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Natural Disasters and Armed Conflict

As the year 2015 comes to a close, we look back on the grave events that have transpired: the earthquake in Nepal, the ongoing migrant crisis in Europe, the terrorist attacks in Paris, and so many more. The consequences of incidents such as these are hardly ever contained within the borders of the affected countries. On the contrary, when natural disasters and international conflicts occur, it is as if the whole world feels the shock. And of course, with every instance of cataclysmic weather, outbreak of war, or horrifying accident that occurs, the lives of humans all over the world are put at risk. That is why we at the Journal of Global Health seek to highlight how these calamities have affected global health in the immediate past.

In volume V, Issue II of The Journal of Global Health, we discuss a variety of global health issues influenced by the common theme of natural disasters and armed conflict. In a paper on healthcare reconstruction in Yemen, we see how a violent period of civil war may have opened a "window of opportunity" for complete reformation of primary care practices. Another author examines how Daesh, also known as the Islamic State of Iraq and the Levant (ISIS or ISIL) has critically impaired healthcare infrastructure in the countries affected by the Syrian Civil War. A third paper looks at how the 2003 invasion of Iraq has since affected the quality of medical care to Iraqi citizens. In each article of this edition, regardless of the topic, we see how major incidents affect the health of human beings on a local and global scale.

Now finishing its fifth year of publication, JGH facilitates dialogue between students at the undergraduate and graduate level on interdisciplinary global health issues from a variety of academic, cultural and geographic perspectives. By fostering greater interdisciplinary dialogue and publishing exemplary student-led global health research, both on the topic of natural disasters and armed conflict as well as other topics, we hope that this issue exposes the next generation of health professionals and policy makers to the major health problems faced by communities all over the world. The archived issues of the *Journal of Global Health*, as well as episodes of our podcast, What is Global Health?, featuring interviews with a variety of academics, health professionals, and grassroots activists, can be found at www.ghjournal.org.

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The effectiveness of Urunana radio dramaedutainment in promoting safe pregnancy practices among rural couples in Rwanda

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'Urunana' is a 15-minute episodic radio drama that has been broadcast for 16 years on BBC, Radio 10 and Radio Rwanda. The program was designed to broadcast messages that educate Rwandans on current health issues, specifically, diseases associated with sexual reproduction in order to fight against HIV/AIDS. Additionally, the program transmits messages on family planning and maternal issues including safe pregnancy practices. However, no studies have been conducted to assess its effectiveness in the transmission of safe pregnancy practices among couples living in rural areas where maternal mortality and morbidity is high.

A descriptive cross sectional study was conducted to find out the effects of exposure to Urunana on the awareness of safe pregnancy practices among couples in Rwanda's rural areas. The study sought to determine the extent to which the program helped to increase the rural couples' knowledge and practice of birth preparedness, complication readiness and other safe pregnancy practices.

The study applied mixed methods of data collection and was conducted on 196 couples sampled from seven rural districts across Rwanda. 91.1 % (n=329) of couples reported having heard of Urunana radio drama. Furthermore, respondents reported they learned how to ensure safe pregnancy to varying degrees through listening to Urunana drama. Through the positive characters in Urunana's story lines, couples realized the importance of saving money for childbirth.

Rwanda has a functional primary health system that supports health promotion campaigns through mass media, community health workers and other approaches. Thus, there is a need to conduct a multivariate case study to determine exactly the effect of Urunana drama in promoting safe pregnancy practices among couples living in rural areas.

INTRODUCTION

Pregnancy is a critical period during which couples must adopt healthy practices to decrease the risks of morbidity and mortality of both the mother and the child.[1] To ensure a safe pregnancy, obstetricians advise pregnant women to develop a birth preparedness and complication-readiness plan.[2] In all stages of pregnancy, pregnant women, their partners, family members as well as the community should be aware of danger signs during pregnancy. Couples should also plan for a proper birth location and arrange for a skilled health provider who will deliver the baby. Lastly, couples should save money for transport and childbirth.[3]

Therefore, safe motherhood communication interventions should focus on the individual women, their family, husbands or partners, the community and the healthcare providers. These interventions must further equip them with information on birth preparedness and complication-readiness[4]. By intensifying maternal health campaigns, an estimated 289,000 maternal deaths would be prevented[5].

