prevalence from over 18% (in rural areas) and 25-30% (in urban areas) in the early 1990s to current national estimates of 6.5% (UNAIDS, 2010). This has been largely attributed to the government's Abstain, Be faithful, Use Condoms (ABC) campaign, which was rigorously implemented in both rural and urban areas. However, this rapid decline phase was followed by stabilization in prevalence between 6.1% and 6.5% and has remained here since 2000 (UNAIDS, 2010), highlighting the limitations of the ABC strategy in decreasing prevalence. This stall in the decline of HIV prevalence has led to calls for a broader and more comprehensive prevention strategy that integrates different empirically-proven prevention approaches with the ABC campaign (Piot, Kazatchkine, Dybul & Lob-Levyt, 2009). One such approach is safe male circumcision (SMC), which has been shown to decrease risk of HIV transmission (Weiss et al., 2008a).

The effectiveness of SMC in decreasing HIV prevalence has been shown by previous ecological and observational studies that demonstrate an inverse relationship between male circumcision (SMC) prevalence and HIV-1 prevalence (Weiss, Quigley & Hayes, 2000; Bailey et al., 2007). Similarly, a meta-analysis of randomized controlled trials conducted in Uganda, Kenya, and South Africa revealed that SMC decreased heterosexual risk of HIV-1 transmission by approximately 60% (Weiss et al., 2008a). The results of these trials led the WHO to recommend in 2006 that SMC be included among global HIV prevention strategies (WHO, 2006). As a result, numerous countries in sub-Saharan Africa with high HIV prevalence and low SMC prevalence are now integrating SMC into their HIV prevention programs. In Uganda, the Ministry of Health drafted SMC policy in 2010 with the goal of including SMC as part of a comprehensive national HIV prevention program (MOH, 2010). This policy is relevant to the fight against HIV in Uganda, as the 2005 National Sero-behavioral Survey reported that only 24.9% men aged 15-59 were circumcised (MOH, 2006). The survey also found regional disparities in circumcision prevalence with highest prevalence observed in the Eastern region (54.7%) and lowest prevalence in the Northern region (less than 10%) (MOH, 2006).These findings are largely a result of cultural factors. For instance, Eastern Uganda is heavily populated by two traditionally circumcising tribes: the Gishu and the Sebei.

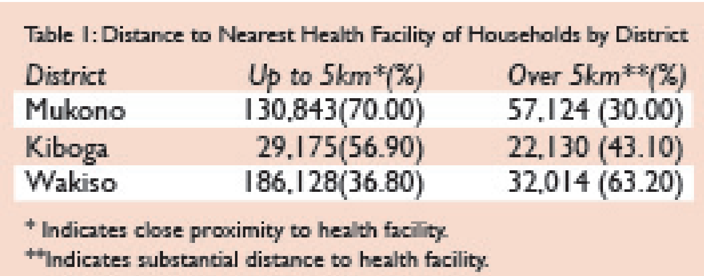

Table 1: Distance to Nearest Health Facility of Households by District

District	Up to 5km*(%)	Over 5km**(%)
Mukono	130,843(70.00)	57,124 (30.00)
Kiboga	29,175(56.90)	22,130 (43.10)
Wakiso	186,128(36.80)	32,014 (63.20)

* Indicates close proximity to health facility.
**Indicates substantial distance to health facility.
Source: Uganda Bureau of Statistics Census Report, 2002.

Despite the potential of SMC to reduce HIV prevalence, concerns remain about uptake in regions where SMC rates have historically been low (Muula, 2007). Consequently, numerous studies have investigated the determinants of uptake of SMC among different groups, including women, young men and other individuals from traditionally non-circumcising tribes (Bailey, Muga, Poulussen & Abicht, 2002; Kebaabetswe et al., 2003; Lukobo & Bailey, 2007; Mattson, Bailey, Muga, Poulussen & Onyango, 2005; Scott, Weiss & Viljoen, 2005). But most of these studies are qualitative, leaving little quantitative data about the determinants of SMC uptake. In Uganda, for instance, only one study (Wilcken, Miiro-Nakayima, Hizaamu, Keil & Balaba-Byansi, 2010) has quantitatively assessed the determinants of SMC. That study found that among youth (both males and females) aged 18-24 (n= 185) in rural areas, those with higher educational attainment (completed primary education vs. completed secondary education) had lower awareness of SMC's role in preventing HIV (SMC benefits) (Wilcken et al., 2010). In analysis, the study found marginal evidence that educational attainment was the main explanatory variable for this difference (Wilcken et al., 2010), suggesting a possible negative relationship between educational attainment and awareness of SMC for HIV prevention among youth in rural areas. In addition, since awareness of SMC benefits is likely to lead to uptake of the procedure, these results suggest that more educated youth might be less willing to undergo SMC.

The purpose of this study was to investigate the relationship between educational attainment (completion of primary education only vs. completion of secondary education and higher) and young males' (ages 18-24) willingness to undergo SMC in rural areas of central Uganda.

Selection of explanatory variables

The World Health Organization identifies some of the determinants of global SMC prevalence in a review of the literature (WHO, 2007). Religion, ethnicity, social desirability (cultural reasons), knowledge of SMC benefits and socioeconomic factors (income and education) are described as important determinants of SMC prevalence in that review (WHO, 2007). In sub-Saharan Africa, for example, the review notes that Muslims are more likely to be circumcised compared to men of other religions, and that SMC prevalence varies by tribe. The influence of socioeconomic status on SMC is also discussed, with consistent trends observed in developed countries (there is a positive relationship between SMC prevalence and higher socioeconomic status). However, this pattern is ambiguous in Africa. For instance, in Lesotho, there is a negative relationship between higher socioeconomic status and SMC prevalence, while the reverse is true in Tanzania, for example (Fig 1).

Acceptance of SMC among non-circumcising groups in sub-Saharan Africa has been studied in numerous qualitative studies (Bailey, Muga, Poulussen & Abicht, 2002; Kebaabetswe et al., 2003; Lukobo & Bailey, 2007; Mattson, Bailey, Muga, Poulussen & Onyango, 2005; Scott, Weiss & Viljoen, 2005). These studies generally report knowledge of SMC benefits (hygiene, decreased risk of HIV/AIDS, STIs and other factors) as an essential determinant of acceptability. But these studies do not report quantitative measures of association and have largely focused on awareness of SMC benefits as a determinant, leaving little information about the influence of other determinants of SMC. Moreover, a search of the literature revealed that in Uganda, for example, only one study (Wilcken et al., 2010) has used a quantitative approach to investigate the determinants of SMC. In that study education, age, sex, employment status, district, ethnic group and circumcision status were intuitively selected as predictors of awareness of SMC, with educational attainment emerging as an important determinant of awareness of SMC benefits among youth.

> Despite the potential of SMC to reduce HIV prevalence, concerns remain about uptake in regions where SMC rates have historically been low.

From the above studies, awareness of SMC benefits, socio-demographic factors and socioeconomic status emerge as important determinants of SMC. But socio-demographic and socioeconomic variables present a number of concerns in model building, ranging from internal validity issues (from the use of proxies) in measuring socioeconomic status to potential multicollinearity resulting from high correlation between some of these predictors (Gorman, 2010). One study (Achia et al., 2010) addressed some of these concerns in an analysis of socioeconomic determinants, using DHS data from Kenya. In a forward stepwise logistic modeling approach examining socioeconomic status as the outcome, a best-fit model of socioeconomic predictors was determined. This model contained the following explanatory variables: education, age, region, religion, type of residence (rural vs. urban) and ethnicity, indicating that these variables are essential indicators of socioeconomic status in sub-Saharan Africa (Achia et al., 2010).

Based on the above review, the following variables were included in our model as some of these capture socioeconomic and sociodemographic variables simultaneously, reducing the potential for collinearity and improving model parsimony: education (explanatory variable of interest), religion, ethnicity (tribal affiliation), district and marital status. Age, SMC status, sex and type of residence (rural) were all constants in our model. Owing to the dearth of quantitative studies examining the effect of these variables on SMC, we opted to use a forward stepwise approach in our analysis, introducing explanatory variables at each stage, as recommended in exploratory research (Menard, 1995).

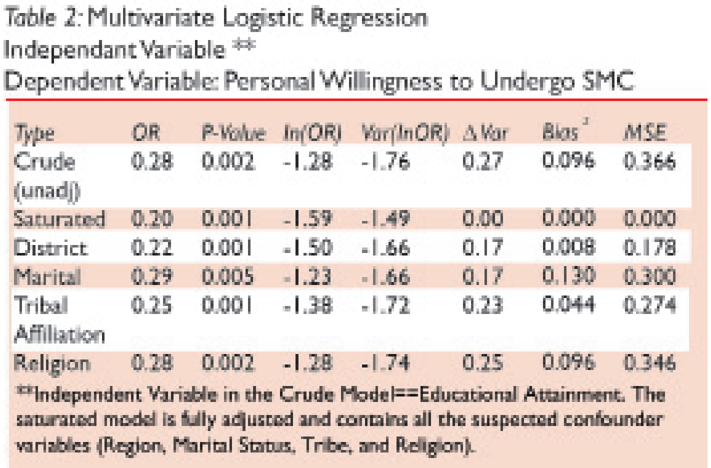

Table 2: Multivariate Logistic Regression
Independant Variable **
Dependent Variable: Personal Willingness to Undergo SMC

Type	OR	P-Value	ln(OR)	Var(lnOR)	ΔVar	Bias^2	MSE
Crude (unadj)	0.28	0.002	-1.28	-1.76	0.27	0.096	0.366
Saturated	0.20	0.001	-1.59	-1.49	0.00	0.000	0.000
District	0.22	0.001	-1.50	-1.66	0.17	0.008	0.178
Marital	0.29	0.005	-1.23	-1.66	0.17	0.130	0.300
Tribal Affiliation	0.25	0.001	-1.38	-1.72	0.23	0.044	0.274
Religion	0.28	0.002	-1.28	-1.74	0.25	0.096	0.346

**Independent Variable in the Crude Model==Educational Attainment. The saturated model is fully adjusted and contains all the suspected confounder variables (Region, Marital Status, Tribe, and Religion).

Methods

This cross-sectional study was conducted in rural areas of 3 districts (Mukono, Wakiso and Kiboga) in central Uganda from June to August 2011. Rural areas in Uganda are defined as areas with mostly poor road infrastructure (predominantly marum roads), limited motorized transportation in the area and high prevalence of subsistence farming (Kobusingye, Guwattude & Lett, 2001). We used a mixed methods approach, collecting quantitative data by means of survey administration and qualitative data using focus group discussions.

Approval to conduct the study was sought from Duke University's Institutional Review Board (IRB) and the Uganda National Council of Science and Technology (UNCST).

Sampling:

We used privately-owned software (Research Randomizer™) to randomly select counties in which to administer surveys (Urbaniak & Plous, 2011). Using the same software, we randomly selected secondary schools from an online database. In power calculations, using Russ Lenth's power and sample size calculator (Lenth, 2006), we generated a sample size of 283 participants (margin of error of 0.0495, 95% CI).

To control for non-response from some of the participants, we adjusted the sample size to 300 participants (assuming a 95% response rate).

Selection of study participants:

In Uganda, the majority of secondary schools (ages 12 through 18) are boarding schools. This factor necessitated a convenience sampling strategy on our part, since sampling in the community (such as at local markets or other gathering areas) would have skewed the data towards participants with lower education (since they are not in school). So, we sought to collect data from two groups—currently in-school participants and currently out-of-school participants—dividing our sample equally between the two groups. We believed that this approach would enable us capture an array of educational attainment among study participants, with in-school participants mostly having

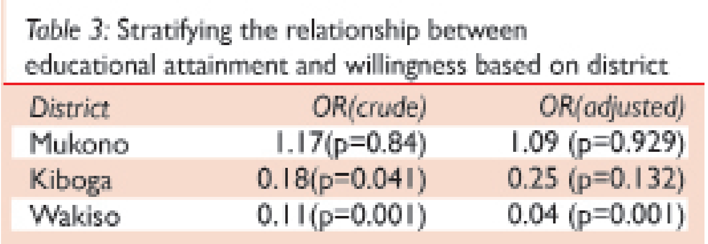

Table 3: Stratifying the relationship between educational attainment and willingness based on district

District	OR(crude)	OR(adjusted)
Mukono	1.17(p=0.84)	1.09 (p=0.929)
Kiboga	0.18(p=0.041)	0.25 (p=0.132)
Wakiso	0.11(p=0.001)	0.04 (p=0.001)

higher educational attainment and out of school participants having lower education.

For in-school participants, we sought 150 survey participants (18-24). Dividing this across the three districts, the target sample of schools per district was set to five schools, each in a different sub-county within the districts, with a goal of collecting ten surveys per school. We selected ten schools per district in order to compensate for defunct schools (since the Ministry of Education's records are not regularly updated, some defunct schools appear on the list) as well as unwillingness to participate in the study. For out-of-school participants, we surveyed 150 casual laborers/ working cohorts, such as boda-boda cyclists and car-wash bay workers, divided equally among the three districts, in the same sub-counties as the selected schools. These individuals tend to congregate in small groups called "stages." In order to decrease the potential for selection bias introduced by this convenience sampling strategy, we administered a maximum of ten surveys at each "stage." The inclusion criterion for these participants was restricted to fulfillment of the age requirement (ages between 18 and 24).

> Decreased willingness to undergo SMC among more educated youths in Uganda initially seems counterintuitive, and the reasons behind this observation are not entirely clear.

Pre-testing & data collection:

Surveys were pre-tested by our study collaborators (Communication for Development Foundation Uganda—CDFU) among a randomly selected group of ten young men in Kawempe, resulting in minimal changes to the instrument. The surveys were also translated in to "Luganda" (the tribal language predominantly spoken in this area) and back-translated into English to ensure accuracy. Survey administration was self-administered among in-school participants and literate out-of-school participants. For out-of-school participants with low educational attainment, survey administration was conducted by interviewers, who received two-day training facilitated by CDFU.

Variables and Measurement

Independent Variable

The independent variable in this study was educational attainment. This variable was measured using an ordinal scale (ranging from no education to completed secondary education) adapted, with modifications, from the 2009 Tanzania MOH MC Situational Analysis Report (MOHSW, 2009) (see appendix). The range of this scale ensured accurate measurement of a respondent's educational attainment, especially for those who had dropped out before completing a particular level.

Dependent Variable

The dependent variable in this study was willingness to undergo SMC, which was assessed using an open-ended question after the respondent's circumcision status had been determined. First, the circumcision status of participants was assessed using the closed-ended question "Are you circumcised?" (Yes/No). Then, for uncircumcised men, the primary outcome of the study was assessed using the question "Would you be willing to undergo SMC?"(Yes/No/Undecided) followed by the open-ended question 'Why or why not?" To avoid bias, survey participants were not given any information regarding SMC benefits until after they completed the survey.

Statistical Analysis

We used stepwise logistic regression in STATA 11.0 to assess the relationship between the independent variable (educational attainment) and the outcome of interest (willingness to undergo SMC given that one was currently uncircumcised). We also conducted parametric path analysis (MacKinnon, 1994) to investigate the indirect and direct effects between educational attainment and willingness to undergo SMC, mediated by awareness of SMC benefits.

Coding variables

The independent variable (educational attainment) was coded as a disjoint indicator variable with 3 levels: Education=0: had no education and those who did not complete primary school; Education=1 (referent group): had completed primary school but had not completed their O-level (the first four years of secondary school); Education=2: Anyone who had completed O-level education and higher (see appendix). Owing to power concerns, we used "completed primary" as our referent group (note that we had only one participant who had no education at all, for example).

The dependent variable (willingness to undergo SMC) was coded as a dummy variable (0=not willing to undergo SMC, 1=willing to undergo SMC).

Multivariate Analysis

We used a stepwise approach to investigate whether the relationship between the independent variable and outcome of interest was affected by other variables. We individually introduced selected explanatory variables into a crude (unadjusted) model and then observed whether the newly introduced variable substantially changed the effect measure estimate (OR), and whether this change was statistically significant ($p<0.05$). We then computed a Mean Squared Error (MSE) for each adjustment, comparing these to the fully-adjusted model, using the formula $MSE = (bias)2+(\Delta variance)$. This step enabled us to assess any projected loss in precision arising from inclusion of the explanatory variable in the model.

Results

Demographics

We had a total of 297 respondents for the surveys, nearly equally distributed among the three districts: 101 respondents in Kiboga (34.01%), 94 respondents in Mukono (31.65%) and 102 respondents in Wakiso (34.34%). The respondent ages ranged from 17 to 40 years, with 94.61% falling in the desired 18-24 age range. Participants outside the desired age range were not included in analysis. Distribution of participants was also equal among both cohorts (in school and out of school), with 49.49% of total respondents being in school and the remainder (50.51%) being out of school. Educational attainment differed between the two cohorts as over 80% of in-school participants had completed O-level compared to only about 20% of out of school participants.

We found 18.75% prevalence of circumcision among traditionally non-circumcizing groups. We also found that in Wakiso and Kiboga, SMC prevalence was higher among more educated individuals. In Mukono, however, lower-educated participants had higher SMC prevalence (Fig 3).

Logistic Regression Analysis

Multivariate Analysis

In a stepwise approach, we introduced selected explanatory variables into our crude model (district, marital status, tribal affiliation and religion) and computed MSE values for adjustments to the model. In the crude model, we obtained an odds ratio of 0.28 indicating that the odds of willingness to undergo SMC among those who completed a secondary school education were 0.28 times the odds of those who completed only a primary education (p=0.002; CI: 0.12-0.62).

We found the OR in the fully adjusted model (OR=0.20; p=0.001) slightly lower than the OR in the crude model (OR=0.28; p=0.002), indicating minor confounding or possible effect measure modification by some of the explanatory variables. When we computed MSE values for the explanatory variables, we found that marital status introduced the most bias in the adjusted model (bias = 0.130; MSE = 0.30). Conversely, we found that district introduced the least bias in the adjusted model (bias = 0.008; MSE = 0.178) and the highest change in the coefficient of the OR, so we stratified the data based on district (Table 3).