Various conventions working towards maternal death and morbidity reduction have taken place. In 1994, the International Conference on Population and Development held in Cairo agreed on steps for action regarding the transmission of information about safe pregnancy practices and safer birthing procedures.[6] Governments and their stakeholders were called upon to make greater and more effective use of the entertainment media, including radio and television soap operas, serial drama, folk theatre and other traditional media to encourage public discussion on topics related to maternal health promotion.[5, 7]

Following these recommendations, serial radio drama can be an effective way of reaching a wide audience in the most rural settings in Africa, which are strongly affected by maternal mortality and morbidity. Specifically, Rwanda registered a high maternal mortality ratio (1071 maternal deaths per 100,000 live births) between 1995 and 2000. The period just after the 1994 genocide against the Tutsi was marked by a high need for health promotion activities. Due to ignorance, low literacy, poverty and limited health infrastructure at the time, three-quarters of births in the rural areas were not assisted by a skilled attendant.8 Open discussion about sexual reproductive health issues was almost nonexistent. This was partially responsible for unwanted pregnancies, HIV/AIDS and other sexually transmitted diseases recorded at the time. In addition, the use of family planning was constrained by lack of information on the availability of contraceptive methods and misconceptions regarding side effects of modern family planning methods; hence health promotion campaigns using various approaches had to be designed to address the issue.[8]

De Fossard argues that radio brings exciting, entertaining dramas into the homes of millions of listeners.[9] Radio engages their emotions while informing them of new ideas and behaviors that can improve their lives and their communities. Edutainment radio serial dramas have a continuous plot that unfolds in sequential, episode-by-episode fashion. They are primarily designed to entertain but also convey educational messages as they unfold.[10] Edutainment serial drama has proven effective in changing the knowledge, attitudes, behavior and norms of people living in rural areas[9]

Drama can evoke emotions by creating role models and stimulating discussion among listeners and viewers.11 To address the high need of sexual and reproductive health information and discussion in Rwanda, Urunana Development Communication, a Rwandan nongovernmental organization specializing in health promotion chose drama as a reliable tool to reach rural areas. Rural areas were singled out because they are hard to reach and are seriously affected by maternal mortalities and morbidities.[12]

In Rwanda, the radio remains the most common form of media exposure with 68% of women and 87% of men reporting that they listen to the radio at least once a week.[8] A number of health messages covering topics like HIV/AIDS, malaria, tuberculosis, nutrition, hygiene and safe motherhood have been channeled through radio programs. Therefore, Urunana Development Communication started the Urunana serial edutainment drama in 1999. Unlike other radio dramas like "Museke Weya" (Twilight) and "Umurage Urukwiye" (Bright Future), "Urunana" (Hand in Hand) has solely focused on health promotion activities in Rwanda.

Urunana focuses on listeners' health and welfare concerns. Apart from dealing with themes of HIV/AIDS, the drama also addresses safe pregnancy practices, family planning, malaria and adolescent reproductive health. For the promotion of safe pregnancy practices among rural couples, Urunana transmits messages encouraging couples to attend antenatal sessions. It also airs messages that inform couples about danger signs during pregnancy and how they can intervene once they notice them. The program further passes messages about the benefits of planning for birth, embracing hygiene and birth spacing as well as about men's contribution to making pregnancy and childbirth healthy.

The program has been broadcasted for almost 16 years on BBC and Radio Rwanda. Some previous studies conducted about Urunana dealt with its role in the fight against malaria, the promotion of adolescent reproductive health and raising awareness on HIV/AIDS knowledge, attitudes and practices. Urunana is the most listened-to serial drama in Rwanda with a 75% listenership countrywide.[13] However, little is known about how effective this popular radio drama edutainment program has been in the promotion of maternal health in Rwanda. Furthermore, there is a gap in information about the extent to which Urunana helped to promote safe pregnancy practices among couples in rural areas of Rwanda. Collecting and analyzing data on the effectiveness of this program in the promotion of safe pregnancy practices among couples in Rwanda's rural areas would help revamp sensitization efforts to birth preparedness, complication readiness, nutrition and other safe practices and behaviors that rural couples should adopt during pregnancy. To respond to this gap, this study aimed to answer the following questions:

- To what extent has Urunana drama helped to increase the knowledge and practice of birth preparedness, complication readiness and safe pregnancy practices among couples living in rural Rwanda?
- How has Urunana radio drama influenced practices associated with safe pregnancy among couples living in rural Rwanda?

Participants' demographic characteristics

			Age group					Total
			15-20	21-30	31-30	41-49	50-59	
Sex	Male	Frequency	1	50	91	41	13	196
		Percentage	0.5%	25.5%	46.4%	20.9%	6.6%	100.0%
	Female	Frequency	2	91	73	29	1	196
		Percentage	1.0%	46.4%	37.2%	14.8%	0.5%	100.0%
Total		Frequency	3	141	164	70	14	392
		Percentage	8%	36.0%	41.8%	17.9%	3.6%	100.0%

Table 1: Age. As shown above, the highest concentration of survey participants was in the 31-40 age group for males and the 21-30 age group for females.

			Level of education				
			Have not gone to school	Have attended at least primary school	Vocational training	Secondary school	Total
Sex	Male	Frequency	23	152	7	14	196
		Percentage	11.7%	77.6%	3.6%	7.1%	100.0%
	Female	Frequency	20	151	14	11	196
		Percentage	10.2%	77.0%	7.1%	5.6%	100.0%
Total		Frequency	43	303	21	25	392
		Percentage	11%	77.3%	5.4%	6.4%	100%

Table 2 shows that most of the participants (n=303, 77.3%) attended at least primary school. The proportion of females with vocational training education was twice that of men in the same category. However, the percentage of men with a secondary school education was slightly higher than that of females (7.5% for males and 5.6% for females).

			Occupation of the respondents					
			Farmer	Trader	Private sector	Professional in public sector	Others	Total
Sex	Male	Frequency	148	12	5	5	26	196
		Percentage	75.5%	6.1%	2.6%	2.6%	13.3%	100%
	Female	Frequency	164	15	0	3	14	196
		Percentage	83.7%	7.7%	0%	1.5%	7.1%	100%
Total		Frequency	312	27	5	8	40	392
		Percentage	79.6%	6.9%	1.3%	2.0%	10.2%	100%

Table 3: Occupation of the respondents. With regard to the respondents' professions, the majority of the respondents (79.6%) earned their living from subsistence farming. 10.2% of participants earned their living through other professions, such as driving, masonry, fishing and sawing.

No. of children	Percentage	Number
1-3	63.2	241
4-6	31.5	120
7 and above	5.5	21

Table 4: Frequency and percentage of children couples have. The majority of respondents (n=241, 63.2%) had less than four children. On average, each respondent had 3.19 children.

METHODS

Study design

The study was a cross sectional analysis that applied both qualitative and quantitative methods to assess the extent to which Urunana informed couples on safe pregnancy practices in rural areas.

To control the study's confounding variables, the researcher focused on capturing couples' testimonies on how they practice safe pregnancy as a result of Urunana. Other sources of information like health messages from other mass media tools, health campaigns, antenatal sessions and information from community health workers in charge of maternal and child health were not given much focus.

Setting and sampling procedures

In this study, the term rural area refers to a remote or suburban area in the countryside. The rural area is also defined in terms of its proximity to roads, health facilities, schools and economic activities such as markets and business centers. Economic activities practiced in rural areas include farming, fishing, carpentry and small-scale husbandry.

To allow for the representation of every Rwandan province, at least one district was selected from each province. The researcher identified seven districts in total in which to conduct the study. Data was collected in ten selected villages in the Rulindo, Gakenke, Kamonyi, Bugesera, Rwamagana, Ngororero and Nyarugenge Districts. Both married and cohabiting couples living in rural areas who had at least one child were selected for this study. To ensure representativity of the sample, some households selected were near roads, health facilities and business centers. Others were far from these infrastructures, mainly in hard-to-reach, mountainous areas.

The researcher applied cluster sampling to select participants. Each village sampled had around 180-200 households. The researcher used the village registry to systematically select 20 households from eight villages. In Kamonyi and Ngororero, because the researcher selected one village in each, the number of households rose from 20 to 32 to meet the planned sample number. The sample for the study was then 384 participants (192 men and 192 women).

To get a fixed starting point, the total number of households in the village was divided by 32, which gave a periodic interval of six (6) households to ensure randomization in data collection. The researcher selected households for inclusion starting from household number three on the list, and subsequently every sixth household was selected for inclusion. However, when the data collection exercise ended, the researcher found that four more households were added. These respondents were also added to the initial sample and this made the total number of couples 196; that is, 392 male and female respondents.

The researcher liaised with the chief community health workers in selected village to recruit couples to participate in focus group discussions. A total of four focus group discussions consisting of currently pregnant women or those who had recently given birth and their partners were held to collect qualitative data. The number of participants in each focus group discussion was limited to eight people. During these interactive sessions, the role of Urunana in informing rural couples on safe pregnancy practices, which characters from the program inspired them, and what participants thought could be improved on the program was discussed. Initially, eight focus group discussions were planned. However, only four focus group discussions were held, since they satisfied the researcher's point of information saturation.

During the focus group discussions, information from participants was recorded using digital audio recorders and transcribed verbatim by the research assistants. Participants were fully informed of the nature and purpose of the study; verbal consent for participation was obtained.

Data analysis process

In analyzing data from the survey, the qualitative content analysis process was applied. According to Cole as cited in Elo and Kyngas, content analysis is a method of analyzing written, verbal or visual communication messages.[14, 15] For the purposes of this study, content analysis was used to determine the effects of exposure to Urunana radio drama on the awareness of safe pregnancy practices, such as birth preparedness, danger signs recognition, complication readiness and healthy practices during pregnancy, among rural couples in Rwanda. The data from focus group discussions and in-depth interviews with selected community health workers in charge of maternal and child health complemented the data from the survey.

Qualitative data from focus group discussions were read and decoded. Each transcript was read several times in order to precisely extract the participants' accounts of what they learnt from Urunana radio drama. Thereafter, significant statements about focus group participants' responses were reported to clarify some topics from the general survey.