The disparity in willingness to undergo SMC between those with high education and those with low education could potentially decrease the impact of SMC on HIV prevalence.

What role does awareness of SMC benefits play in the pathway between educational attainment and SMC willingness?

Previous studies indicate a positive correlation between awareness of SMC benefits and willingness to undergo SMC, although they do not compute a measure of association. These findings imply that awareness might be a mediator in the pathway between educational attainment and willingness (see Fig 2). To investigate this assumption, we used the Barron & Kenny parametric method of mediation analysis (MacKinnon, 1994) as explained below:

Pathway based on study conceptual model (see Fig 2 for complete conceptual model):

Educational attainment (X) --> Awareness of SMC Benefits (M) --> Willingness to undergo SMC (Y)

(1) $Y = c X + e1$ The independent variable (X) causes the outcome variable (Y)

(2) $M = a X + e2$ The independent variable (X) causes the mediator variable (M)

(3) $Y = c' X + bM + e3$ The mediator (M) causes the outcome variable (Y) when controlling for the independent variable (X). This must be true (MacKinnon, 1994; Judd & Kenny, 1981a; Judd & Kenny, 1981b)

From this analysis, we observe that $c' < c$ (table 5 (2)), fulfilling the condition for partial mediation by M in the causal pathway (MacKinnon, Fairchild & Fritz, 2007), with 14% of the total effect mediated by M. A Sobel-Goodman test (Preacher & Leonardelli, 2001) for the significance of the mediated effect revealed a marginally statistically significant p-value of 0.0597 (Goodman test) for the indirect effect in the pathway.

Discussion and conclusion

Key findings of the study

The distribution of circumcision prevalence among our participants was similar to that reported in the 2005 Sero-Behavioral Survey (MOH, 2006), with Muslims and Bagishu most likely to be circumcised. At least 32% of participants reported being circumcised, a percentage that is higher than the national average of about 22%. When we excluded participants from traditionally circumcising groups (Muslims, Bagishu,Sebei and Sabinyi), we found SMC prevalence close to the national average (18.75%).

In the18-24 age group, we found a negative relationship between educational attainment and willingness to undergo SMC, although results from Mukono were not statistically significant. This relationship is potentially mediated by awareness of SMC benefits, indicating that lower awareness of SMC benefits among more educated youth is partly responsible for decreased willingness to get circumcised.

During focus group discussions, participants with awareness of SMC for HIV prevention frequently stated radio as the source of this information, highlighting the importance of this medium in disseminating information. Participants also mentioned hygiene and increased sexual sensitivity as key reasons to get circumcised (appendix).

Discussion

Decreased willingness to undergo SMC among more educated youths in Uganda initially seems counterintuitive, and the reasons behind this observation are not entirely clear. One factor that could explain this trend, as we demonstrate in this study, is lower awareness of SMC benefits among those with higher educational attainment. Lack of awareness of SMC benefits in this cohort might be a result of narrowly-focused HIV prevention education programs targeted towards this group. Official HIV prevention education programs for youth in school, for example the Presidential Initiative on Aids Strategy for Communication to Youth (PIASCY), often focus on abstinence while simultaneously shunning other methods of HIV prevention (Human Rights Watch, 2005). Critics argue that this strategy is not only impractical, but also potentially counterproductive as it leaves these youth uninformed about other methods of HIV prevention (Human Rights Watch, 2005). Moreover, Uganda's SMC policy (MOH, 2010) does not state whether SMC will be included as part of HIV prevention education campaigns in secondary schools. It remains unclear to what extent such policies contribute to decreased awareness of SMC benefits and, subsequently, willingness to undergo the procedure in this cohort.

But, lack of awareness of SMC benefits is only a partial mediator in the causal pathway between educational attainment and willingness to undergo SMC, pointing to influence by other factors. One such factor could be differences in access and awareness of other HIV prevention methods. For instance, the 2005 serobehavioral survey (MOH, 2006) found that youth with higher educational attainment were more likely to have used a condom at first intercourse compared to their less educated peers (Table 4). So, access to other HIV prevention methods might lead more educated youth to perceive SMC as unnecessary. Conversely, youth with lower education, due to lack of access to other HIV prevention methods, might view SMC as an economically-efficient method of HIV prevention. Moreover, it appears that stated willingness is more likely to translate to uptake among the less educated than among the more educated. For instance, in Mukono, the district with the highest proportion of households with close proximity to a health center (used as a proxy for better access) among all districts in our study, SMC prevalence is nearly double among the less educated yet stated willingness to undergo SMC is nearly similar between both groups (Figure 3; Table 1). These findings suggest that in regions with high access to health facilities, individuals with lower education are more likely to seek SMC services.

The disparity in willingness to undergo SMC between those with high education and those with low education could potentially decrease the impact of SMC on HIV prevalence. For instance, there is a potential to avert more cases of HIV among youth currently enrolled in secondary school, since they are less likely to have reached sexual debut compared to their counterparts with less education (Table 5) (MOH, 2006). But, with decreased willingness to undergo SMC in this cohort, this opportunity could be missed. This could also have economic ramifications, since averting premature mortality and morbidity in this cohort promises future economic benefits for Uganda in terms of a healthy and highly educated workforce.

Increased willingness to undergo SMC among less educated youth should be interpreted cautiously as it could signal inaccurate in-

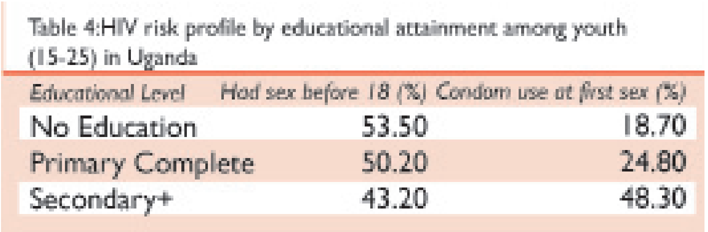

Table 4:HIV risk profile by educational attainment among youth (15-25) in Uganda

Educational Level	Had sex before 18 (%)	Condom use at first sex (%)
No Education	53.50	18.70
Primary Complete	50.20	24.80
Secondary+	43.20	48.30

formation about SMC benefits in this cohort. Exaggerated views about the protective role of SMC can lead to risk compensation. This observation is evident in Lesotho, where an econometric analysis found that SMC does not appear significant in explaining HIV status; moreover, it appears as a risk factor for HIV in this setting (Keeletsang, 2010). In Lesotho, SMC prevalence among those with no education is nearly three times SMC prevalence among those with secondary education (WHO, 2007). Yet, HIV prevalence among those with low education is nearly double the prevalence among those with higher education (Keeletsang, 2010). This anomaly could be attributed in part to potential risk compensation among those with lower education who undergo SMC (Keeletsang, 2010). These trends raise a crucial question: Do the less educated eagerly seek out SMC because they think that it confers full protection from HIV? Factors driving increased willingness among the less educated should be investigated.

Limitations of the Study

Our study was conducted in central Uganda, a region that is predominantly occupied by the Baganda. As such, the results of this study cannot be generalized to the entire country.

This study was conducted in three districts and the sample size was 297. While in power calculations we determined this to be sufficient to detect differences between in-school and out-of-school youth, a study with greater sample size and district coverage could provide more power and results that are more generalizable to other regions in Uganda.

Since circumcision status was self-reported, there could have been some misclassification bias, which could have affected the circumcision prevalence reported in our results section. This bias has been reported in previous studies, whereby some participants who self-reported as circumcised were found to be misclassified after physical examination (Weiss et al., 2008b). But that study also found that 99% of uncircumcised males self-report correctly. Since this was the group used in analysis, it is highly unlikely that this bias affected our effect measures.

This was a cross-sectional study and as such does not provide information about how willingness changes over a longer time frame. Future studies could use a prospective study design to account for time.

There might have been some selection bias in selection of in-school participants, since participation depended on availability when we arrived at the schools. But during study design, we attempted to decrease selection bias using randomization to select sub counties and schools.

We are also unable to guarantee the honesty of participants' responses, when they were asked about willingness and whether willingness translates into uptake of SMC.

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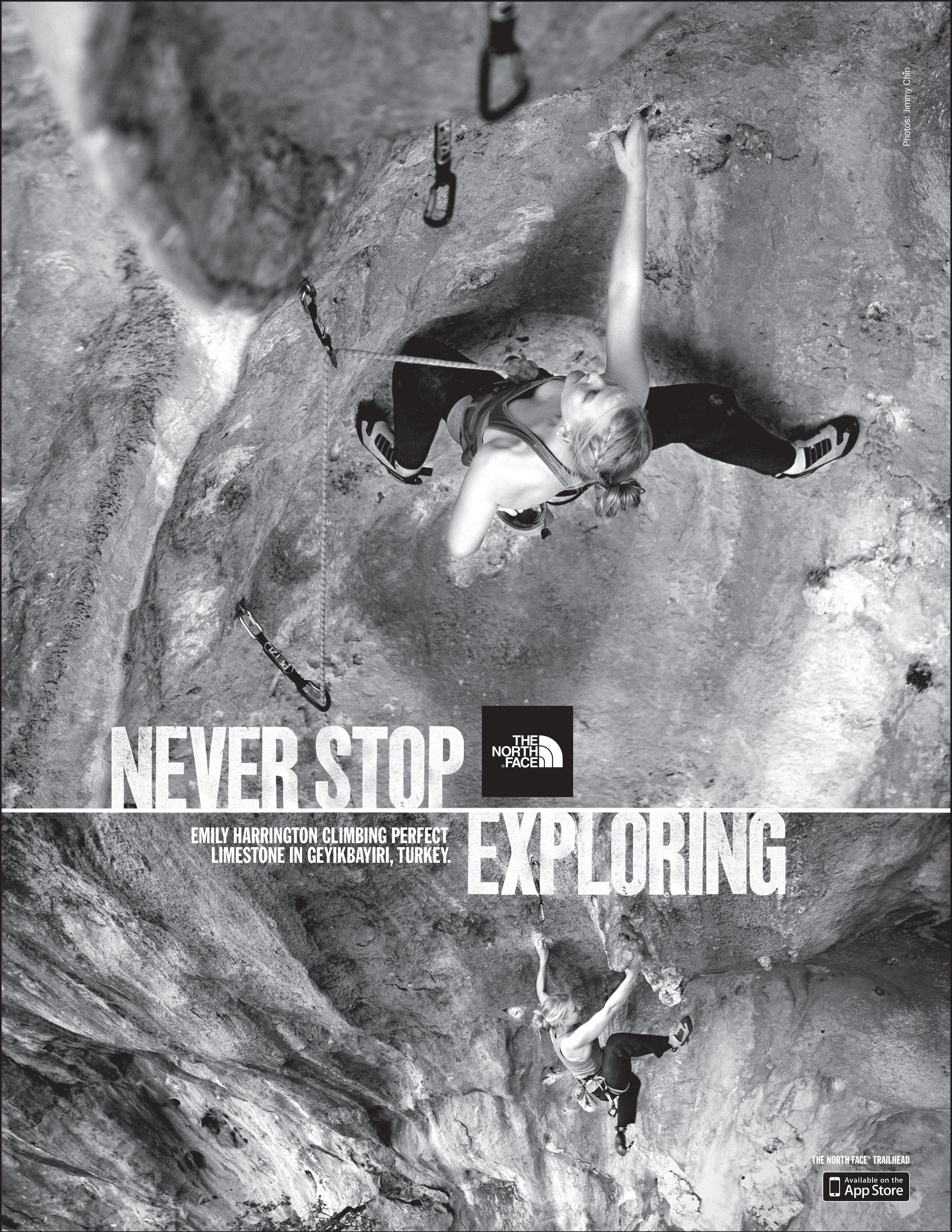

Perspectives

PEPFAR's violations of the right to health of sex workers

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Introduction

In 2003, the Bush administration established the President's Emergency Plan for AIDS Relief (PEPFAR), a program that pledged to provide $15 billion to support the global effort to eradicate HIV/AIDS over a five-year period. PEPFAR's initiatives center around both prevention and care: providing antiretroviral (ARV) medication to individuals already diagnosed with HIV/AIDS and scaling up efforts to stop the spread of new infections (About PEPFAR, 2011). In 2008, PEPFAR was renewed and expanded. Due to its efforts, PEPFAR has helped provide ARV drugs to three million individuals and has partnered with over 30 countries to give aid to 11 million individuals (Latest PEPFAR Program Results, 2011).

However, many of PEPFAR's initiatives contain ideological components that constrain the scope of its anti-HIV/AIDS missions. One such component is the "anti-prostitution pledge," a requirement of PEPFAR that prohibits its funding of organizations that do not actively denounce prostitution. Some opponents of this policy argue that it violates the right of organizations to free expression by placing restrictions on the language, beliefs and ideologies of these organizations (Kinney, 2006). However, the PEPFAR anti-prostitution pledge also violates sex workers' right to health. The anti-prostitution pledge incorporated into PEPFAR impedes the treatment of a key HIV/AIDS risk group, commercial sex workers, thus constituting a violation of these sex workers' rights by hindering their access to the highest quality medical care and placing them at an increased risk of death by AIDS due to their inability to receive care in a stigma-free setting.

The right to health and medical care was first guaranteed by the United Nations General Assembly in the 1948 Universal Declaration of Human Rights (UN General Assembly, 1948). This right was reinforced in the 1967 International Covenant on Economic, Social, and Cultural Rights, which "recognize[s] the right of everyone to the enjoyment of the highest attainable standard of physical and mental health" (Office of the United Nations , 1966). The right to health means that individuals should be guaranteed both the living conditions that are necessary for the establishment of good health (i.e., adequate food, clean water, proper sanitation, economic and political security, sufficient education, etc.) and the medical care they need when they fall ill. In terms of HIV/AIDS, the right to health includes access to preventative tools (for example, condoms), testing facilities and medical treatments, including ARVs.

In the global effort to eradicate HIV/AIDS, a human rights perspective, in which "free access to medicines should be seen as a question of making real the right to life," would provide an important means of effectively helping populations that suffer from a high risk of infection (Galvao, 2005). In fact, without a human rights approach, HIV/AIDS may never be effectively eliminated. HIV/AIDS is a disease that increasingly shows a high prevalence in marginalized populations, such as men who have sex with men, the impoverished, sex workers and injection drug users (Piot, Greener & Russell, 2007). As a result, the disease carries a great deal of stigma. Unfortunately, this discrimination can prevent people from seeking testing and treatment, thus increasing their risk of further spreading the disease (Galvao, 2005). In order to decrease stigma and to reach high risk populations, access to HIV/AIDS treatment must be freely available to all, regardless of background, and must be presented as a fundamental right to which all individuals are entitled. Otherwise, it will be impossible to eradicate the disease, for "violating the human rights of people with HIV/AIDS—through stigmatization, discrimination and violence—is increasingly recognized as a central problem that is impeding the fight against AIDS" (Galvao, 2005). Guaranteeing HIV/AIDS treatment as a fundamental human right would not only provide individuals with life-saving treatment; it would also make them more willing to seek treatment without the fear of stigma. Thus, a human rights approach to treatment constitutes an effective way of preventing the further spread of disease.

Prostitutes become condemned by the very organizations that aim to help them, and HIV/AIDS becomes associated with prostitution as more and more sex workers become infected with the disease.

In Brazil, the government's method of fighting HIV/AIDS contains a human rights framework: anti-retroviral drugs are provided free of charge to every citizen. Opening access to treatment to the entire Brazilian population has drastically decreased HIV/AIDS rates in Brazil; though the World Bank predicted that by the year 2000 there would be over 1.2 million people in Brazil living with HIV, the efforts of the Brazilian government lowered the actual number to only 600,000 (Averting HIV and AIDS, 2011). Regarding Brazil's human rights approach to combatting HIV/AIDS, Richard Parker of the Mailman School of Public Health at Columbia University has said:

> By affirming universal access to treatment for all those infected with HIV, Brazilian policy has simultaneously reaffirmed the rights and citizenship of those who otherwise would be defined primarily by their broader exclusion in Brazilian society. Because of this, prevention becomes possible, not just as a technical exercise in public health, but as itself the right to health of all citizens (Galvao, 2005).

This case study demonstrates the benefits of a human rights approach to combating HIV/AIDS. Unless universal access to treatment is provided as a fundamental human right, marginalized populations will continue to display increased incidence of HIV, accelerating the spread of the disease and impeding prevention efforts. Inaction in this regard will have serious ramifications for the larger public, as the risk of infection increases if HIV/AIDS continues to spread from these populations to the general populace. Irrespective of one's views on the morality of prostitution, sex workers must be treated for HIV/AIDS to both improve their own health and to help guarantee the health of the larger global community.

PEPFAR certainly does aim to increase access to antiretroviral medications and declares its commitment to "expand[ing] prevention, care, and treatment in both concentrated and generalized epidemics" (About PEPFAR, 2011). However, some of PEPFAR's policies reflect a strong ideological basis that prevents PEPFAR from maintaining a completely human rights-based approach in its fight against HIV/AIDS. The anti-prostitution pledges of PEPFAR I and II (the original plan and the renewal) each contain two stipulations that reflect the "morally charged" imperatives of the United States government (Kinney, 2006). First, PEPFAR cannot fund any organization that supports the legalization of prostitution. Second, in order to receive HIV/AIDS funding, an organization must take the further step of "explicitly opposing prostitution and sex trafficking" (Fedorova, Mikdadi, Baruah & Higman, 2010). These two clauses reveal the beliefs of the United States government: prostitution is wrong and should be criminalized and eliminated. By including an anti-prostitution pledge, PEPFAR aims to eliminate any sort of legitimization of prostitution that may result from health organizations working directly with sex workers. Advocates of the anti-prostitution pledge claim that these organizations should focus on encouraging women to leave sex work. By not formally vocalizing opposition to prostitution, the rationale goes, they are in fact enabling the commercial sex industry (Loome, 2011). Organizations that do not take an official stance against prostitution are, in the US government's eyes, "inherently harmful and dehumanizing [and contribute] to the phenomenon of trafficking in persons" (Kinney, 2006). As a result, PEPFAR funding will not go to organizations that do not explicitly denounce prostitution, even if though they in no way promote it.