Data collection and data analysis were performed simultaneously. Strategies, such as member checking, peer examination and code and recode procedures, were used to increase credibility.

The software package used for statistical analysis (SPSS) was used to generate percentages, frequency tables and graphs on the extent to which Urunana contributed to the promotion of safe pregnancy practice among couples in rural areas in Rwanda.

Ethical approval was sought from the Uganda Christian University Postgraduate Research Committee. The researcher also received approval for data collection from the Kigali Health Institute Ethics Committee, representing the Rwanda National Heath Ethics Committee. Before proceeding with data collection, participants were informed of the research objectives and gave their consent to the research by signing on the questionnaires.

Findings

The effectiveness of Urunana edutainment drama in promoting safe pregnancy practices among couples living in rural Rwanda

Couples' access to health information

Survey results showed that 93.1% (n=362) of participants listened to the radio. Among listeners, the majority (70.4%, n=252) followed radio programs in the evening, whereas 10.8% (n=38) listened to the radio throughout the day. Participants who did not listen to the radio acquired information about safe pregnancy practices from other sources of information. Health centers (63.1%) and public hospitals (40%) were the first places where couples got information on safe pregnancy practices when they attend antenatal care sessions.

The study further found that only 10.8% of participants who ever listened to the radio reported that they had never heard of Urunana drama.

Urunana edutainment radio drama listenership among couples

In order to get detailed information on the frequency of listening to Urunana serial radio drama and how couples internalize the safe pregnancy information it airs, the researcher relied on responses to these questions:

- When did they last listen to the program?
- Which female characters from Urunana serial drama were pregnant or previously gave birth at the time?
- What were some of the complications those characters faced?

In order to find out how couples internalize the events surrounding maternal health issues, the researcher asked couples about female characters who were pregnant at the moment or who had recently given birth in the drama. Relevant female characters included Nyiramaliza, Gitefano's wife and a rural woman who had become pregnant without her husband's consent. Domina, a single woman who was impregnated along with her daughter by a renowned businessman in their suburban village, had recently delivered, along with her daughter Aline. Mugeni was also relevant; she had previously dropped out of school because she was both pregnant and HIV-positive. Another female character pregnant at the time was Devota, a nurse in the health center at Nyarurembo (the fictious village in the Urunana serial drama) and Shyaka's partner. These female characters and their partners have been instrumental in transmitting various safe pregnancy messages designed for rural couples.

47.5% (n=154) of respondents mentioned a character that had previously given birth, including Nyiramaliza, Aline, Domina and Mugeni. 26.9% (n=70) answered Aline, 14.5% (n=47) mentioned Nyiramaliza, 3.4% (n=11) mentioned Domina, 0.6% mentioned Kankwanzi, 1.2% mentioned Mugeni, and 0.9% mentioned Solina. Some participants mentioned Kankwanzi and Solina; however, the plot of this drama showed that they had not given birth in the previous two years.

As for the obstacles that these female characters faced, many of the respondents (41%) did not recall any. Only 3% of respondents answered correctly that Aline, who conceived at an early age, did not attend antenatal care. 20.5% of participants mentioned that Aline's

			When did you last listen to Urunana drama?					
			Within the last two days	This week	Two weeks ago	This month	Sometimes back in three month	>1 year
Sex	Male	Frequency	18	34	57	13	45	8
		Percentage	10.3%	19.4%	32.6%	7.4%	25.7%	4.6%
	Female	Frequency	10	27	43	16	29	14
		Percentage	7.2%	19.4%	30.9%	11.5%	20.9%	10.1%
Total		Frequency	28(8.9%)	61 (19.4%)	100 (31.8%)	29 (9.2%)	74 (23.6%)	22 (7%)

Table 5: When couples previously listened to Urunana drama. 31.8% of participants followed Urunana drama two weeks before the

Information received	Percentage (%)	Frequency
Sexual and reproductive health	27.5	76
Family planning	38.8	107
Sexual transmitted diseases, including HIV	19.9	55
Safe motherhood, including safe pregnancy practices	27.8	77
Malaria prevention	10.9	30
Hygiene	18.5	51
Learning from positive characters	34.1	94

Table 6: Information participants received from Urunana drama

conception at an early age and not consulting a skilled attendant during pregnancy and childbirth caused her to suffer from fistula after delivery. 11.4% answered that both her mother and the rich man who impregnated her had harassed Aline.

Another character mentioned was Nyiramaliza, whose husband did not support her because she compromised their agreement to space births. Over a fifth of the respondents (22.3%) answered that she experienced poor living conditions characterized by the lack of nutritious food and being beaten by her husband. In addition, they answered that she did not attend antenatal care regularly. Few respondents (1.8%) succeeded in recalling the anemia and bleeding that befell Nyiramaliza during her pregnancy due to her living conditions.