PEPFAR does not deny the increased prevalence of HIV in the sex worker population; it acknowledges that "persons who engage in socially stigmatized behaviors, including sex work … are at a disproportionately higher risk for HIV" (PEPFAR Technical Working Groups, 2011). PEPFAR focuses its efforts on "engaging in targeted prevention, care and treatment outreach for prostitutes; helping governments to support alternatives to prostitution; and working to reduce demand for prostitution" (Center for Health and Gender Equity, 2011). So PEPFAR does intend to help sex workers receive care for HIV/AIDS. But because PEPFAR seeks to eliminate prostitution completely, it rejects anything it sees as legitimizing the practice and thus justifies the inclusion of the anti-prostitution pledge in its requirements for the provision of funding. Although aspects of PEPFAR's work do target sex workers and aim to help them acquire medical treatment, by forcing organizations to use language that denounces the legality and morality of prostitution, PEPFAR in fact hinders the ability of sex workers to receive the highest quality of HIV treatment. Sex workers are unlikely to feel comfortable seeking care from an organization that denounces their occupation.

In order to understand the nature of this human rights violation, it is first important to establish why sex workers are at increased risk for HIV infection. Most sex workers are driven to prostitution as a result of living in extreme poverty or lack of education (Baker, Case & Policicchio, 2003); unable to support themselves, they sell their bodies for sex in order to provide food for themselves or their families (Beyrer, 2001). Prostitutes face "vulnerable work situations with violent, non-paying clients in unprotected places and lack of protection by police and legal systems," inhibiting their abilities to engage in safe sexual practices, such as using condoms (Wolffers & Van Beelen, 2003). Forced to engage in unsafe sexual behavior by the nature of their profession, sex workers are at a high risk of contracting various sexually transmitted diseases, including HIV. In South Asia, for example, since most sex workers become heavily indebted to the brothels that hire them, they must engage in many of these risky sexual encounters to free themselves from the brothel's control (Beyrer, 2001).

While PEPFAR does encourage "out of the box solutions" (Center for Health and Gender Equity, 2011) to help sex workers, the anti-prostitution pledge constitutes a major barrier in guaranteeing prostitutes HIV/AIDS treatment as a human right. By requiring organizations to officially oppose prostitution in order to receive funding, "PEPFAR's own policies stand in the way of adequately reaching out to marginalized populations, such as commercial sex workers…who do not have adequate access to HIV/AIDS services because PEPFAR funding is restricted for those engaged in certain activities" (Fedorova, Mikdadi, Baruah & Higman, 2010). Prostitutes find themselves condemned by the very organizations that aim to help them, and HIV/AIDS becomes further associated with prostitution as increasing numbers of sex workers become infected with the disease. Local NGOs that work directly with sex workers are unable to secure PEPFAR funding without denouncing prostitution. For example, an organization in India called Sangram provides HIV/AIDS counseling and education services to sex workers. Though its work has been recognized by the United Nations Program on AIDS (UNAIDS), it can no longer receive funding from the US government because it refuses to sign the anti-prostitution pledge and therefore cannot access important resources (Loome, 2011). Other such organizations face a similar dilemma: they must alienate their target population or lose funding. If they choose the former, they increase the stigma of being a sex worker. Therefore, sex workers are less likely to seek out the prevention and treatment services of these organizations, putting the sex workers at increased risk for both infection and death and contributing to the spread of HIV/AIDS to others (Kinney, 2006). NGOs that refuse to meet PEPFAR's requirements are excluded, so "as a result, the anti-prostitution pledge requirement works to screen out key organizations with years of experience in the field [and] established connections to targeted communities… excluding them from US-backed initiatives that work to combat HIV/AIDS and human trafficking" (Kinney, 2006). Thus, the anti-prostitution pledge violates sex workers' rights to health; either they are stigmatized by the organizations that could provide them with health services, decreasing the likelihood that they will seek out care, or the organizations best suited to help them without stigma are themselves hindered through lack of funding and exclusion from PEPFAR's international effort to eradicate HIV/AIDS.

Sex workers constitute a marginalized population that is at a significantly higher risk for HIV infection than other populations. The best way to combat the incidence and spread of HIV/AIDS is through a rights-based approach that guarantees universal access to HIV treatment in a stigma-free setting. In order for sex workers to receive the full benefits of HIV treatment, they must not be stigmatized because "groups at risk of… exploitation in the commercial sex industry do not take advantage of programs providing social, health, and legal services unless services are provided in a non-judgmental, non-discriminatory setting" (Kinney, 2006). PEPFAR's anti-prostitution pledge increases the stigma of both prostitution and HIV/AIDS and hinders NGOs from providing the highest attainable standard of health care to sex workers. Thus, this PEPFAR policy constitutes a violation of the human rights of sex workers. The only way to effectively eliminate the incidence and spread of HIV within the sex worker community, and thus prevent further spread to the general public, would be through a rights-based approach that works to eliminate stigma and marginalization.

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Autism in China

A biosocial review

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Introduction

With a true artist's musicality, Jordan stands up before his peers at NYU Steinhardt's Nordoff-Robbins Center for Music Therapy to play an improvisational xylophone solo. In Kunming, China, at the MoreToBaby Center for Mental Health Therapy, Chenxuang enthusiastically beats his tambourine to the tune of a Chinese children's rhyme.

Though thousands of miles apart, Jordan and Chenxuang have much in common—they are both five-year old boys who have been diagnosed with autism spectrum disorder, a neurodevelopmental disorder that manifests in social, communicative and behavioral impairments (CDC, 2011).

Both seem content; however, their drastically different surroundings influence the way they experience autism. Jordan plays well-crafted musical instruments in a research facility; Chenxuang plays with donated plastic tambourines in a center with fading posters, peeling paint and aging equipment. Next year, Jordan will likely return to the same building to continue his therapy; due to constant relocation and closure, it is unclear whether Chenxuang will return to the same center. Two therapists tend to Jordan and four other boys; with the center severely understaffed, Chenxuang has to have a parent attend class with him every day. Each attends one of the best centers in his respective region, yet one is underfunded compared to the other.

Such examples prompt the need for a biosocial analysis that studies the influence of environmental, social and political factors on biological diseases. After all, it is impossible to understand human behavior, abnormal psychopathology or mental health care without accounting for social and cultural phenomena (Jenks, 2005; Chiang &and Hadadian 2010; Lin, Tseng & and Eng-Kung, 1995). The relationship between symptoms and social stigma is especially worth examining because it may have a strong and enduring effect on the well-being of those who face mental health problems (Kleinman,1986; Pearson, 1995; Link et al., 1995).

Psychiatry in China is a fusion of Eastern and Western thought, a canvas onto which cultural ideas have fostered various interpretations of autism spectrum disorder. In addition, politics impact the manner in which resources are allocated for treatment. Though there have been many studies on the development of Chinese psychiatry and mental health, few have focused on the diagnosis and treatment of autism. This paper provides an overview of how historical, cultural and political factors affect an autistic individual's experience.

Problem

Historical Influence

While the development of Chinese psychiatry paralleled that of Western psychiatry, there existed a constant internal struggle that rejected more effective Western techniques. Tension grew between the desire to practice Western psychiatric theories and to create a purely Chinese form of psychiatry (Pearson, 1995).

Before 1949, little was known about the state of Chinese psychiatry (Zhao & Miao, 2007; Pearson, 1995). Though ancient records of psychiatric and mental illnesses existed, psychiatry was not formalized until after the revolution in 1948 (Liu, 1981). Indeed, whereas only one psychiatric hospital for Chinese citizens was present in 1906, there were 80 hospitals after the revolution. By 1978, an additional 190 hospitals had been built (Collins, 1982). Academic psychiatry began in 1932 with the establishment of the Peking Union Medical College (Pearson, 1995).

The many pioneers of Chinese psychiatry were either from the West or trained in Western methodology (Pearson, 1995). However, during the Cultural Revolution in the 1960s, the nationalistic movement rejected Western influence, including notions that leading practitioners believed were capitalistic, such as mental health.

In addition, the heterogeneity of Chinese culture as evidenced by the variety of dialects spoken across the country in diverse provinces and regions prevented the creation of a standardized practice of psychiatry. The disparity is most notable in the treatment provided in urban versus rural areas, where centers like MoreToBaby do not even exist and must rely on patients traveling long distances and making sacrifices to receive the treatment they need and deserve.

Due to its tumultuous political and ideological history, mental health is not looked upon favorably. Stigma, defined as "the psychological and interpersonal experiences of being discredited and discriminated against because of a particular condition," is prevalent (Jinhua & Kleinman, 2011).

Cultural Context

The treatment of psychiatric disorders, especially autism, can vary by nation due to cultural differences in diagnosis and interpretation.

For instance, many Chinese psychiatrics prescribe to the Chinese Classification of Mental Disorders, 3rd edition (CCMD-3), instead of two more well-known diagnostic manuals, Diagnostic and Statistical Manual (DSM) and International Statistical Classification of Diseases and Related Health Problems (ICD). Chinese psychiatrists, who have expressed doubts with the constant updates and diagnosis-associated changes of DSM and the awkwardly translated ICD, thus resort to the culturally appropriate CCMD (Kleinman, 1986). Even the director of MoreToBaby preferred CCMD-3 over other forms of diagnostic criteria.

Though symptomatic diagnosis is largely standard, there are variances in interpretation and categorization between CCDM-3 and DSM-V. For example, CCMD-3 diagnosis of autism involves "interpersonal harm" with "qualitative damage" and "significantly impaired ability" in communication, as opposed to the more politically correct emphasis on "deficits" as found in the proposed DSM-V (Zhang Yue Heng, 2009).

Furthermore, thousands of years of cultural history have culminated in a socially-accepted framework, which affects society's interpretation of autism. Five common themes are:

"(1) As a basic life value, the Chinese stress a harmonious attitude toward nature;

(2) Influenced by traditional medical concepts, the Chinese are concerned with balance and conservation for optimal health;

(3) In their social organization, the Chinese value the family as the basic unit of life and resource for support;

(4) The Chinese emphasize social and interpersonal relations in life situations; and

(5) For coping with life situations, the Chinese sanction practical and flexible adjustment" (Lin, Tseng & Eng-Kung 1995).

In accordance with the first two points—harmonious attitude toward nature and the need for balance—mental illness is commonly believed to be the result of imbalance between self and society, with the self suffering from an imbalance of yin and yang, hot and cold or the five elemental phases (Kleinman, 1986). To give birth to a special-needs child is to sin against the ancestors or to have been cursed by the gods (Chiang & Hadadian, 2010). In Traditional Chinese Medicine (TCM), mental disorders are viewed as physical diseases or manifestations of physical disorders (Jinhua & Kleinman, 2011).

Traditional Chinese Medicine (TCM) regards the blockage of qi, the vital force of energy that controls the functioning of the human mind and body, as the result of an internal imbalance between yin, the passive component, and yang, the active component (AT, 2009; NCAAM). Acupuncture helps to improve pain or other medical complaints by inserting fine needles into certain meridians, or channels of the body, to clear a pathway for the qi and fix the imbalance (CYWH).

In addition to its role in the treatment of chronic pain, acupuncture can be used to change the cognitive state (Hui et al, 2010). According to Chinese medicine, autism is a "yin" disorder that manifests in social isolation, lack of communication and apathy (Clark & Zhou, 2005). As many of these symptoms are related to underlying neurological aberrations, acupuncture is thought to influence the regions of the brain associated with autism.

Studies have shown that acupuncture can be effective in allowing attention and receptive semantics, especially if paired with other means of therapy, such as language therapy, a form of therapy prevalent in Western tradition (Clark & Zhou, 2005). This fusion of culture demonstrates Lin, Tseng and Eng-Kung's fifth point: that practical and flexible adjustment in adapting and being open to various therapies across cultures is necessary when coping with life situations (1995).

The third point highlights the family as a central point of organization and of mobilization. Progress, Confucius taught, was the cultivation of self towards the raising of a family, to the governing of society and to regulation of the world (Lin, Tseng & Eng-Kung, 1995). Each person is a member of a family that is connected to greater levels of society (Pearson, 1995). As a member of the family, each individual has rights and responsibilities. Acting in a socially unacceptable manner is very much unfavorably representing the family, even if the actions are uncontrollable or due to mental illness.

> While the development of Chinese psychiatry paralleled that of Western psychiatry, there existed a constant internal struggle that rejected more effective Western techniques.

This leads to the fourth point, which states that much of Chinese culture is based on social interactions. Though the widespread theory of Confucianism states that all humans are born "good" and in need of respect, this seemingly positive and unbiased view is not as prevalent in practice, especially with regards to individuals with disabilities (Yang, 2001; Chiang & Hadadian, 2010). When individuals with disabilities are placed into a system that upholds binary and ethnographic definitions, they are viewed as aberrations because they do not conform to the "norm" (Chen, 2003).

An important concept in Chinese society is "saving face," a form of social currency earned by interacting in the public sphere (Cardon, 2003). Saving face is the preservation of the public appearance of the patient and family for the sake of community propriety (Kramer, 2002). In order to uphold the family's honor, individuals with disabilities are often locked up at home as a family secret (Yang, 2001). At MoreToBaby, parents often wonder about the future of children with autism because they rarely see autistic individuals in public.

With their inadvertent disruptions of social order, autistic individuals face heavy stigma from their verbal and nonverbal actions (Philips, 1998). Given that much of Chinese society is intolerant to such faux pas, societal acceptance and understanding for such actions are difficult to achieve.

Examination of the cultural factors that influence the perception of the disorder highlights the idea of "local moral worlds," the mindset of people toward those with diseases. Understanding the local moral worlds is important not only on the scale of possible interventions to assuage the social suffering of the individuals, but also to the opening of dialogue to sustain conversation among nations.

Political Climate

During China's pre-reform era, medical costs were kept low. As the market opened up, the cost of care increased dramatically (Philips, 1998). But the lack of understanding of the disorder led to an inability to properly implement policies to support families with children with mental health disorders.

Mental health in China is shameful not only on an individual or familial level, but on a national level (Pearson, 1995). The government, unwilling to be open about people living with mental illness, tries to ignore or hide mental health issues, as evidenced by their reticent acknowledgment, but the Five Year Plan will bring mental illnesses into the field as a "major field of research" (Moore, 2009). Only a few child mental health centers exist in China, with the Nanjing Child Mental Health Research Center being the sole location to train child mental health workers (Lin, Tseng & Eng-Kung, 1995).

Furthermore, family planning policies created a dilemma for those with children suffering from poor mental health. The one child policy, enacted in 1978, reduced fertility rates but increased socioeconomic problems (Hesketh, 2005). Expected and pressured to raise the "single healthy child," parents pinned hopes and dreams onto their spoiled "Little Empress" or "Little Emperor." It also placed great pressure on the one child, especially those who faced autism and had trouble learning. The government's response, which allows for the birth of a second child in the event that the firstborn has a mental illness, did nothing to aid the marginalized population and in fact perpetuated the idea that individuals with mental health problems could not carry out social obligations and were worthless (PBS, 1998).

But many cannot afford to have another child because taking care of a child with special needs in China is costly and difficult. Given that mental health is seen as a private problem, a lot of time and energy is spent on disadvantaged children at home. This care forges strong family and community relationships, but, at the same time, it proves difficult for families with autistic children to maintain a work-life balance (Kelly, 2007).

At the MoreToBaby Center, a family member must accompany the child at all times due to shortage of staff members. This often makes it difficult for one parent to work during school hours. Even for those who do not need parental accompaniment in school, many times a family member will serve as the unpaid caretaker, reducing their chances of income. According to parents at MoreToBaby, despite stipends that allow families to alleviate some of the costs, livelihood is still grueling.

This also brings to light how the lack of government support for education can make it difficult for families. Even though the MoreToBaby Center is less than state-of-the-art with its fading posters, old equipment and biennial location change, it is considered one of the best centers in Yunnan, with a waitlist of children from all over the province, including the more rural areas. Sometimes, people will rent expensive flats in the city to facilitate access to the somewhat shabby public schools (Ying, 2010).

Oftentimes, all the children who are mentally challenged will be grouped together, making individual care a rarity (Ying, 2010). These are simply not the appropriate measures for intensive care and attention that are necessary, as shown by the low education attainment for disabled children (Yang, 2001). Furthermore, the government does not provide a substantial "mainstreaming" program, making it difficult for children with autism to transition into a public school or school for typically developing children, and ultimately, into society. Of the few companies that offer jobs to graduates of schools for individuals with mental health disabilities, all are China-based foreign companies (Ying, 2010).

Families with autistic children undergo much unrecognized sacrifice and suffering. The implicit and explicit costs prove to be particularly burdensome for the average family. Some public schools can cost almost half the average annual salary; private schools may cost twice or thrice the amount (Ying, 2010). Additional costs include tutors or therapists.

But even nongovernmental organizations are helpless and few such groups provide services or support (Pearson, 1995). Due to the stigma of mental health illness, it is difficult for parents to speak up for their children with autism and rally support from community members.

On the other hand, these obstacles can inspire these individuals to overcome their discrimination (Yang, 2001). As the government's ineptitude is revealed, demand for mental health services increases; this will lead to a market of financial incentives for public and private sector organizations to provide services (Phillips, 1998).