Lessons learnt by couples from Urunana edutainment serial drama

Couples were asked if they had learned anything from Urunana drama and what they benefitted from by listening to it. 81.9 % (n=249) of the participants stated that they had learned from the program. The table below indicates the extent to which couples received information from Urunana drama.

As shown above, most of the regular listeners (38.8%) answered that they received information on family planning, 34.1% of participants learnt from positive characters from the program, and 27.8% received information about safe motherhood including safe pregnancy practices. It should be noted that the percentages do not add up to 100% because participants had to list more than one category of information learnt from Urunana drama.

To further capture the efficacy of the messages on safe pregnancy practices, participants were asked to list some of the safe pregnancy practices learned through listening to Urunana radio drama. One of the participants said:

"It is really an important program. It teaches us how to care for our wives focusing mainly on how a man can cater for his spouse during pregnancy."

Another female participant in Gihara Village, Kamonyi District, in the Southern Province said:

"Urunana edutainment educates us on the benefits of attending ANC. I also learned about taking a balanced diet during pregnancy. I used to neglect consuming vegetables and fruits, but after I heard that they protect a pregnant woman, my attitudes changed. At last, I understood well that avoiding heavy work during pregnancy and taking much rest are more important for a pregnant mother."

One male participant from Bugesera District, in the Eastern Province said the following:

"The program made me aware of danger signs during pregnancy more, especially malaria."

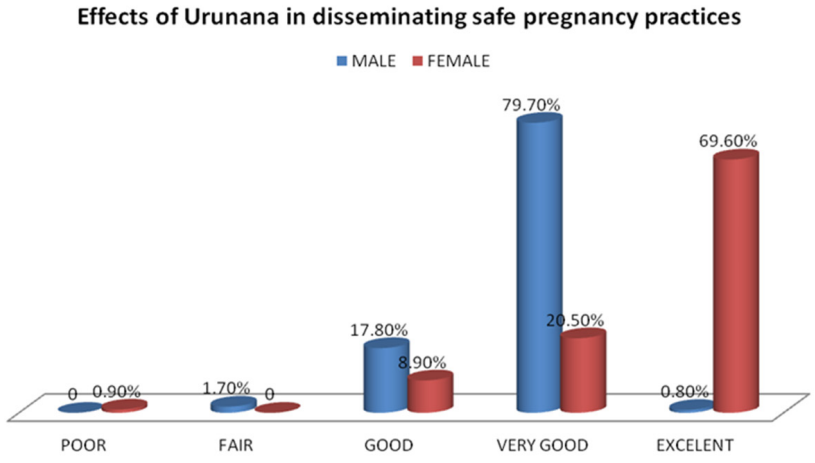
He added that it was through Urunana that he learnt that a pregnant mother should consume a balanced diet rich in essential nutrients.

Effects of Urunana drama in the promotion of safe pregnancy practices

The majority of the participants (85%, n=227) thought that the program's messages on safe pregnancy practices might increase male listeners' awareness of complication readiness and practices to adopt while their spouses are pregnant.

In order to assess the couples' practice of what they hear from the program, participants were asked to list three practices they had learned from Urunana and applied to ensure safe pregnancy. 50.8% of respondents were able to mention at least one practice they had adopted to ensure safe pregnancy, 49.5% mentioned two, and 38.5% mentioned three practices they learned from the program and which they had embraced in their day-to-day lives to ensure safe pregnancy.

Additionally, respondents reported that from Urunana they had learned about ensuring that a pregnant woman takes a balanced and healthy diet (20.1%), attends antenatal care services (23.1%), is protected from heavy demanding work (22.1%) and rests (7.5%). Practices that contribute to safe pregnancy but were reported with a low frequency (0.5% to 3%) include doing sports, sleeping under treated mosquito nets, ensuring hygiene during pregnancy, protecting a pregnant woman from gender-based violence and mental harassment, providing adequate birth spacing, avoiding non-prescribed medicine, avoiding alcoholic drinks and avoiding smoking. In addition, it was found that 19% of 195 male respondents smoked when their partners were pregnant and 3.7% of women smoked during pregnancy. As for alcohol consumption by pregnant women, 42.6% of women interviewed consumed alcoholic drinks during pregnancy.



The role of Urunana edutainment drama in disseminating safe pregnancy practices

Couples were asked if they found the information about safe pregnancy practices transmitted through Urunana helpful. Despite the issue of recalling characters and events surrounding them, the majority of participants (96.5%) claimed that it had been helpful for them.

In order to assess how effective Urunana has been in

promoting safe pregnancy practices among rural couples, couples were also asked to rate it compared to other programs or campaigns of safe pregnancy.

As shown in this graph, Urunana was rated very well with 79.7% of male participants agreeing that it was "very good" at promoting safe pregnancy practices. 69.6% of females rated it as "excellent," and another 20.5 % of females rated it as "very good." 17.8% of women and 8.9% of men reported that the program has been "good" at promoting safe pregnancy practices.

We asked participants what could be improved to make the program more relevant and helpful for ensuring safe pregnancy for women in rural areas. The majority of the respondents (40.4%) proposed that the Urunana crew should present some scenes from the drama (for example, caring for a pregnant mother) in their villages. 37.5% asked for an increase in the length of the program.

Another 22.1% of the participants proposed that Urunana should bring in more couples in the reproductive age group so as to ensure the continuity of delivering messages about safe pregnancy. Moreover, they suggested that the program should introduce a character who reflects rural ways of living to foster positive attitudes and behaviors towards pregnant women in that context.

To understand more about the effects that Urunana had on couples living in rural areas, participants were asked to enumerate some of the changes in pregnancy practices in their villages brought about by listening to the drama. Couples noted having learned the dangers associated with not caring for a pregnant woman. One of the most important safe practices during pregnancy they mentioned is to deliver at a health facility to avoid some of the danger signs after delivery.

Aline, an un-married young girl in this drama who delivered at young age, was one of the female characters that couples recalled most. Participants discussed that through her, they learned that if a pregnant mother is not catered for in terms of good nutrition and psychological support, she could face fatal complications. Hence, they stated that they should ensure that a woman leads a healthy lifestyle during pregnancy.

In an interview with one Community Health Worker in charge of MCH in the village of Mageragere, in the Nyarugenge District of Kigali City, the researcher asked her how Urunana has aided in the fulfillment of her duties.

"The program is helpful to me. … I have got messages about delivering into the hands of skilled birth attendants who will care for the newborn; I have applied this in sensitizing couples in this village to always go to the health facility for delivery or complications during pregnancy."

Another community health worker said:

"Urunana boosts our knowledge and skills in our work of ensuring better maternal and child health. Couples here enjoy listening to the program; and it has facilitated our work. They value what we teach them because of Urunana edutainment."

Couples' role models in safe pregnancy practices adoption

To understand how helpful Urunana has been in promoting safe pregnancy practices among rural couples in Rwanda, we asked participants to mention their role models and villains from the drama. The opinions gathered from the interviews presented the character Shyaka and his wife as ideal characters in ensuring safe pregnancy practices. Participants reported that they discussed the two when aiming to ensure safe pregnancy in their families.

One female participant from the Kabunigu village in the Northern Province had this to say:

"Shyaka encourages his wife to sleep under the mosquito net, take a balanced diet and even when she is not taking some he encourages her. He is always anxious about how she is feeling. He is really a character whom I envy. I wish all men here should emulate him in taking care of their wives during pregnancy."

Although Shyaka and his wife are appreciated by the participants, men observed that adopting their behaviors requires formal education. One man during the focus group said, "For sure, the ideal care for a pregnant woman is that shown by Shyaka towards his wife. We try our best to care for our wives, but it is very hard for us rural men who have not gone to school to reach their level."

Another character from whom they learned was Mariyana, a female character playing the role of a community health worker. In the program's storyline, she inspires couples to adopt safe pregnancy practices. A community health worker in Mareba Village in Bugesera District expressed her appreciation:

"Mariyana is a channel through which couples are sensitized to go for ANC screening, eating balanced diet, and planning for deliver[y] in the health facility. Though I do not follow the program regularly, the little I have heard transformed the way I perceive safe pregnancy issues and the way I counsel pregnant women."

Another participant explained that Mariyana's messages inspired her family: "Listening to Urunana drama has impacted my interaction with my husband. Through the positive characters in the drama such as Mariyana who is always advising couples to embrace safe pregnancy practices and other health topics, my husband and I embraced family planning. My husband supports me in this endeavor."

Although they had had two children some years back, the family of Bushombe and Kankwanzi, transitional humorous characters in Urunana, are also appreciated by the participants. They expressed that through them they acquired information on malaria prevention during pregnancy and also while planning for birth.

One woman in a focus group had this to say:

"For me, I like the family of Bushombe and Kankwanzi. For example, Bushombe supported his wife by doing heavy work during pregnancy. He made sure that he pays the health insurance on time. Personally, I understood the role of sleeping under the mosquito net thanks to way Bushombe's suffered from malaria as a result of using the mosquito net to protect their chicken from eagles."

Stefano and Nyiramaliza are characters in the drama who failed to adopt safe pregnancy practices. The negative results thereof helped the audience to change their behaviors. Focus group participants blamed Stefano for failing to care for his wife and for harassing and battering her during pregnancy until she bled. A male participant in one of the focus groups shared what he learned from their conflict:

"For sure, that conflict between them inspired me to develop good communication with my wife about family issues, mainly contraceptive use to space births. My wife and I support each other in this endeavor."

Couples' level of satisfaction with the information transmitted by Urunana on safe pregnancy

During the focus group discussions and key interviews, we asked participants whether they were satisfied with the way Urunana drama tackles safe pregnancy topics. Participants commended Urunana for the information about maternal health and reproductive health imparted to them. One participant had this to say:

"Urunana drama is really informative about reproductive health issues and safe pregnancy. They do their best to inform the public regardless of the age."