Through pressure with the developing trends around the world, China has begun to realize the importance of early intervention and special care. Though the national strategy for Early Childhood Care and Education has brought the issue into the public sphere, it is not tailored specifically to children with disabilities (Corter, 2006). However, autism has been written into the 11th Five Year Plan, as the government looks to have autistic training facilities in 31 pilot cities, one for each province (Ying, 2010). Yet, many are still skeptical about the inclusion of autism in the plan, thinking that this would just give a label for discrimination once again (Feinstein, 2010).

Wrapped up in the politics of it all, legislators find it difficult to create policies adequate for individuals with autism fitting for the political climate. However, these political reforms are only part of the necessary solution to improve the quality of life of autistic individuals.

Solution

Stigma is an unintended consequence of political and social actions (Merton, 1936). In order to change the current mentality on mental health, solutions must account for all possible unintended repercussions.

In regards to the political situation, reform of the policies that are aggrandizing the social suffering of the individuals would prevent bureaucratic rationality. Due to the societal structure that is based heavily on family, compensating the families, beginning with their explicit costs of education, would be a start. Then, moving on to help families with implicit costs of time, energy and opportunity cost should follow. This would help the families to free up resources to help the individuals with autism.

Funding could also be extended to institutions to expand their resources for autism. Centers like MoreToBaby could accommodate more individuals with more staff members, school and therapy supplies and space in a permanent home. Another step would be to change the infrastructure of the educational system. This would involve creating centers able to concentrate on specific disorders, but at the same time, creating a channel to mainstream individuals into public schools and eventually into positions in society.

However, these are short-term solutions to a long-term problem. Though they relieve some of the difficulties surrounding living with autism in China, they will only cover up the underlying stigma of autism and other mental health disorders.

A major change would be to overturn the secrecy surrounding mental health. By opening dialogue about mental health, more measures can be taken. Going deeper into the cultural foundations for the inappropriate or insensitive policies, awareness campaigns would help individuals with mental health disabilities and their advocates to stand up for their rights while rallying parts of the community. In the past, some similar campaigns have succeeded in the context of malaria, but others have not had as much luck (Kleinman, 2011). Though the awareness campaigns will spread information about the disorder, they still have to overcome the fundamental stigma.

Uprooting stigma and misunderstanding surrounding autism would cut off nourishment from the metaphorical weed of policies and practices. Research, for example, is one potential venue for greater understanding. After all, much of the disorder is still ambiguous. Looking at the causes, diagnoses and treatments of autism will help clarify disparities between different cultures.

For example, determining the cause, be it genetic or environmental, will overturn some cultural beliefs and prompt the need for socially acceptable ways to regard individuals with autism. The clarification of the diagnosis of autism will contribute to the ability to distinguish between mental illnesses and complications, better tailoring treatment mechanisms. And, most importantly, discovering and verifying the effectiveness of treatments will save families time and energy looking for the best way to help their child.

> To give birth to a special-needs child is to sin against the ancestors or to have been cursed by the gods.

With this approach comes the clash of local moral worlds, the differences in perception based on differences of values, with a tinge of medicalization, and the increasingly scientific approach towards medicine. Though numbers and data can be generated, the interpretation of the data is dependent on cultural aspects. However, conducting research in China and combining this research with that of investigators in other countries will provide a more complete perspective on the disorder. The research and understanding will take more time and effort than the other actions. It is difficult to try to put time and resources into preventative care when there are more imminent interventions that need support.

Multiple levels of different types of solutions are necessary in order to comprehensively improve the quality of life for autistic individuals. To start, energy and resources need to be placed into research; more effort should be put into advocacy and awareness. Finally, above all the infrastructural changes is the need to make the reforms toward accommodating the special needs of children with autism.

Conclusion

China has the potential to improve the situation for autistic individuals. Currently, the mental health services available to children with autism are in the early stages of development. Though the standards of living are progressing, there is still much to be done. Assessing the fallbacks of the current situation can help point out areas of focus such as educational provisions or economic inequalities. For example, assessment of the social, political and economic imperatives that direct the development of mental health services in China suggest that both the quality and accessibility of services will decrease in the future (Phillips, 1998).

This is not to say the story of autism is unparalleled. Other mental health disorders in China such as schizophrenia, depression and neuroanesthesia have gone through the same dynamics (Pearson, 1995; Kleinman, 2010). Similarly, the history of HIV/AIDS and its stigma in China could be juxtaposed with that of mental health illnesses, resulting in obstacles to proper treatment and care (Jinhua & Kleinman, 2011).

It was only decades ago that the now-prominent awareness of autism in America was in its basic stages; hopefully a similar growth trend can occur in China. Beginning with vocal parents speaking up for their children's needs and rights, a movement was initiated in America. Parents mobilized those in the community who interact-ed with autistic children and then expanded into social networks, until autism awareness spread throughout the country as a hot topic (AutismSpeaks).

With both the cultural and political context in mind, the biosocial framework can help to empower individuals with autism. By taking into account all the factors of the disease, not just those that are biological, future approaches can be more horizontal, as opposed to the vertical approaches of the past. Further research into socially constructed approaches to the origin and treatment of the disorder could lead to a better understanding of autism, both in America and China.

Looking back at Jordan and Chengxuang, it is evident that they themselves have no control over their situation. It is up to those around them, their families and their communities, to help them make the best of their situation.

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Mental health is a large component of the global burden of disease, yet it is often neglected or categorized as a "luxury item" on many agendas. The World Health Organization has only recently started to address the gap between those in need of mental health care and the resources available to them, but the majority of developing countries allocate less than 2% of their health budget on mental health. Amidst the numerous other diseases/conflicts that plague the international community, how do we justify the importance prioritizing mental health?

The Fall 2012 issue of JGH will highlight the theme of "Looking Inside: Justifying Mental Health." We specifically encourage submissions that address relevant issues such as: the underlying factors of the stigma associated with mental health, varying interventions such as medicine and psychosocial services and their accompanying barriers, and how breakthroughs in understanding the brain will affect the mental health gap.

National directives and community empowerment

Public health in Sleman Regency, Indonesia

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Abstract

Although public health in Indonesia is regulated at the national level, district-level government health authorities are often responsible for shaping and executing specific public health programs. While cooperating with national efforts, Sleman Regency, Indonesia, has improved upon these recommendations to design innovative solutions to public health crises. Through community empowerment, Sleman has implemented voluntary AIDS commissions, women-led non-profit organizations and neighborhood health coalitions, volunteer-based home inspections and green initiatives. This paper draws on firsthand observations from my recent trip to Yogyakarta, Indonesia, including interviews with public health administrators, site visits and primary source material from education campaigns and local health clinics.

Part I of this paper provides a broad overview of the decentralized structure of the Indonesian public health system; it examines how Sleman operates under the federalized system and focuses on the district's method of expanding upon national health directives to create novel local initiatives. Part II of this paper evaluates how instrumental community empowerment has been in reducing disease incidence and promoting healthy behaviors. Part III assesses whether this community engagement can be replicated on the national level.

Introduction

Dr. Nurulhayah, Head of Medical Services at Sleman Health Office in Sleman Regency, Indonesia, describes Sleman as a "preferred district, with the best model for public health in the nation" (D. Nurulhayah, personal communication, August 3, 2011). Sleman Regency's unique model of public health bolsters national health directives with local innovations; a particularly noteworthy instigation is community empowerment, which the World Health Organization (WHO) defines as "the process of enabling communities to increase control over their lives" (2009b). Community empowerment measures include voluntary AIDS commissions, women-led non-profit organizations and neighborhood health coalitions, volunteer-based home inspections and local green initiatives—all of which likely have contributed to Sleman's above-average health indicators, improved health statistics and sustained institutional and volunteer support. Though Sleman boasts a number of medical and social advantages, similar projects are plausibly replicable throughout all of Indonesia.


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Part I: Overview of the Indonesian public health system

In Indonesia, healthcare is overseen at the national, provincial, district or regency, sub-district and village levels. The Ministry of Health establishes national health policy, develops the standards of care for district and sub-district health care providers, formulates national health insurance plans and determines accreditation standards for healthcare facilities and professionals (Ministry of Health Republic of Indonesia). Under the decentralization policies of Act No. 22/1999 and Act No. 25/1999, however, most administrative functions are left to the provincial, district, sub-district and village levels (Library of Congress, 2004). At the provincial level, the Provincial Health Office supports the work of the district, sub-district and village public health administrators and coordinates health resources throughout the province (Dinas Kesehatan Provinsi Jawa Barat, 2006). Indonesia has 30 provinces (provinsi), two regions with a special status and one special capital region (Central Intelligence Agency, 2011).

After a January 1, 2001, agreement to further decentralize policymaking, most healthcare decision-making was left to the districts or regencies and their sub-districts (Library of Congress, 2004). The District-Level Health Office carries out provincial guidelines, directs local public health programs such as immunization and infectious disease control and regulates the food, drug and drink industries (Dinas Kesehatan Sleman, 2011). The primary feature of the sub-district level of government is the community health center (Puskesmas) that directly administers medical care to patients (World Health Organization, 2006). Village-level provision of care includes small community health centers, mobile health clinics, midwife clinics or maternity huts and integrated health posts (Posyandu) (World Health Organization, 2006).

Under this structure, patients throughout Indonesia receive care primarily through four mechanisms: government-funded village-level health centers (such as Posyandu), public sub-district level community health centers (Puskesmas), private physicians and private and public hospitals (Eko Relawati, personal communication, August 4, 2011). The most common village-level health center is the Posyandu. Unlike other forms of clinics in Indonesia, which are staffed by government-paid or privately-paid physicians, Posyandu, which are only open once a month, rely completely on community volunteers (Renosari). Puskesmas provide most primary health services including immunization, pre- and postnatal care, dentistry and laboratory services. On average, each Puskesmas serves 30,000 inhabitants (Airlangga University, 2002). Though each district follows the same health model, the capacity and quality of Puskesmas and Posyandu can vary.

> Community empowerment has been linked to better health outcomes and unified support for local health initiatives.

Many public physicians employed at Puskesmas also maintain private practices or positions at local hospitals as secondary forms of employment. Patients who require primary care services after the Puskesmas close can still seek care from these private physicians, who often accept various forms of health insurance such as Jamkesmas for the poor, Jamsostek for private employees and Askes for government employees and civil servants (Export Victoria, 2010). For specialty services, patients rely on district, provincial and central hospitals (World Health Organization, 2005). According to the National Ministry of Health, hospitals are divided into four classes—A, B, C and D—based on the number of specialty services provided (Sutiono, 2009). Half of all hospitals in Indonesia are privately owned by non-profit organizations, while the remaining half are owned by the Ministry of Health, local government or the national armed forces (World Health Organization, 2005).

Sleman health office (Dinas Kesehatan Kabupaten Sleman)

Sleman Regency is located in the northern section of Yogyakarta Province, and its boundaries range from Yogyakarta City in the south to Mount Merapi in the north. With a population of over 1 million, Sleman is made up of 17 sub-districts, 86 villages and 1212 hamlets (United Nations Centre for Regional Development, 2005). Although Sleman is urbanizing due to pressure from Yogyakarta City, agriculture remains one of the largest economic sectors in the region, making up over 14% of the Gross Regional Domestic Product (Sleman Regency, 2005). In addition, Sleman is home to 29 universities, a consequent large student population and a rich intellectual history (United Nations Centre for Regional Development, 2005).

Sleman's primary body for overseeing public health is the Sleman Health Office (SHO), which oversees immunization, infectious disease control through surveillance and education campaigns and food, drug and drink registration and certification (Cahyo Purnama, personal communication, August 3, 2011). Under the guidance of the National Ministry of Health, SHO operates a broad program of developing clean and healthy behaviors at five locations: home, school, public places, workplaces and healthcare facilities (Dinas Kesehatan Kabupaten Sleman, 2009). Projects are not exclusively beneficial to the locals; for example, "Health in Tourism" provides mobile health services for tourists. Other initiatives include a sand-mining occupational health service and a "Healthy Market Program," which both divides traditional markets into separate sections for fruit, meat and other food products and makes available a mobile primary health station (D. Nurulhayah, personal communication, August 3, 2011).

Expanding upon national directives

Although it receives guidance from the Ministry of Health, the Sleman Health Office often amplifies national recommendations for public health. Five expanded upon national directives are: augmented health indicators, public health education, maternal health interventions, infectious disease control and environmental programs.

The National Ministry of Health has ten indicators for evaluating the health status of households: 1) deliveries assisted by a health professional, 2) babies breastfed, 3) infants weighed every month, 4) using clean water, 5) washing hands with soap and clean water, 6) using healthy latrines, 7) eradicating larvae at home, 8) eating fruits and vegetables daily, 9) performing daily physical activities and 10) abstaining from smoking inside. Twice a year, each household is scored based on these indicators and given a ranking of deficient, average, good and very good. SHO added ten indicators for evaluation: 1) balanced nutrition, 2) examination during pregnancy according to appropriate standards, 3) health insurance status, 4) complete infant immunization, 5) family planning methods, 6) floor of the house lifted off the ground, 7) utilization of health services, 8) waste management, 9) presence of a medicinal garden and 10) tooth brushing habits (Dinas Kesehatan Kabupaten Sleman, 2009). Each household's score is then recorded on a sticker placed on the front window of the household and in a large logbook kept at the Health Office. Village volunteers regularly perform checkups, and if a household continues to score poorly on a certain item, Sleman authorities will connect the family with a Family Health Empowerment Volunteer (D. Nurulhayah, personal communication, August 3, 2011).

SHO designs its own educational programs to inform the community about communicable diseases and their prevention. Booklets are distributed to Puskesmas throughout the district that describe and depict proper health behavior and suggest ways (hand-washing and proper waste disposal) to improve health conditions at work and at healthcare centers (Dinas Kesehatan Kabupaten Sleman, 2009). Graphs and images emphasize the dangers of an unhealthy lifestyle. Informational disease posters are similarly designed and distributed throughout the Puskesmas and Posyandu. One poster featured at Puskesmas Kalasan warns of dengue fever, using large red letters before going on to illustrate how residents can protect themselves from the fever by keeping communal work areas clean, draining water once a week and closing water reservoirs very tightly (Dinas Kesehatan Kabupaten Sleman, 2005). Through these poster campaigns, SHO hopes to educate residents about the environmental and behavioral risk factors for infectious diseases.

In an effort to reduce maternal and infant mortality, SHO created an extension of the national initiatives "Mother Friendly Movement" and "Love Mother Movement." The "Mother Friendly Movement" sought to promote education, ensure access to midwives, form blood donor groups within each village and organize referral programs for women with complicated pregnancies. Under the "Love Mother Movement," every pregnant woman is given a sticker to place on the front window of her home that alert emergency teams, midwives and physicians in case of an emergency. The sticker lists the name of the mother, due date, delivery assistant, desired place of delivery, delivery companion, mode of transportation and prospective blood donor in case of complications during delivery (Eko Relawati, personal communication, August 4, 2011).

To bolster this national approach targeting maternal and infant health, Sleman Regency mandates that midwives at each Puskesmas must not only maintain a logbook of all women in the sub-district who have recently given birth but also track areas of high-risk pregnancy on large color-coded maps. Puskesmas staff relies on educational tools, such as booklets on proper prenatal care, to encourage expecting women to continue with prenatal care and to avoid harmful behavior during pregnancy. Women are expected to meet with a midwife at least once every trimester, but midwives advocate for more checkups—once a month during the first trimester, twice a week in the second trimester and weekly during the third trimester (Eko Relawati, personal communication, August 4, 2011).

SHO has developed other unique models for improving health in the community. To combat mosquito-borne diseases, health officials promote using mosquito repellant and nets and placing mosquito larvae-eating fish in drinking water. To target leptospirosis, a bacterial infection that spreads through rat urine, which is a major health problem in Yogyakarta Province, SHO releases owls and snakes to reduce rat populations in rice fields (United Nations Office for the Coordination of Humanitarian Affairs, 2011). In 2006, Ngaglik Village authorities launched the "Green and Clean Program," which filters drinking water, discourages smoking outside designated areas and provides composting and recycling services. For example, to improve drinking water quality, waste from homes in Ngaglik village is filtered through wood, coal from coconut skins, sand and small stones. Goldfish are then placed in the filtered water. "If they survive," one employee of the Program explained, "that means the wastewater management is working" (personal communication, August 4, 2011). The filtered water is finally released into the local river.

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Part II: Programs of "community empowerment"

Sleman Regency's most notable expansion upon national health directives is what Sleman Health Office Head of Medical Services Dr. Nurulhayah terms "community empowerment" (D. Nurulhayah, personal communication, August 3, 2011). Community empowerment—a "process by which communities gain control over the factors and decisions that shape their lives" (World Health Organization, 2009b)—has been linked to better health outcomes and unified support for local health initiatives by encouraging individuals to be more aware of their surroundings, their community involvement, their health and their personal lives. These programs seek to engage members of the community in a decision-making process that all too often neglects local input (Kahssay & Oakley, 1999). Also significant is that Sleman's public health successes have come even when financial resources were scarce.

Strong leadership has appeared from individuals associated with both SHO and the communities being served. Prominent women, often the spouses of local health practitioners, were approached by SHO officials to initiate a number of volunteer-led health programs. Dr. Tunggul Birowo, a family physician and employee of the Sleman Health Office, believes that because of these community-based programs "we can accomplish a lot without much money" (Tunggul Birowow, personal communication, August 4, 2011).

Five programs of community empowerment

Voluntary AIDS commission

One project in Sleman Regency that embodies this community empowerment approach to public health is the Regency's voluntary AIDS committee, a small non-profit group promoting HIV/AIDS screening among high-risk groups. The commission, made up of community members, encourages Sleman residents to obtain "Voluntary Consultation and Training" (VCT), an HIV screening made available at Puskesmas. Injection drug users and commercial sex workers are especially advised for screening (D. Nurulhayah, personal communication, August 3, 2011). Community empowerment arises from the fact that local residents are taught public health education techniques; for it is they, rather than external public health officials, who promote HIV/AIDS awareness in their neighborhoods. Moreover, by personally visiting at-risk individuals and neighborhoods, they can engage members of the community that might normally not otherwise pursue a screening.