Participants were asked to suggest what could be done to increase the information on safe pregnancy practices transmitted by Urunana. In three focus groups, participants observed that the issue of the neglect of pregnant women at health facilities has not been tackled. They suggested that including information about such situations in Urunana could improve the services offered to pregnant women and their partners.

Other participants in the focus group requested the Urunana team to also consider male and female couples preparing to get married. They advised that the program should package a set of messages on safe pregnancy practices to adopt as the couples anticipate marriage and childbirth. Participants argued that this might help couples pass through pregnancy safely, because the couples will have acquired information earlier, enabling them to plan ahead on child birth and complication readiness.

Lastly, a good score by participants in areas with electricity suggested that Urunana should be televised. A participant supported the idea:

"By showing Urunana in pubs, it may be an occasion to reach men who fail to plan for birth and yet spend the little money extravagantly there. Maybe, by watching the program, they can be transformed positively."

DISCUSSION

This study is the first to assess the effectiveness of edutainment serial drama in promoting safe pregnancy practices in rural areas in Rwan-

da. Specifically, the study focused on the extent to which Urunana has been effective in promoting safe pregnancy in Rwanda.

Couples have benefited from listening to Urunana. Compared to the year 2005, there has been a great improvement in reproductive safety.12 This study found a significant increase in couples' acquisition of sexual and reproductive information that contributes to safe pregnancy practices. The audience's knowledge about HIV/AIDS shifted from 16% to 20.8%, family planning from 19% to 42%, sexual and reproductive health from 22% to 29.2%, safe motherhood from 6% to 27.1% and good family communication from 6% to 38%.

The study indicates that the program appears to have been effective in the promotion of safe pregnancy practices among rural couples in Rwanda. Couples affirmed the role that the program has played in fostering the discussion within families on how to ensure a safe birth. Despite the recall bias noted during the survey, whereby half of the respondents failed to recall the female characters used to transmit safe pregnancy practices, the survey results showed that the program has still been instrumental in imparting knowledge about safe pregnancy practices. Couples claimed that by listening to the program they started to realize the importance of attending antenatal care sessions for couples, paying the health insurance on time and preparing for childbirth.

Particularly in mountainous areas, where transporting a pregnant woman to the health facility is a bit challenging, couples value saving for childbirth. Families have organized themselves in associations to encourage a saving plan for childbirth.

Listenership of Urunana among men and women

Radio can educate audiences without requiring their physical presence or even requiring them to be liberated. According to Sabido as quoted in, the only audience requirement is that listeners understand the language of broadcast.16 This format enables them to listen while performing other tasks. As a result, radio appears to be more accessible to working people during the day than other forms of media.

The findings of this study revealed that the exposure of couples in rural areas to Urunana varies depending on their regularity of listening. For example, the survey found that the proportion of women who had listened to Urunana radio drama within the two days prior to being surveyed was 7.2% (n=10). Unlike the present study, in 2005 a survey on listenership patterns among couples done by the Urunana Development Communication and Well Women Media, which runs the Urunana program, found that 20% of the female participants had listened to the program in the past two days.[12] Hence, there is a need to understand and address what obstacles impede couples' listening patterns for Urunana to reach its audience effectively.

Urunana drama exposure among males and females is significantly associated with higher levels of safe pregnancy practices. Respondents who have listened to the program reported that they intervene by taking a pregnant mother to the health facility if they notice bleeding, abdominal cramps and spontaneous abortion symptoms. Additionally, Urunana has encouraged males to attend antenatal care with their wives, to assist them with heavy work during pregnancy, to not batter them during pregnancy, to urge their wives to sleep under the mosquito net during pregnancy and to save money for transport and delivery.

However, the study did not measure changes in behavior as a result of Urunana. There has not been enough data because of the deficit of safe pregnancy knowledge, attitudes and practices in the formative research conducted by Urunana development communication.

The role of Urunana characters in influencing safe pregnancy practices

When listeners realize that an edutainment program epitomizes people like themselves, they become loyal to it and develop trust in the messages and modeling of the intended behaviors.17 The present study found that regular followers of Urunana are eager to know what happens next to the characters with whom they identify. This interest is likely due to the long running, involved stories of the drama that keep listeners interested in knowing the outcomes of situations their role models are struggling with, how they are getting punished for engaging in risky behaviors and how they get rewards from behaving healthily. In the process of following the plot, listeners learn from the charactesr' experiences depending on what stage of behavior change an individual character has reached.