Posyandu volunteers

Nearly all Sleman Health Office programs rely on volunteers; Posyandu, as an example, depend on over 8,000 volunteer community members (D. Nurulhayah, personal communication, August 3, 2011). Their responsibilities range from assisting midwives with deliveries to serving as Psychiatric Health Volunteers who provide Post-Traumatic Stress Disorder counseling, a skill which was especially necessary after a 2010 Mount Merapi eruption (Novita Krisnaini, personal communication, August 3, 2011). As in the voluntary AIDS commission, volunteers are chosen directly from the lay community, a move that fosters greater community participation in public health efforts. Through their involvement at Posyandu, these volunteers are able to informally transmit their public health knowledge to the community.

Home inspections

In addition, volunteers play a critical role in Sleman Health Office's programs for infectious disease control. Every week, Health Office volunteers conduct a district-wide survey of local Posyandu and Puskesmas for rates of measles, food poisoning, leptospirosis, tuberculosis, dengue fever and malaria. Volunteers also regularly check the sanitary condition of homes and neighborhoods and evaluate how well these environments are protected from mosquito larvae. Through this weekly surveillance project, communicable diseases can be detected at earlier stages and public health efforts can be shifted from treatment to prevention and eradication (Cahyo Purnama, personal communication, August 3, 2011). In relying on community members to execute home inspections, the Sleman Health Office may achieve higher rates of compliance, as residents are more likely to trust familiar faces from the community. Although employing lay people to perform home inspections could conceivably create a problem with quality control, the indicators being measured are likely simple enough for even non-health professionals to evaluate.

Female-led neighborhood coalitions

Women are important public health leaders. One female-led community program is Dasa Wisma, a collection of female representatives for every 10-20 homes in each village in the district who are responsible for evaluating and promoting healthy behavior. Initiatives include recording pregnancy and infant mortality statistics in each village, educating families about proper nutrition and sanitation, weighing infants at local Posyandu and reducing family poverty (Harmayani, 2009). Dr. Cahyo Purnama, a physician at Sleman Health Office who supervises primary health care and hospital compliance, calls Dasa Wisma volunteers "key figures in maintaining community health" (Cahyo Purnama, personal communication, August 3, 2011). Dasa Wisma also shares its collected data with local government officials and Puskesmas in order to direct more appropriate public health interventions (Harmayani, 2009).

Female-led non-profit organizations

Other female-led community organizations have found ways to encourage routine medical screenings through group office visits. Ikatan Isteri Dokter, an organization of physician wives formed in 1954, arranges group mammograms for its members. According to Dr. Lina Choridah, a radiologist and breast cancer specialist at Dr. Sardjito Hospital in Yogyakarta (Rumah Sakit Dr. Sardjito), many women "feel more comfortable when their friends are also getting breast exams. It helps reduce emotional stress and encourages women to get screened who might otherwise be afraid to" (Lina Choridah, personal communication, August 4, 2011). These informal community coalitions that encourage group participation in health—in this case, screening for breast cancer—could result in more successful public health initiatives in the long term. Community members may feel more empowered in their health choices and more comfortable undergoing potentially frightening medical procedures. In a society in which women's participation in the public sphere can be limited by prevailing cultural or religious mores, female-led health organizations provide women with the opportunity to develop leadership skills and influence local conditions.

Measuring the outcomes of Sleman's community empowerment program

To evaluate the success of Sleman Regency's programs of community empowerment, one can examine quantitative aspects, such as changes in health statistics, as well as more qualitative measures, such as community satisfaction (Glanz et al., 2008, p. 295). Although this paper does not purport to identify a statistical link between Sleman's community empowerment programs and the district's successes with public health, it does suggest that these programs have had a potentially large impact on health indicators. For example, the female-led neighborhood health coalitions are Sleman's primary initiative to address maternal-infant health, meaning that they likely substantially influence maternal and infant mortality statistics. Moreover, since all provinces in Indonesia share Sleman's other public health programs, it is more likely that regional disparities in basic health statistics—or at least in their change over time—are likely attributable to the Regency's community empowerment programs. Certainly, differences in income and education levels also contribute to these regional differences, but I argue that the primary factor responsible for Sleman's above-average status is its community health programs, and the fact that the rate of improvement is higher in Sleman substantiates this thesis. Unfortunately there are not as many statistics available on community satisfaction, since this requires a more qualitative assessment. Sleman's continued high volunteer participation rates within community empowerment programs, however, speak to a broad base of support among those who have experienced and benefited from the programs.

Compared to Indonesia as a whole, Sleman has a well-developed healthcare system. In 2009, Sleman Regency recorded an average life expectancy of 72.46 years for men and 76.79 years for women, compared to a national average of 66 years for men and 71 years for women. The infant mortality rate for Sleman was 4.09 per 1000 live births (versus a national average of 30 per 1000 live births), and the maternal mortality rate was 69.31 per 100,000 live births (compared to a reported national average of 230 per 100,000 live births) (UNICEF, 2010). Similarly, Sleman Regency typically demonstrates better health statistics than the entirety of Yogyakarta Province. In 2001, the infant mortality rate in Sleman was 11.3 per 1000 live births (compared to 15.5 in Yogyakarta Province), the maternal mortality rate was 84.6 per 100,000 births (versus 110.0 in Yogyakarta Province), and the gross mortality rate was 5.1 per 1000 people (versus 7.7 in Yogyakarta Province) (Sleman Regency, 2005).

Sleman Regency itself has shown improvements in health statistics. Between 2004 and 2009, infant mortality dropped from 7.67 to 4.09 per 1000 live births; maternal mortality per 100,000 live births declined from 78.70 to 69.31; and the proportion of low birth weight infants was reduced from 2.38% to 0.82%. The number of health care providers also increased in the period from 2003 to 2009. Dentists rose in number from 503 to 1338, and government-employed general practitioners rose from 28 to 76 (Pemerintah Kabupaten Sleman, 2011). This 271% increase is remarkable, especially when compared to the highly-developed European health system. On average, the number of physicians in European Union countries increased by 10% over the same time period, with Ireland increasing at the highest rate of 50%. France and Italy had almost zero growth in its physician population, coupled with a decline in medical school entrants. Moreover, almost all European Union countries have seen a much more rapid increase in the number of specialist physicians than in general practitioners; Indonesia, in comparison, has had the most rapid growth in the general practice (OECD, 2010). Indonesia, unlike other developing countries (including Lebenom, Syria, the United Arab Emirates and Albania), rarely experiences "brain drain," a phenomenon in which educated physicians leave the country in search of higher-paying jobs overseas (Mullan, 2005).

Sleman Regency is likely retaining greater numbers of healthcare workers because physicians want to be a part of the district's superior system of preventative care. Physicians in Sleman widely support the community empowerment initiatives, perhaps because they are designed and run by physicians. In addition to Dr. Nurulhayah's glowing remarks about Sleman Regency's public health reputation, Dr. Tunggul Birowo, former director of Puskesmas Kalasan and private general practitioner, called Sleman "the best health district nationally" (personal communication, August 4, 2011). Employees of Sleman Health Office and several Puskesmas employees, most of whom were physicians, boasted about their strong program of community empowerment, repeatedly emphasizing how proud they were of their public health initiatives.

Volunteer support for Sleman Regency's health initiatives also indicates that the district's program of community empowerment has been a success. Sleman's strong base of over 8,000 health volunteers at Posyandu alone suggests that community members value their health programs and recognize the importance of local participation in promoting healthy behaviors and reducing disease (Tunggul Birowow, personal communication, August 4, 2011). Of course, these positive perspectives must be viewed with caution because they do not entirely represent the opinions of local community members impacted most by community empowerment and because Sleman Regency continues to face challenges with infectious diseases.

Sleman still confronts problems with dengue hemorrhagic fever (DHF); the number of DHF cases in Sleman District from 2002-2006 represented nearly 30% of total infections in Yogyakarta Province, with Bantul, Kulonprogo and Gunungkidul districts numbering only 19.1%, 6.9%, and 8.7% of cases, respectively. Researchers have criticized Sleman Regency's response to DHF, arguing that even though "the general patterns of DHF spatial and temporal distribution in Sleman District were known, public health practitioners and the community failed to make effective action to prevent DHF epidemics" (Kusnanto, 2006). Sleman has also faced a recent influx of leptospirosis cases, with 35 cases over a four-month span in 2011 (Concord Consulting, 2011). Although Sleman Regency continues to encounter public health challenges and may not excel in all areas of health, the district's program of community empowerment must still be considered an overall success. Given that the district has improved critical health indicators over time and demonstrates significant community satisfaction with public health, Sleman Regency's community empowerment initiative has likely resulted in improved health outcomes and reduced disease incidence.

Part III: Exporting Sleman Regency's program of "community empowerment"

Since Sleman Regency's programs of community empowerment have largely been successful, policymakers wonder if this model of public health is replicable in other Indonesian districts. Although Sleman does hold several notable advantages in its strong educational system, top-tier hospitals and prominent community leaders, this paper argues that Sleman's programs can be duplicated in other areas.

Education in Sleman Regency

Sleman Regency's public health office undoubtedly benefits from its local connection to a variety of medical and graduate schools. Home to Gadhah Mada University, the oldest and most prestigious national university, Sleman has such a large student population that it is informally known as "Student City." Three of Sleman's twenty-nine universities—Gadjah Mada University, Islamic University of Indonesia, and Muhammadiyah University—have medical schools which place students into internships toward benefiting the community (D. Nurulhayah, personal communication, August 3, 2011). Puskesmas Kalasan, for example, often has two to three midwifery students who help deliver babies and receive training for special cases (Tunggul Birowow, personal communication, August 4, 2011). Psychiatry students from Gadjah Mada University volunteer at Puskesmas Ngaglik I twice a week to provide basic mental health consultations as well as reproductive health and domestic violence counseling (Eko Relawati, personal communication, August 4, 2011). SHO also relies on its university connections to provide technical training for food preparation in the Department of Pharmacy, Food and Drink (Seksi Farmasi, Makanan, dan Minum). Gadjah Mada University collaborates with SHO to instruct applicants for food certification on basic food preparation and safety procedures (Gunanto, personal communication, August 3, 2011).

Even though most other districts in Indonesia do not have access to these academic resources, the key components of Sleman Regency's community empowerment initiative are nevertheless achievable. Although the presence of strong research programs and talented students can certainly improve the quality of care at local health centers, the key features (female-led non-profit organizations, neighborhood health coalitions, volunteer-based home inspections and Posyandu services) can induce success in areas deficient of academic advantages. Community empowerment, after all, is not premised on technical training; instead, it strives to harness the power of neighbors to help other neighbors.

Teaching hospitals

Sleman Regency has sixteen hospitals, with one class-A Gahjah Mada University-affiliated teaching hospital, Dr. Sardjito Hospital, or RS Dr. Sardjito (Cahyo Purnama, personal communication, August 3, 2011). RS Dr. Sardjito has a total of 750 beds and a large number of employees including resident physicians, nurses, medical technicians, nutritionists, pharmacists and physical therapists. It offers an extensive number of services, from nursing and home care services for the elderly to osteoporosis, diabetes mellitus and hypertension specialty clinics (Kementrian Kesehatan RSUP Dr. Sardjito Yogyakarta, 2010). RS Dr. Sardjito has several renowned and highly advanced medical clinics. Klinik Infertilitas Permata Hati, one of fourteen such clinics in Indonesia, is RS Dr. Sardjito's infertility treatment center. Permata Hati offers artificial insemination (IUI), simple IVF and intracytoplasmic sperm injection (ICSI) (Klinik Infertilitas Permata Hati, 2011). RS Dr. Sardjito also has a breast cancer clinic located in the radiology department. Dr. Lina Choridah describes the "integrated clinic" as one that comprises a pathologist, operating room, laboratory equipment and radiology staff. In addition, the clinic conducts breast cancer-related research; Dr. Lina Choridah's current research project involves comparing digital and analog mammograms (personal communication, August 4, 2011).

> With the appropriate leaders and volunteer base, these inequalities will not prevent Sleman Regency's community empowerment programs from being successful in other districts.

However, while top-tier teaching hospitals are essential for providing advanced medical care for rare conditions, most patients at teaching hospitals receive care for common health conditions such as stroke, pneumonia and heart disease. One article in the Milbank Quarterly suggests that for these routine health problems, "teaching hospitals may offer a lower quality of care than do nonteaching hospitals, particularly if the substantial involvement of inexperienced trainees and the attenuated role of senior physicians in teaching hospitals results in more fragmented and less appropriate care" (Ayanian, J. & Weissmann, J., 2001). Moreover, since the primary point of contact for patients in the Indonesian healthcare system is the government-run Puskesmas, the most critically used public health services will be accessible in all districts. As with academic institutions, a lack of university-affiliated hospitals should not significantly impact the core programs of community empowerment, which rely on low-tech home inspections and the support of lay volunteers. Programs like Ikatan Isteri Dokter, which mobilizes groups of women to receive yearly mammograms at RS Dr. Sardjito, would of course not be technically feasible in areas without advanced medical equipment. However, similar programs could be formed in other districts that utilize less expensive alternatives, such as group breast self-examinations or ultrasounds (Gonzaga, 2010).

Local community leaders

Sleman Regency benefits from prominent local community figures who promote public health goals. Dr. Nurulhayah, Dr. Cahyo Purnama, Dr. Novita Krisnaini and Dr. Tunggul Birowo are part of a talented staff that has been an essential force in developing Sleman Regency's unique public health programs that involve volunteers and the broader community in health activities. Dr. Novita Krisnaini credits the current Sultan of Yogyakarta Province, Hamengkubuwono X, for encouraging local Muslims to embrace immunization; he further explained that health officials "rely on the community leaders of individual religious groups to encourage people to get immunized" (Cahyo Purnama, personal communication, August 3, 2011). In addition to politicians and health officials, Sleman Regency's community empowerment initiatives depend on women who play a critical role in urging their neighbors and friends to value public health (D. Nurulhayah, personal communication, August 3, 2011).

These aspects of the program ensure that community empowerment is more transferable to other districts. Cities that are considering implementing Sleman Regency's program of community empowerment can use politicians, clergy and celebrities to cultivate local support for healthy behaviors and disease eradication campaigns. Female-led groups run the gamut from Flower Aceh, a Banda Aceh organization that runs a human rights crisis center and economic empowerment group, to GERTAK, a program that utilizes art to raise awareness of intimate partner violence in East Nusa Tenggara. These remarkable women-led programs have demonstrated success across Indonesia, even in areas of extreme poverty and deep religious and political conflict (UNIFEM, 2001). Community-based public health initiatives led by women would likely achieve the same results.

Health disparities

A final challenge that could affect that transportability of Sleman Regency's community empowerment program is the incredible baseline disparities in health across Indonesia. As a UNICEF report notes, the infant mortality rate in East Nusa Tenggara is 57 per 1,000 live births, nearly 14 times that of Sleman Regency. Less than 10% of poor families in Papua have access to clean water, compared to two-thirds of poor families in Bali and Java (UNICEF, 2009). Disparities between rural and urban areas pervade other aspects of health care, including births attended by health personnel (63% versus 88%), measles immunizations in 1-year-old children (73% versus 82%), under-5 mortality rate (6% versus 3.8%), and healthy sanitation facilities (approximately 37% versus 62%) (World Health Organization, 2009a).

However, with the appropriate leaders and volunteer base, these inequalities will not prevent Sleman Regency's community empowerment programs from being successful in other districts. Because they rely on very little technology and can be implemented across a wide range of cultural, religious and socioeconomic backgrounds, Sleman Regency's program of community empowerment may actually be the most suitable program for addressing these vast inequalities in health across Indonesia.

Conclusion

Sleman Regency has developed innovative ways to expand upon national health directives by creating additional health indicators, forming health education campaigns, providing additional maternal health services and supporting local green initiatives. Sleman Regency's most impactful expansion, however, is its program of community empowerment, which relies on local leaders, female volunteers and community participation to promote healthy behaviors and increase disease control. These local initiatives encompass a wide range of duties: voluntary AIDS commissions, Posyandu volunteers, home inspections, women-led neighborhood leagues and non-profit health organizations. Although Sleman Regency enjoys a rich academic environment, advanced hospitals, strong community leaders and a relatively healthy population, its program of community empowerment is still likely transferable to other parts of Indonesia. Given that most of these programs rely on female volunteers and willing community leaders without the need for advanced technology, pharmaceuticals, or complex public health planning, community empowerment could be a viable option for improving health throughout Indonesia.

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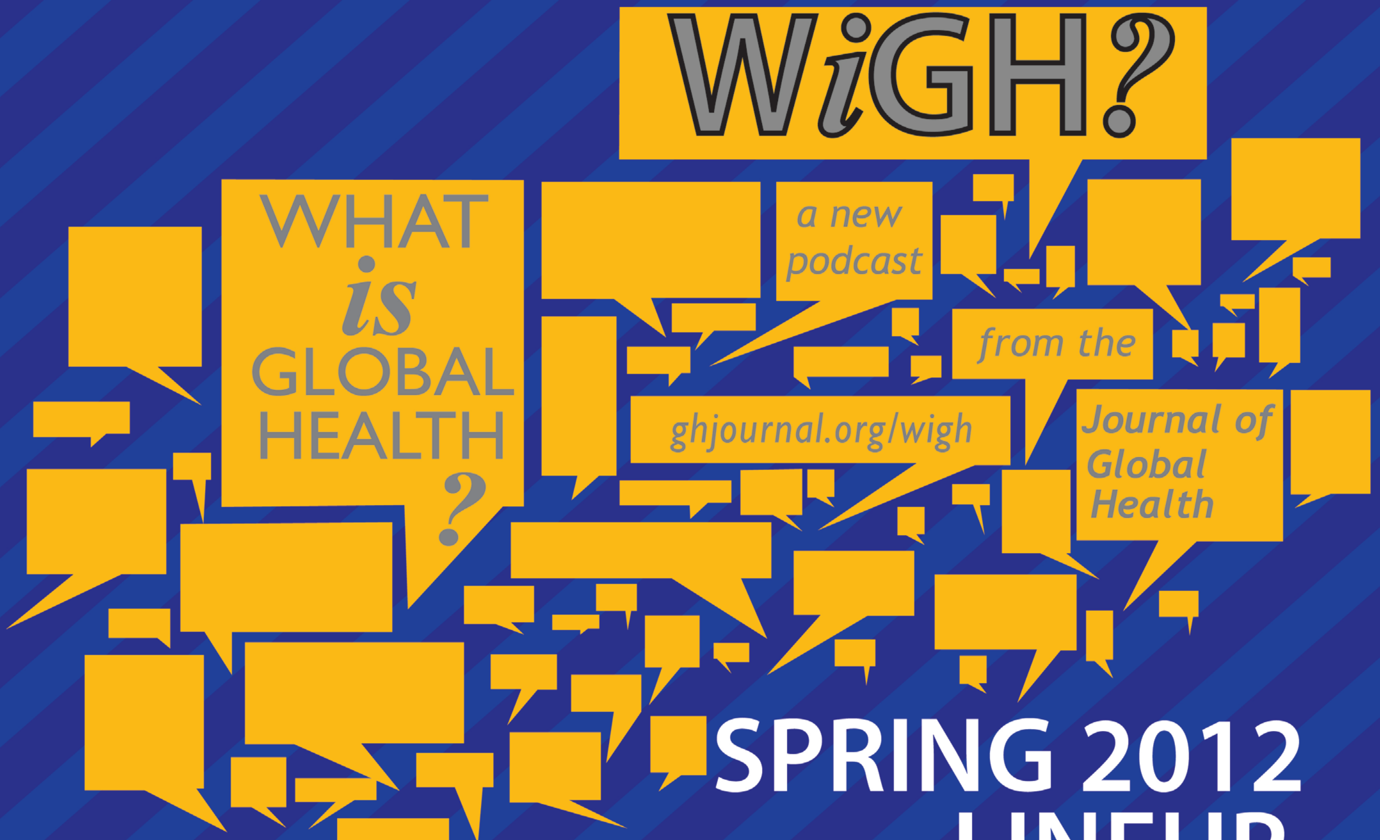

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Integrating traditional practices into allopathic medicine

An evidence-based policy to improve quality of care in the United States

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Abstract

Although the popularity and demand for traditional medicine (TM) in Western countries has increased dramatically in the last several decades, allopathic healthcare practitioners in developed nations have largely avoided TM due to a lack of scientific evidence and controlled clinical trials supporting it. Unfortunately, the Western medical community's aversion to TM has resulted in a lack of appreciation for its many supposed benefits and is representative of a challenge towards maintaining a high quality of care. The failure to recognize and integrate TM into modern medical practices can lead to adverse effects, such as dangerous drug-herb interactions due to the mixing of incompatible herbs and pharmaceuticals, and a deterioration of the patient-centered model of care due to the lack of TM communication between patients and practitioners. This paper seeks to investigate the current state of traditional medicine in American health care and policy, examine the factors that drive miscommunication between patients and practitioners and introduce solutions that can be implemented to address existing challenges. In addition, this paper highlights successful examples of integration of traditional and modern medicine systems in developing countries, which can serve as a model for the United States.

Introduction

The World Health Organization (WHO) defines traditional medicine (TM) as the "sum total of knowledge, skills, and practices" of unique cultural origin that can be used to treat disease and illness and improve physical and mental wellness (WHO, 2005). This mode of classification is used interchangeably with complementary and alternative medicine (CAM), a term used to denote TM in countries that do not recognize or incorporate TM into their formal health care systems, and includes dietary supplements such as natural compound-based vitamins, herbal medicines such as gingko and ginseng and therapeutic practices such as yoga, acupuncture and tai chi (WHO, 2005). Even today, TM/CAM have remained popular alternatives to modern medicine due to their many benefits, including a relative lack of short-term side effects, low long-term toxicity, and a culturally accepted general effectiveness (Qian, 2007; WHO, 1986).

TM/CAM has traditionally played an important role in the health care systems of many African and Asiatic countries, where an estimated 80% of the population utilize some form of alternative therapy for primary care (WHO, 2008). In these regions, the importance of TM/CAM as an option for treating disease is widely recognized by citizens and medical practitioners alike (Zhang, 2000). However, in developed countries such as the United States, an alarming disconnect exists between TM/CAM use by the public and allopathic healthcare professionals. Despite estimates that one in three Americans consistently utilize TM/CAM in the United States either by seeking care from an alternative health care provider or by self-prescribing oral TM/CAM medications (Barnes, Powell-Griner, McFann & Nahin, 2004; van Tilburg et al., 2008), practitioners of modern allopathic medicine have remained wary of TM/CAM, citing concerns such as a lack of dialogue with TM/CAM practitioners and doubts about TM/CAM efficacy (White, Mitchell & Ernest, 1996). As a result, discussions of traditional remedies that the patient may be utilizing often do not surface in clinical encounters, which may lead to dangerous herb-drug interactions and adverse outcomes if an incompatible pharmaceutical drug is prescribed. Given these challenges to patient safety and quality of care, it is imperative that open communication between healthcare providers and patients be emphasized and promoted on a national level in the United States.

Prevalence of TM usage in Western countries

The popularity and demand for TM/CAM have skyrocketed in Western countries such as the United States, France, Germany and Australia over the past two decades, largely due to the perceived advantages of these types of therapies over modern pharmaceutical options for treating some types of health problems (Qian, 2007). In France, Germany and Australia, 46-69% of the population reported having used some form of TM/CAM, (Fisher & Ward, 1994; Xue, Zhang, Lin & Story, 2007), and the demand for herbal remedies has caused annual revenues to reach five billion USD in Western Europe alone (WHO, 2008). In the United States, public health records in combination with data from the Center for Disease Control's (CDC) 2002 National Health Survey revealed a similar trend, in which 65-70% of Americans reported having used at least one form of alternative therapy in their lifetime (Barnes, Powell-Griner, McFann & Nahin, 2004). In addition, the percentage of TM/CAM patients in the United States has been steadily rising over the past several decades, with the number of annual visits to alternative therapy providers exceeding the number of visits to all primary care physicians in 1990 (Eisenberg et al., 2003). Indeed, this trend of increasing TM/CAM use accelerated dramatically between 2002 and 2007. During this period, CAM use increased across all major racial and ethnic groups: 18.1% among whites, 17.2% among Asians, 6.6% among blacks and 1% among Hispanics (Su, 2011). This trend suggests that TM/CAM is likely to exert considerable influence on the current and future state of health care.

Lack of open TM/CAM dialogue between doctors and patients: an opportunity for intervention

Despite the surge in public interest in TM/CAM therapy, Western countries have largely failed to integrate TM/CAM into recognized health care programs (Chi, 1994). This failure stems in part from the lack of regulatory procedures and standardization measures for approving TM/CAM treatments, partially due to the lack of clinical trials. However, another important factor is the lack of open communication between allopathic physicians and their patients. Data from the United States in particular indicate that the lack of dialogue between health care providers and patients concerning TM/CAM usage has become an increasingly complex problem. The study, conducted by the American Association of Retired Persons (AARP) and the National Center for Complementary and Alternative Medicine (NCCAM) at the National Institutes of Health (NIH), showed that over 40% of patients do not disclose personal TM/CAM usage to their health care providers. Even if alternative medicine is discussed at a medical appointment, it is twice as likely to be brought up by the patient as by their health care provider (NIH, 2011). Such findings suggest that the burden of determining the right treatment and exploring alternative medicine options rests with patients, who often lack the relevant medical knowledge and expertise to make safe, fully informed decisions.

> The failure to recognize Traditional Medicine practices alongside allopathic medicine in the doctor-patient relationship can harbor dangerous consequences.

The AARP and NCCAM put forth two reasons for the observed lack of communication between patients and physicians regarding TM/CAM. The first reason, which was observed in 42% of cases, attributes the lack of dialogue to the failure of health care providers to ask appropriate questions or facilitate comprehensive doctor-patient dialogue (NIH, 2011). Other studies have confirmed this finding, with evidence that practitioners asked one or more questions about alternative therapies in only 3.4% of patient encounters (Sleath, Rubin, Campbell, Gwyther & Clark, 2004). The second contributing factor to the lack of communication, which represents 30% of existing cases, suggests that patients may harbor feelings of hesitancy as to whether or not to bring up the topic of TM/CAM usage during a medical appointment (NIH, 2011). One study found that only 2% of patients asked their physicians one or more questions about alternative therapies, suggesting that patients expected the clinician to bring up the topic of alternative medicine usage, tended to anticipate negative responses from their physicians and/or detected an impression of disinterest (Adler & Fosket, 1999; Frenkel & Borkan, 2003). This assumption is troubling, as evidence points to the tendency of clinicians to interpret the low levels of communication about TM/CAM as a sign of low use among patients. This supposition, when combined with the low level of understanding of TM/CAM treatments among Western allopathic physicians, appears to limit the discussion of TM/CAM in the brief clinical encounter, a detriment to patient well-being (Shelley, Sussman, Williams, Segal, & Crabtree, 2009).

The dangers of ignoring TM/CAM usage

The failure to recognize TM/CAM practices alongside allopathic medicine in the doctor-patient relationship can lead to dangerous consequences, including toxic drug-herb interactions and a failure to administer the most effective treatments. During an allopathic medical visit, doctors routinely ask patients to provide a list of drugs they are currently taking as a cautionary step to prevent harmful drug interactions in the case that additional medication is prescribed. While herbal medication is derived from natural sources, dangerous herb-drug interactions have been observed when TM/CAM remedies are taken concurrently with pharmaceutical prescriptions. As a result, TM/CAM usage may cause adverse outcomes for patients who do not disclose their TM/CAM-related medical history to their physician (Langmead & Rampton, 2001; Miller, 1998; D'Arcy, 1991). For example, herbal medicines such as psyllium and aloe sap, which increase gastrointestinal transit and absorption and are commonly taken as laxatives, are likely to exert downstream gastrointestinal side effects or alter the pharmacokinetics of oral prescriptions when administered together with certain pharmaceutical drugs (Langmead & Rampton, 2001; Ernst, 1999). St. John's Wort, a plant used to treat depression and anxiety, can limit the effectiveness of common prescription drugs such as synthetic anti-depressants and birth control pills when taken concurrently (NIH, 2007). Research has revealed numerous other adverse effects of various herb-drug interactions such as bleeding, induction of mania, increased risk of hypertension, mild serotonin syndrome and decreased drug absorption (reviewed in Fugh-Berman, 2000). Moreover, in cases of chronic degenerative diseases that require on-going treatment, such as cancer and diabetes, the potential for adverse outcomes from herb-drug interactions can be further magnified.

In addition to increasing the risk of adverse outcomes, failure to acquire information on patient use of TM/CAM can lead to oversight of the most effective course of treatment. In some cases, herb-drug interactions can induce chemical synergy, providing a greater benefit to the patient if both treatments are used together rather than individually. For example, Alzheimer's disease is characterized by reduced activity of choline acetyltransferase, an enzyme critical in the biosynthesis of the neurotransmitter acetylcholine. Acetylcholine plays an important role in learning, memory and synaptic plasticity in the central nervous system. Standard modern therapies typically employ cholinesterase inhibitors to decrease the rate at which acetylcholine is broken down. However, a recent study found that in patients with Alzheimer's disease, the cognitive benefits of the combination of donepezil, a standard therapeutic cholinesterase inhibitor, and Kami-Untan-To, a traditional Japanese herbal medicine that upregulates choline acetyltransferase at the mRNA level, were greater than when either treatment alone was used (Maruyama et al., 2006). Without the integration of TM/CAM discussions into routine medical visits, such a beneficial herb-drug synergy would not be utilized.

Encouraging collaboration and integration: a proposal to integrate TM/CAM into modern American health care practices

Given the dramatic increase in TM/CAM usage by the American public over the past several decades, it is imperative that these alternative therapies are accounted for and integrated into the standard clinical encounter. Unfortunately, major barriers to the integration of TM/CAM into American medicine include the lack of clinical trials for many TM/CAM therapies, the absence of information about the active ingredients and composition of an herbal treatment and the lack of strict regulation for many alternative medicine products. Here is proposed a three-step model that addresses these limitations in order to establish more open communication among physicians and to effectively integrate TM/CAM into modern medicine in the United States.

Initiating the TM/CAM discussion in the context of the medical visit

Traditionally, strategies designed to increase communication with patients about TM/CAM have recommended that clinicians acquire wider knowledge about specific TM/CAM therapies (Shelley, Sussman, Williams, Segal, & Crabtree, 2009). However, evidence suggests that the primary limitation to the discussion of TM in the clinical encounter actually resides in the initiation of the conversation. Physicians do not have to be experts in alternative treatments nor do they need to receive formal homeopathic training. They simply need to show nonjudgmental interest, and candor regarding limited knowledge. Appropriate measures must be implemented to ensure that clinicians take the initiative to begin the discussion. A logical first step in this direction is implementation of a mandate by the American Medical Association (AMA) requiring certain questions about TM/CAM and other alternative therapies to be asked during the recommended annual physical examination.

Regulating the quality of patient experiences with TM/CAM products and practices

Once the physician has initiated the conversation and determined the patient's interest in engaging in TM/CAM practices, the physician must determine whether the patient prefers to, (a), engage solely in TM/CAM medications and practices or, (b), integrate both allopathic medicine and TM/CAM into his or her course of care. In the case of the former, it is imperative that the physician provides the patient with safe, trusted and reliable access to TM/CAM therapies. Currently, two major threats to patient safety are the lack of proven evidence of some alternative therapies, and the large quantity of counterfeit or adulterated TM/CAM products in the international drug market (WHO, 2008). Indeed, scientific evidence demonstrates that there is only a 50% probability of selecting an authentic TM/CAM product containing both the correct species and correct plant component at the indicated dosage (Betz, Fisher, Saldanha & Coates, 2007). Since there currently exist no regulatory bodies in the United States that ensure the efficacy and safety of TM/CAM products, patients often rely on false and inconsistent claims to make their decisions. We propose three key recommendations to address this issue. First, measures should be taken to establish a regulatory body that oversees the quality assurance of TM/CAM products on the market and the training and licensing of TM/CAM practitioners. Second, rigorous clinical trials should be undertaken to ensure that only effective TM/CAM therapies that adhere to strict standards of patient safety are available. Finally, physicians should develop their own list of trusted TM/CAM providers in their community and inform patients interested in procuring TM/CAM treatment of these providers. Generating provider lists would not only benefit patient safety but also encourage physicians to communicate and collaborate with TM/CAM practitioners.

In the case in which patients prefer to integrate both modern and traditional medicine into their treatment plans, allopathic physicians should take the initiative to gain some knowledge of TM/CAM treatments so that herb-drug combinations can be prescribed without the risk of dangerous side-effects. Increased government funding for research in these areas and a requirement by the AMA to include TM/CAM as part of the required medical school curriculum will help ensure that this knowledge is more readily available. In the long-term, truly effective patient-centered care requires the formal integration of TM/CAM and alternative medicine practitioners into primary care, with the support of requisite scientific evidence and clinical experience (Frenkel & Borkan, 2003).

Formally integrating TM practitioners into primary care

To date, while some studies explore the role of TM practitioners in the primary health care team, the question of how to systematically integrate alternative therapies into formal health care systems has yet to be addressed (Ben-Arye, Scharf & Frenkel 2007). Currently, there exist documented frameworks that can provide the basis for regulatory guidelines in the establishment of this model. In the United States, the Federation of State Medical Boards developed an outline for integrating TM/CAM into conventional health care systems, including guidelines for educating and regulating alternative therapy practitioners, initiating certifications and licensures for state-regulated alternative therapy health care practitioners, using approved TM/CAM products in medical practice and organizing the integration of accepted standards of care with legitimate medical uses of alternative medicine (New Model Guidelines, 2002). Similar frameworks have been proposed in Great Britain, although they are narrower in scope and do not provide guidelines for ensuring TM/CAM efficacy and safety, selecting and educating TM/CAM practitioners or facilitating dialogue between patients and providers (Frenkel & Borkan, 2003; British Medical Association, 2009). Unfortunately, there exist several barriers to the implementation of these guidelines, including organization, cost and the exclusion of TM/CAM from insurance coverage, which forces patients to bear the brunt of the financial burden. The removal of these barriers requires a coordinated national effort among government, physicians and insurance companies. For example, the establishment of a national task force dedicated to overseeing the integration of TM/CAM into primary care, and the requirement for insurers to include licensed TM/CAM healthcare providers in their reimbursement policies, would go a long way towards the creation of a unified, and more effective, healthcare system.

> By following the lead of developing nations, the United States can take steps towards improving the quality of American primary care.

The above proposals align directly with the long-term vision of the WHO on the future of TM/CAM. Overall, the WHO encourages countries to establish national regulations to control the quality of herbal products and to license TM/CAM practices to ensure patient safety (United Nations, 2009). To this end, the WHO has completed the first steps in identifying the challenges of incorporating TM/CAM into formal healthcare systems, such as, (1), maintaining international diversity of treatment options; (2), crafting national policy and recognition to support and integrate traditional medicine into national health care systems; (3), promoting patient safety by upgrading the skills and knowledge of traditional medicine providers; (4), acknowledging TM/CAM as part of primary health care to increase access to care and preserve knowledge and resources; and (5), ensuring the safety, effectiveness, and quality of TM/CAM products (WHO, 2008). The establishment of doctor-patient communication regarding TM/CAM treatment is an interdisciplinary, collaborative effort that would address steps 1-4, four of the five pressing challenges regarding TM/CAM as recognized by the WHO.

Valuable lessons on integrating TM with allopathic medicine from developing countries

According to data collected on the global relationships between TM/CAM and allopathic medicine, many developing countries have taken steps towards meeting the WHO goals of integrating the two practices. For instance, the Chinese government, which instituted an integrated allopathic-homeopathic health system in the 1950s, has mandated a national policy stipulating regulatory measures for TM practice, products and research, in addition to an insurance policy that covers both traditional and modern medicine (WHO, 2005; UN, 2009). Governments of African countries including Tanzania, Indonesia and Ghana have also enacted national laws to recognize traditional practitioners, including the establishment of a set of minimum criteria to approve physicians who wish to practice TM/CAM (WHO, 2008).

Recognized integration of TM/CAM treatment into formal health care systems has brought forth many unanticipated benefits in patient safety and quality of care, most of which arise from the improved standardization, cataloging and control that regulatory bodies are able to exert over drug manufacturing and regulation. For example, many Chinese laboratories that manufacture TM/CAM products are equipped with state of the art ultra-performance liquid chromatography systems that are able to precisely examine individual batches of product pre-distribution in a high-throughput manner, ensuring tight quality control on TM/CAM products available in the market (Cordell, 2011). In addition, government recognition of TM/CAM has led to significant advances in drug discovery, particularly through collaborations that apply local resources and indigenous knowledge to the design of new drugs for global diseases (Cordell, 2011). A number of conventional pharmaceutical drugs have been derived from plants used in TM/CAM, such as digoxin from foxgloves, aspirin from willow-bark, quinine from cinchona-bark and morphine from the opium poppy. More recently, the potent anti-malarial drug artemisinin was developed from the isolation of an extract from the Artemisia annua plant, a product that has been used in traditional Chinese medicine for thousands of years (Klayman, 1985).

Despite the many benefits of integrating TM/CAM with modern medical practices, concerns still exist regarding the transferability of TM/CAM practices due to the wide range of social, economic and cultural differences between developed and developing nations. In particular, the United States and many other Western countries may lack the cultural support for TM/CAM typically rooted in hundreds of years of history, as observed in places such as China. In addition, the governments of democratic nations lack the Chinese government's ability to enact sweeping mandates that ensure rapid TM/CAM integration with allopathic medicine. However, with the implementation of rigorous clinical trials, regulatory bodies and government oversight, the United States can enact measures to ensure that TM/CAM is effectively and safely utilized even without a firmly established cultural base.

Conclusion

While modernization often rests on the paradigm that developed countries provide aid to the rest of the world, Western nations such as the United States can learn from the practices of developing countries to address the challenges that arise from the intersection of TM/CAM and modern medicine. Given the widespread popularity of TM/CAM among Americans, reviewing the successful integration efforts of healthcare systems such as those of China and African nations is essential. By following the lead of developing nations, the United States can take steps towards improving the quality of American primary care through the integration of homeopathic and allopathic treatment.

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Field Notes

Purity, balance and wellness among the Swahili of Lamu, Kenya

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Introduction

The Swahili of Lamu Island, Kenya, are part of a larger Swahili nation that extends along the East African coast, from northern Mozambique to southern Somalia, and includes archipelagos (Lamu, Zanzibar, Comoros) in the adjacent Indian Ocean. As the Swahili established themselves into an important economic niche as the middlemen of trade between East Africans and visitors from across the Indian Ocean over the centuries, the Swahili language became the primary trade language of East Africa. Since hundreds of African ethnic groups reside in this region, each with a unique native language, speaking Swahili as a first language is both a distinguishing and unifying feature. Through close commercial interaction, intermarriage with newcomers—be they Africans or immigrants from overseas—and conversion to Islam, the Swahili have continuously integrated new philosophies and practices into their existing cosmology. Swahili concepts of health and illness exist within a complex framework constantly re-shaped by intersecting and competing notions of the physical body and the mind, the capacity to engage the supernatural and by traditional Islamic beliefs. Here we illustrate some of the ways in which the Swahili of Lamu seek purity, balance and wellness, particularly in their method of achieving psychological well-being. We share insights based on ethnographic research that Gearhart, a cultural anthropologist, has conducted in Lamu over the past decade and experiences that Abdulrehman, a Lamu native and nurse practitioner, has had with fellow residents and patients. Our hope is that these insights will promote the delivery of culturally appropriate, effective healthcare by medical professionals interested in working with the Swahili of Lamu and peoples similar to them.


Munib Abdulrehman

The Swahili of Lamu sustain a host of ritual practices that other Swahili communities in coastal East Africa have given up over the past two decades in favor of the popular Islamic reform movement known as Halali Sunna (Beckerleg, 1994; Purpura, 2000). The Lamu community, known as a vestige of traditional Swahili culture especially since the town's designation as a UNESCO World Heritage Site in 2001, has historically dealt with such movements by retaining customs believed to be meaningful and beneficial while discarding those that are no longer useful (Gearhart, 2005). The perpetual re-evaluation of beliefs and practices within Swahili cosmology is an enduring characteristic of Lamu society. This is particularly true of the strategies used among Swahili healers today.

The Swahili have traditionally cultivated a complex repertoire of healing strategies to employ when afflicted with psychological distress. "Unlike many of their coastal neighbors, the Swahili of Lamu do not speak of being victims of witchcraft but rather of being cursed by a malicious force that can be translated as 'the evil eye,' known to be directed by human and/or supernatural enemies" (Gearhart & Abdulrehman, forthcoming). In Lamu, healing strategies utilize a pre-Islamic focus on subduing spirits of the dead (mizimu) and possession spirits (pepo), appeasing malevolent nature spirits (vibwengo) and preparing antidotes against hexes (roga), along with Islamic prescriptions for combating evil spirits (mashetani) and calling on good spirits (marohani) that are mentioned in the Qur'an (the Islamic Holy Book). Treatment therapies involving medicines usually prescribed by herbalists are paired with rituals aimed at invoking the power of God to purify and heal (Parkin, 2000; Pouwels, 1987; Gearhart & Abdulrehman, forthcoming).

Since the Swahili believe that those in a pure spiritual state are able to deflect malice more effectively than those in a state of impurity, victims of enmity caused by jealousy (hasidi) or a curse (fitna) seek spiritual protection. If a person or family experiences a series of illnesses or other calamities, a Muslim scholar (mwalim) is often called on to perform a purification ritual known as kuzungua. This ritual entails the recitation of specific Qur'anic verses (such as al qursi and yasin) while burning Frankincense (ubani), which is believed to summon angels to dispose of any malevolent forces at work in the household (El-Zein, 1974; Frankl, 1993).

The people of Lamu maintain the Swahili belief in the medicinal power of Qur'anic scripture, employing it for example, when a mwalim prepares an amulet (hirizi) containing protective Qur'anic verses that can be worn around the neck or arm, or stuffed into the rafters of a house. A mwalim may also soak a piece of paper, on which he has written a Qur'anic verse in saffron, in a glass of water which is then drunk by the patient as a healing potion. Since the Swahili use saffron particularly for psychological ailments, with its usage in treating depression recorded in ancient Indian Sanskrit texts, clinical trials have been conducted on its effectiveness. These trials appear to confirm that saffron is in fact a helpful depression treatment (Noorbala et al., 2005; Moshiri et al., 2006).

> It is critical that bio-medical practitioners avoid viewing Swahili patients through a Eurocentric lens.

Another common purification practice among the Swahili involves giving sadaka (charity), usually in the form of food, to the less privileged. As an act of nadiri (a pact with God), charity is given after a person has been cured in order to complete a bargain made with God for good health (Gearhart, 2000). The Islamic mandate to give 2.5% of one's wealth to charity annually (zakat) in order to purify one's wealth is emphasized by the Swahili, who understand charity as a method by which one becomes "right with God"—a state that provides optimal spiritual protection against harmful entities of all kinds.

A fundamental concept that underscores the Swahili understanding of wellness is the belief that people can be possessed by supernatural spirits (pepo), which can be good or bad, or sometimes both (Giles, 1999). People become possessed by spirits through several means. Kusukumizwa is a process of spirit possession that occurs when a person is cursed with a bad spirit by another person. Attracting a spirit can also happen by walking into or past an area where spirits are known to dwell. Another way of "catching a spirit" is by allowing oneself to become spiritually unclean and thereby being vulnerable to spirit possession. Being in a state of spiritual uncleanliness is believed to occur after sexual intercourse, when a person does not pray five times per day, when one cheats others out of money and during menstruation.

Among the four case studies presented below, the first two offer intriguing anecdotes from Abdulrehman, a native of Lamu and acquainted with several people whose illnesses and behaviors have been associated with pepo. The latter two case studies are based on interviews Gearhart conducted as part of her ongoing research on Swahili ritual practices. Together, these vignettes illustrate some of the ways in which Swahili people think about and respond to physical, psychological and social maladies. The names of these people and some specific details that might identify them have been changed to preserve their anonymity. From the context of clinical practice, these case studies provide information that could facilitate the delivery of culturally-fitting care by bio-medical practitioners working among the Swahili people, and more specifically, the people of Lamu.

Case Studies

Salma

In her early forties, Salma happened to walk past an old, crumbling building in the oldest section of Lamu at noon. Due to the combination of being in a state of spiritual uncleanliness and walking past an area known to host spirits at high noon and at midnight, Salma attracted a pepo that plagued her for the next two years. The spirit caused Salma to have symptoms of ill physical health including headaches, fever, sweating, chills and nausea, as well as symptoms related to psychological imbalance such as frequent nightmares and episodes in which she spoke to herself incessantly. Salma participated in spirit possession dances meant to rid her of the spirit and visited a variety of healers who tried to determine the nature of the spirit, the spirit's motivation for possessing Salma and how to exorcise the spirit. Since identifying a spirit, satisfying its demands and successfully compelling it to leave the host's body is known to take a considerable amount of time, Salma was relieved to be rid of the spirit in just two years.

Zulfa

Zulfa is a fifty-year-old woman, possessed by a spirit when she was seven years old. The spirit, sent by her father's second wife to afflict her mother, mistakenly possessed Zulfa. When Zulfa was young, the spirit often made her physically ill, leaving her bed-ridden for long periods of time. As she grew older, Zulfa learned to listen carefully to the spirit's demands and that if she did not, mishap would befall her and those closest to her. For example, if the spirit told Zulfa to refrain from participating in a family outing but Zulfa disobeyed the command, calamity would strike—either someone in the family would become seriously ill, or there would be an unexplained accident. Zulfa came to recognize these calamities as the spirit's vengeance. As Zulfa came to understand the spirit's desires and how to satisfy them, she accepted the spirit and settled into a comfortable relationship with it, eventually giving it a nickname that came to be used affectionately by her whole family.

Over time, the spirit gave Zulfa insight into the future through dreams and visions. At first, Zulfa feared sharing the premonitions with anyone, but eventually, she became comfortable in revealing what she knew to close relatives, who became keenly interested in her abilities after several omens she foretold came to pass. Today, Zulfa is a well-respected oracle whose predictions are taken very seriously. She is often consulted to interpret the meaning of dreams.

Hamid

As a fifteen-year-old boy, Hamid was described by his mother as being "mixed up with bangi (marijuana) smokers and coming to no good," and was therefore sent to an Islamic herbalist (twabibu) to be cured of his obstinacy and disobedience of his mother's orders. In particular, Hamid's mother requested a potion that would satiate her son's desire for bangi and allow Hamid to accept her plan to relocate to another town and start a new life. The twabibu selected a verse from the Qur'an known as subu kuduse, known for helping change people's minds. Then he dipped a thin wooden stick into a small plastic container of bright orange, saffron-tainted water and used the mixture as an ink to write out the verse on a piece of paper. After writing the verse nine times, the twabibu folded the paper, slipped it into a glass of water and set it aside for Hamid to drink three hours later. The healer explained that if Hamid was not cured after drinking the potion the first time, he would be required to repeat the procedure with additional doses (three times per day) until the potion had the desired effect. The use of the numbers three and nine in these procedures reflects the Swahili belief that these numbers (in addition to seven and eleven) are powerful in Islam (Interview with Said Omar, October 23, 2003). This explains why patients in Lamu are often instructed to take medicines three times a day for three days, a course of action which combines the numbers three and nine.

Mani

After suffering from stomach pain for several days, Mani consulted a medical officer at a local clinic, was tested for parasites at the District Hospital and finally sought treatment for ulcers in Mombasa. It was to no avail. Mani came to the conclusion that his stomachache was the result of someone cursing him with the evil eye, after which he called a mwalim to his house to perform a ritual called kukata degi.

The mwalim performed the ritual by sprinkling drops of water into a small dish of oil and then cutting, with a knife, the "eyes" that had formed in the mixture to sever the power of the evil eye. Three small pieces of smoldering charcoal were then inserted into the oil and water mixture. Mani "ate" the smoke until the charcoal burned down into next to nothing. The mwalim then asked Mani to dip a finger into the liquid mixture and dab a bit on his tongue, on his forehead, on his stomach and on the soles of his feet, thus protecting his entire body from evil forces. Afterward, Mani was instructed to throw the remaining liquid outside, remembering not to look at it so that the bad energy collected in the mixture could not regain power over him. During the procedure, the mwalim ascertained that Mani's stomachache was indeed caused by the evil eye. Soon after the ritual, Mani reported that his stomach pain had subsided.

Discussion

These four case studies illustrate several important lessons for researchers and other bio-medical practitioners working with Swahili communities in coastal Kenya. Among the Swahili, the spirit world and the natural world are in constant interaction, and in their minds, spirits and other supernatural forces can have a positive or negative impact on a person's health and wellbeing, or both. While spirits can turn out to be the cause of physical and mental illness in some, others may be of some benefit to the host, providing special healing powers or making the host clairvoyant, as Zulfa's case illustrates. Though the afflictions caused by such spirits may be greater than the benefits, the release of the spirit may be psychologically challenging for the patient. Such ambiguity among patients must be handled carefully and in a culturally sensitive manner or the patient's overall wellbeing may suffer.

Bio-medical practitioners working with the Swahili should understand that although a patient is seeking their professional help, the patient may very well be seeking advice and/or treatment from a mwalim, a twabibu or other type of healer for the same symptoms. It is critical that bio-medical practitioners avoid viewing Swahili patients through a Eurocentric lens, as this will obfuscate both the diagnosis and the treatment plan. For example, many people describe hearing the voices of their spirits, which in bio-medical terms might lead to a diagnosis of schizophrenia and the prescription of anti-psychotropic drugs. If a patient such as Zulfa were suddenly unable to communicate with the spirit who helps her predict the future, her role in the community would be significantly diminished. Though Zulfa may adapt to her change in status over time and find a new niche to fill in the community, her sudden loss of status in her society could, on the other hand, cause her further psychological problems. Taking a holistic view and exploring the cultural framework within which the Swahili understand illness is key to providing the best care.

It is of utmost importance for bio-medical practitioners to create an environment in which a patient like Salma, Zulfa, Hamid or Mani would be comfortable describing his or her illness as he or she perceives them, enhancing the patient-practitioner relationship and allowing for better treatment. In a tight-knit community such as Lamu, where the majority of the population struggles daily for basic necessities (nutritious food, clean water, a healthy living environment), physical and mental illness are often directly linked to financial crisis, failed marriage, competition for scarce resources among extended family members and illness among close family members. Since the Swahili are savvy about what a "daktari" (a bio-medically trained practitioner) takes seriously, patients typically avoid discussing any supernatural influences on their health during consultation in a bio-medically-focused clinical setting. The influence of the Halali Sunna movement, which makes talk of spirits anti-Islamic, has stifled open discussion in some Lamu circles, especially among those known for their religious piety. Anyone practicing medicine in Lamu should be aware of the myriad ways in which the Swahili conceptualize physical, spiritual and mental health.

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Healthcare of the rural aged in Andhra Pradesh, India

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Introduction

In the summer of 2010, an elderly man in West Godhavari asked me, "Now that you've met us, how are you going to help?" I could sense the frustration in his voice as he described his previous encounters with health care workers whose promises to alleviate his unaffordable monthly bills remained unfulfilled. He explained to me that as he grew older, he developed hypertension and diabetes requiring continuous treatment due to the chronic nature of both conditions. The cumulative cost of these medications put a financial strain on his family. This man was the first of many elderly villagers to voice such complaints to me.

In a little over four weeks, I traveled to ten villages in Andhra Pradesh (AP), India, with a team of CARE Byrraju employees. As a research intern for CARE, a non-profit organization (NPO), I formally interviewed ten aged villagers, their caregivers and the CARE Byrraju village doctors and nurses in each of six different villages. I also informally spoke with ten elderly individuals in each of the four other villages for a total of 100 interactions. My primary aim was to elucidate the most prevalent health problems and barriers to care that the elderly face in rural AP.

The motivations for my project were the rapid demographic changes seen across India, the inability or reluctance of aged individuals to seek regular medical assistance and the absence of programs targeting elderly care. Due to technological, medical and economic advances in India, the fertility rate has declined substantially from 5.5 children per woman in 1970 to four children per woman in 2009, and the life expectancy has improved significantly from 49 years in 1970 to 64 in 2009 (India, 2010). As a result, the aged population, defined as ages 60 and above, has increased to roughly 7.5% of the total Indian population as of 2001. Recent sociological changes, namely the increase in female employment and migration of young workers, have led to the disintegration of the joint family, an arrangement in which aged individuals typically live with their son and his family. This disruption of support systems, in combination with issues of immobility and increased dependence, particularly in rural settings, has exacerbated the poor health status of the growing elderly population (Pandey, 2009). Because the elderly often are unable to obtain paid work, most remain entrenched in poverty.

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My first introduction to the abject conditions in which some aged individuals live came through a woman whom, interestingly enough, I did not and could not interview.

This particular individual lived in a dilapidated straw-roofed house that hid in the outskirts of Mahadevapatnam village. Mud had swallowed what had once been a path to the main dirt road. The stench of absolute poverty—a combination of cow manure, unwashed clothes and despondence—was particularly pungent here. She sat amidst this squalor, with her back resting against a stained wall. Though we made considerable noise as we approached her, she made no acknowledgement of our presence.

"She is deaf," the CARE Byrraju coordinator responded upon seeing my confused expression. "And blind," he added. "You cannot interview her—she is alone." It always surprised me how the health center coordinators knew nearly everyone in each village, even those who were not CARE Byrraju patients. According to her neighbors, the approximately 65-year-old widow (her exact age was unknown) was uneducated and unemployed. She spent the majority of her time in the solitary confinement prescribed by her age and socioeconomic status. Every day, she leaned against the same cracked wall, waiting for her son to return from his agricultural labor. She lived with no other family members and had no friends. Given her inability to communicate, she was, as my guide said, completely and utterly alone – at least until nightfall, when her son returned from work.

Background

Many governmental and non-governmental bodies are aware of stories similar to this one and have attempted to mitigate the struggles of the rural elderly. The state of Andhra Pradesh has launched several initiatives aiming to supplement the National Rural Health Mission of India, which has established basic rural public health infrastructure throughout the country. For example, the state government established and effectively implemented Aarogyasri Health Insurance, for which any family with a "Below Poverty Line" (BPL) card may qualify (Aarogyasri, 2011). The scheme provides coverage of up to Rs. 2.0 lakhs (USD 4,000) for any heart, kidney, cancer, brain or accident-related ailment (FAQ, 2011). This program is particularly important because a primary barrier to health care access in rural regions is affordability. In fact, as of 2004, roughly 26.5% of rural households throughout India were designated "BPL" (Public Distribution, 2007).

Despite these recent improvements, the services offered remain insufficient to provide for the welfare of the entire rural community. The Indian Council of Medical Research (ICMR) reports that a large portion of the rural aged still do not have access to adequate healthcare due to insufficient medical supplies at government-funded Primary Health Centres (PHCs), lack of transportation or understaffing of medical personnel (Rao, 1990a). Several private agencies have established programs in an attempt to address these issues. The Health Management Research Institute (HMRI), for example, has pioneered many initiatives: 104 Advice, a helpline that provides medical information and counseling in English, Telugu and Hindi, 104 Mobile, a monthly fixed date health service for rural populations who reside more than three kilometers away from public health care providers that distributes free medicines every month (HMRI, 2010), Fixed Date Health Service, a monthly fixed date health service that complements existing public health systems and Telemedicine services. In order to facilitate transportation to health centers, GVK Emergency Management and Research Institute (EMRI) has established a free emergency ambulance service (Emergency, 2010).

CARE Byrraju, the host organization for this project, similarly aims to facilitate rural development. In 2001, the Satyam group, a prominent Indian information technology company, established this NPO as the Byrraju Foundation in order "to create a world-class platform for sustainable rural transformation." The foundation pursued a multipronged approach, creating programs that address women's empowerment, economic growth, healthcare and education, among other issues. Throughout the years, the organization has provided services for nearly three million people within several districts of Andhra Pradesh: East Godavari, West Godavari, Krishna, Guntur, Ranga Reddy and Visakhapatnam (About Us, 2009). The foundation established five to ten health centers per village in 80 villages. In 2009, the Care Rural Health Mission absorbed these health centers and now aims to sustain and improve the efficiency with which they function. Under this new leadership, the initiative has been renamed CARE Byrraju.

Despite all of these efforts to extend care to rural populations, many individuals still do not access these services. It was only when I engaged with the elderly population of AP that I began to understand the challenges of providing care to this constituency and the complexity of the psychosocial and physical health problems they face.

The Inadequacy of Health Systems in Rural India

Sanjana was approximately 60 years old when I met her. She lived with her husband in a roofless house constructed primarily from mudbricks. They had attached giant blue plastic bags to the tops of the walls to create a pseudo-roof, but it was clear that this contraption would barely shelter them from the heavy rainfall of monsoon season. When we arrived at her doorstep, Sanjana cheerfully greeted us, set out three plastic chairs for us in her bedroom and offered us tea and biscuits. Only after we finally accepted the snacks did she launch into her story. Years ago, Sanjana's husband had suffered a stroke that left him with severe aphasia. He struggled to communicate his thoughts and, as a result, often expressed his anger by beating his wife. As she described her situation, I detected not despondence, but rather, acceptance. She could not blame her husband for his frustration. If she were in his place, would she not also feel overwhelming rage? But if Sanjana was taking care of her husband while enduring domestic violence, who was taking care of her? Despite her relentless joint pains, evidenced by her difficulties walking, Sanjana had no caregiver of her own. It became clear through my interactions with other families that this arrangement was fairly typical. Gender norms mandated that women provide care for their spouses, regardless of the state of their own health. Although both husband and wife suffered from hypertension, neither regularly purchased the necessary medications. They used to visit the Byrraju Foundation health centers until they were unable to afford the monthly fee of 25 rupees. To put this in perspective, 25 rupees are equal to approximately fifty cents.

Unfortunately, Sanjana was unaware of the services put in place to help people in exactly her situation. Certainly, as the ICMR reported, a large portion of the rural elderly cannot access the public health system due to insufficient medical supplies at PHCs, lack of transportation or understaffing of medical personnel (Rao, 1990b). My own surveys were consistent with these trends. Yet the faults of the existing public health system may be worsened by the target population's unfamiliarity with the services available to them. Many of the subjects I interviewed, including Sanjana, were completely unaware of the Aarogyasri Insurance program to which they were entitled and were ignorant of the HMRI and EMRI programs, only seeking medical attention when severe physical illness necessitated it.

While these issues theoretically may be mitigated through educational campaigns, several other deterrents may be more difficult to address. The aged in particular experience a substantial increase in physical, emotional and social vulnerabilities that inhibit health care access. Among the most prevalent physical ailments are chronic disease and immobility. Chronic diseases include visual handicaps, neurological illnesses, cardiovascular diseases, respiratory illnesses, dermatological ailments, gastrointestinal issues and diabetes (Rao, 1990c). These conditions may lead to further disability. Some symptoms, such as poor hearing, indigestion and insomnia, may not be indicative of ill health but rather of the general physical aging of the body (Eapen, 2004). Yet, as I learned through my interviews, many elderly individuals do not distinguish between symptoms of aging and symptoms of disease. Thus, they may either seek excessive care for natural signs of aging or may not recognize the need for medical attention when they fall ill. Existing health care systems often do not provide the counseling or treatment necessary to address these specific issues. This actual or perceived lack of services may discourage the aged from starting or continuing to utilize the medical care available to them.

The emotional and social repercussions of aging, particularly in the context of rural to urban migration and rapid demographic shift, may severely diminish overall quality of life. General weakness of the body, for example, may increase the risk of severe falls (Eapen, 2004). The aged often experience a decline in functional competence or tasks associated with daily living, such as eating, dressing and bathing. The resulting physical dependence on others can induce great psychological stress (Dasgupta, n.d.). This distress is exacerbated by common experiences of chronic verbal, financial and physical abuse and neglect from household members (Ingle & Nath, 2008). Furthermore, the disintegration of the joint family unit, in part caused by the recent increase in migratory labor and female employment, has increasingly isolated elderly individuals in the home (Pandey, 2009). This trend is supported by the Phase I outcomes of the ICMR report, which concluded from coded survey responses of aged subjects that a lack of family integration was widely observed among the rural aged (Venkoba, 1990a). This is particularly important, as regular social interactions may counteract the depressive effects of poverty and poor health (Rajkumar et al., 2009).

Unfortunately, as I quickly discovered, mental health is not considered a legitimate component of holistic health in India. In fact, psychiatric disorders remain so taboo that the local coordinators and nurses cautioned me against asking any questions relating to psychosocial behavior. When asked directly whether they frequently feel sad or depressed, many aged individuals claimed that they are satisfied and comfortable at home and, furthermore, that they are never lonely. However, although the majority of the subjects stated that they prefer spending time with others, many spend more than six hours per day alone. Of those who admitted that their physical or mental ailments prevent them from adequately socializing, one cited old age as the prime reason, one cited fatigue, two cited limited mobility, and one cited severe body pains. Furthermore, in conversation, several individuals claimed that their domestic disputes, financial troubles and limited socialization with others regularly upset them. In fact, the nurse in the village of Chinchinada told me that while she notices mental and psychological stress among patients, she is unable to provide care for these ailments. This information suggests that mental health is, indeed, a serious issue in these regions that should be addressed.

Conclusions and Recommendations

At the conclusion of my research project, I met with one of the leaders of the Byrraju Foundation to talk about the findings of my study. After I described the neglect of the elderly, their deteriorating physical and mental conditions, the gender-based roles that exacerbate the poor health of aged women and the absolute poverty in which many elderly individuals live, I was surprised to find him unmoved. "This is all very relevant and interesting," he said, "but at a certain point, I wonder if we really need to care about the elderly. They have already reached old age; why should we prolong their lives any further? In a country with high infant mortality rates, shouldn't we focus on ensuring the health of children rather than individuals who are close to the ends of their lives anyway?" I cannot deny that when I first was assigned this topic, I posed the same questions. But as I conducted the interviews, I realized that the fundamental view of health as a right prohibits the neglect of such a vulnerable population. Until my internship, I had been exposed to an India dramatically different from the one in which my interviewees lived—that of the urban upper class. From inside my grandfather's Fiat, I could observe the underprivileged, hand them pocket change to mitigate my pity and guilt and quickly roll up the window to return to my sheltered existence. My grandfather, unlike most of the villagers I met, could afford medical care and maintain an independent, prosperous life. He certainly experienced many health ailments and shared many of the psychosocial problems that the rural poor also face. However, in the context of poverty, the economic hardships facing the aging population are too crippling to ignore.

> The stench of absolute poverty—a combination of cow manure, unwashed clothes and despondence—was particularly pungent here.

As I proceeded to look for potential solutions to the problems I saw, I was drawn to the idea of home care nursing. This mode of delivery requires a nurse, which in this case would be a CARE Byrraju nurse (also known as the Village Coordinator, or VCO), to visit certain households and provide appropriate care. This program could be partially funded by the national government, given its increasing focus on the health care of the aged ("25%", 2012). As suggested by Rice (2006), objectives should include providing rehabilitative and palliative therapies, educating the patient and primary caregiver, increasing the patient's independence and reintegrating the patient into society. Old age homes may not be a feasible option, as cultural norms emphasize familial relations and the children's responsibility to care for their parents or elders even if, as my interviews showed, this attention is often inadequate.

Such a model has already been implemented in several populations. In the Republic of Korea, HelpAge, an NGO that supports elderly care, established a volunteer-based home care nursing program (Hyunse, 2007). This model was replicated in a series of pilot projects in other parts of Asia, including Indonesia, and has proven to be successful and cost-effective due to reduced infrastructural and training costs (Do-Le & Raharjo, 2002). The results of the impact study suggested the following general recommendations for development of similar projects: volunteers should be 21-55 years of age, must have experience with the aged and be trained in health care, home care and psychosocial issues. Such expertise would enable the nurses to simultaneously provide physical and emotional care. Additional volunteers may simply provide social support for the elderly, visiting them weekly to combat psychosocial issues and teaching them about the different health services available (Sabdono and Lansia, 2006).

Based on these interviews, I developed the following objectives and recommendations tailored to the villages I visited and the NPO with which I worked. The CARE Byrraju nurse should develop the skills necessary to address the general health issues experienced by the rural aged population. Specifically, the nurse should be equipped to administer general check-ups that address the health issues of the majority of the aged populations, such as common disabilities, hypertension and diabetes. In order to complete these tasks, the nurse should carry basic instruments (thermometers, stethoscopes, low-cost glucose meters, etc.) with them during the home visits.

Skills training should include:

- Provision of general check-ups, including routine measurement of blood pressure and blood glucose level.
- Full understanding of and ability to communicate the symptoms of specific diseases, including hypertension, diabetes, etc.
- Full understanding of and ability to communicate the function and side effects of drugs prescribed and administered.
- Communication of medication schedule, and the importance of adherence to treatment, to the patients and their caregivers.
- Recognition of symptoms of common mental illnesses (such as depression) and verbal/physical abuse.
- Basic ability to treat minor cases of mental illness or refer patient to a mental health specialist.

The frequency of the home visits should depend on the specific requests and ailments of the patients. In most cases, the nurse should visit the home of the patient twice a month to ensure the regular and proper administration of medicine. The frequency of home visits should be greater, up to once a week, for subjects who reside in hard-to-access homes or have extreme difficulty with mobility. The nurse should gather this data through identification of households to which a 60+ year old individual belongs. This information is available, in most cases, in the Panchayat population charts.

The nurse should obtain any relevant and available medical information for each individual in the program. Furthermore, if the nurse cannot diagnose or treat a health issue, she should present the case to a Byrraju Foundation doctor or an affiliated hospital (if the patient does not visit a regular doctor).

HelpAge India, a branch of HelpAge present in every state in India including Andhra Pradesh, may be contacted as a partner to establish a volunteer-based home care nursing program similar to the Korean model. This program may alleviate the health care issues that do not require medical expertise. The designated volunteer's repeated visits may decrease the social isolation that the aged often experience. This model addresses the concerns of the CARE Byrraju patients I had interviewed that the nurse will be unable to manage additional responsibilities. By delegating these tasks to non-medical volunteers, the nurse may focus on medically related issues. The volunteers should ideally reside in the same village as their designated patient and should visit the assigned home at least once a week.

Skills training for these non-medical volunteers should include:

- Assistance with household chores and personal care.
- Communication of the various health care options available (PHC, 104, 108, Byrraju Foundation, RMP Doctor, etc.) and the specific services offered by each provider.
- Full understanding of and ability to communicate the guidelines of Arogyasree Insurance and the benefits of health insurance.
- Communication of behavior through which particular symptoms may be alleviated and risk of ill-health may be decreased. Suggestions include:
    - o Reduction of potentially harmful physical activity (including household chores) and increase of beneficial physical activity (moderate exercise for those physically able to walk relatively easily or regular usage of a walking stick for those not able) to reduce joint pains.
    - o Fulfillment of nutritional needs through change in diet (if possible) or consumption of vitamins.

- Recognition of symptoms of mental illness (such as depression) and verbal/physical abuse.

CARE Byrraju nurses and employees should recruit these non-medical volunteers. A meeting should be held at the Byrraju Health Centre during which the volunteer's responsibilities are fully explained to those interested. Although the elderly are often neglected, respect for the aged remains a widely accepted value, and community engagement and solidarity seem to be foundational tenets in these villages. Because of these local values, it is likely that volunteers will be found; these workers will probably be young women because the gender dynamics in the region generally assign females household chores and males labor outside the home. The number of volunteers required will dramatically vary based on the size of each village. Based on the population charts provided by CARE Byrraju, the populations of the villages in West Godavari range from approximately 1,000 persons to 13,000 persons. Additionally, the required quantity of volunteers depends on the time commitments of each volunteer and the number of households that he or she is able to visit. In the worst case scenario, in which no volunteers are enlisted, compensation may be provided in the form of free CARE Byrraju health services or medicines in order to attract volunteers.

After volunteers commit to the program, the VCOs should invite the residents of the village to an information session. The presentation would include an explanation of the program and an outline of the services provided through this home care nurse model. The VCOs should also discuss basic preventative care measures, such as water treatment, nutrition and sanitation, and emphasize the importance of regular doctor or health care facility visits. Furthermore, normal symptoms of aging should be explained and contrasted with irregular symptoms that may be indicative of serious health problems. These ideas should be conveyed orally and visually through pictures, as the majority of the individuals I interviewed were illiterate or barely literate.

The volunteers should organize visits to the households of individuals aged 60 years and over within each village. They should specifically target districts that are far removed from health centers and individuals who may not have attended the nurse's information sessions. The nurse and volunteers should focus on reaching the female population, as women are often responsible for such household chores as cooking and cleaning, as well as care for the spouse. The volunteers should explain that they may provide assistance with these tasks and reduce the burden that such physically taxing activities may place on both the elderly individual and his or her caregiver, if one exists.

The majority of the subjects I interviewed stated that they would not be willing to pay any costs associated with a home care nurse program. The volunteer-based model is particularly appropriate because it allows for the establishment of the home care nursing program without the patient incurring costs. The costs associated with the extra tasks the nurse would perform and the training she and the volunteers must receive should also be evaluated. At the time of my project, I assumed that CARE Byrraju or another partnering NGO would absorb these costs. However, the recent shift in national health priorities suggests that the government may provide funding for such projects. The Ministry of Health and Family Welfare has revised the National Programme for the Healthcare of the Elderly in order to expand support to the rural aged. This program entails the training of post-graduates in geriatric medicine, the addition of weekly geriatric clinics to community and primary health centers and the availability of home care nurses for severely disabled individuals ("25%", 2012). A home care nurse program implemented through CARE Byrraju can supplement the ministry's initiatives, as the NPO's health centers reach populations that are isolated from or otherwise unable to access community and primary health centers. The nurses and volunteers may be trained through the programs developed by the government.

It is clear from my interactions with the patients and health care workers that designing interventions is difficult in resource-poor settings such as Andhra Pradesh, India. Nonetheless, I believe that such a model will be worth the costs. As shown by my interactions with the rural aged and the literature available on the subject, the needs of the elderly are often neglected. This is particularly worrisome given the rapidly increasing population of aged individuals in India and their increasing healthcare needs. Thus, I return to the elderly man's question, "What will you do to help?" I plan eventually to return to India to facilitate the strengthening of health systems and integration of services. In the meantime, I hope that CARE Byrraju will work with the ministry to effectively implement the recommendations provided in this paper.

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