However, this study did not incorporate analytical questions to collect information on stages of behavioral changes couples have made in terms of practicing safe pregnancy. Additionally, the study did not ask couples how long they have been following the program. Despite this, the feedback from the focus group discussions highlighted that couples appear to have reached a certain stage of behavior change. There is a need for other researchers to explore the effectiveness of edutainment drama using some of the many behavioural change theories and also taking into account some of the environmental, personal and behavioral factors that may influence couples' safe pregnancy practices.18

Barriers affecting couples' Urunana listening frequency

Through focus group discussions, the study identified that there are barriers that affect couples' listenership to Urunana and impede their access to the messages about safe pregnancy practices. The major barriers identified include the time of broadcasting and, since the country has around 25 radio stations, the choice of radio station to which they switch. Work-related constraints like cooking and caring for children by women in the evenings and looking for domestic animals' grass by men, as well as the view of Urunana as a program designed for youth and the issue of buying batteries regularly in some rural areas without electricity were prominent factors affecting the program's listenership. The study limited the analysis to the interview accounts of participants. Therefore, there is a need to analyze barriers that affect couples' ability to listen to Urunana using quantitative methods. This analysis will provide reliable data for the designers of Urunana to take measures to address the identified constraints.

The influence of characters on couples' practice of safe pregnancy

In a serial drama, if the characters and settings are familiar to the audience, they can identify with the situations, conflicts and feelings of the characters.[19] In light of this, the study identified that characters have a big influence on couples' safe pregnancy practices and perceptions. The study found that Mariyana, Shyaka and his wife Devota equipped couples with information and behaviors to adopt to ensure safe pregnancy. It was established that the couples disparaged the behaviors and practices manifested by Stefano toward his wife. Their conflict left the audience with a lesson about complying with the chosen birth spacing method, planning for birth and not conceiving at an advanced age.

Bandura holds that a good scriptwriter takes advantage of parasocial interaction, which refers to the ways in which audience members develop their one-sided relationships with the media being consumed, by creating believable characters who inspire listeners with a feeling of personal relationship.[20] As a result, listeners feel as if they are part of the drama and experience vicariously how adopting a new behavior feels, how others might react and how they might respond to situations that the characters encounter. Social learning theory, which holds that a certain behavior can be learned from the environment through the process of observing, can help the drama writers identify the types of characters that best attract the audience, the consequences of behavior that people are concerned about and the types of stories that give people increased confidence in their ability to perform a behavior.[19]

The study found that couples are still struggling to identify with characters that transmit safe pregnancy messages in Urunana edutainment drama, such as Mariyana, Devota, Shyaka and Nyiramaliza.

Education, relevant occupation and high frequency of listening to Urunana alone are not sufficient to enable couples to follow events that happen to the characters through which the messages about safe pregnancy practices are aired. Siegel and Doner argue that for long-term shifts in knowledge, attitudes and especially behavior, interventions must persist in reinforcing new messages and in using other kinds of communication and environmental support.[17] To them, the chances of success of an edutainment serial radio drama as a media campaign are boosted when it reaches the target audience multiple times with consistent and clear messages. Brown extends this argument by stating that it takes at least three exposures to a relevant message to begin to change knowledge and attitudes, and probably more exposures to begin to affect health practices and behaviors.[21] On the first exposure, the message may not be noticed consciously, but on the second some processing may occur. The third exposure may evoke more active processing and interpretation.

These ideas explain why some events in Urunana involving safe pregnancy practices have not yet captured couples' attention. Messages

about safe pregnancy practices are not aired in every episode of Urunana. Even when they are transmitted, some couples are not in a position to follow or remember them; hence, they may miss vital information on safe pregnancy practices. In addition, the data for this study covered all 15 years for which it has been broadcast. It is possible this scope might have impacted the listeners' recall of characters and the storylines around them. It is crucial for the creators of Urunana to give the same weight to the messages informing couples with safe pregnancy as they do for adolescent reproductive health, HIV/AIDS and awareness of other STIs. In addition, they should strengthen this drama with other approaches to reaching the community on safe pregnancy practices.

Furthermore, to ensure audience members are influenced by any media health messages, audience members must recognize the benefits of the actions described in their own lives.[22] Edutainment should provide role models of satisfied adapters of the new idea for audience members to observe and emulate.

Although the study did not include any questions to lead to the stratification of the participants in relation to Urunana edutainment, the study discovered that some role models advocating for safe pregnancy relate to the couples' real lives. Despite the debate on the good behavior that Shyaka shows toward his wife, a few men in the rural areas wished that they could express the same love he shows his wife during pregnancy. On the other hand, through the negative characters, couples have been influenced to adopt safe pregnancy practices for fear of facing punishment and pain as Nyiramaliza did in the drama.

The study by Health Unlimited found that humor has been instrumental in keeping the audience tuned in.[12] Most people under normal circumstances will not resist a good laugh. The popularity of comic characters attracts and maintains listeners for a long time. As listeners wait to be entertained by their cherished humorous characters, they are simultaneously educated.[23] The humorous approach used by Urunana edutainment influences married audience members to focus on the entertaining characters. The study noted a recall bias, but surprisingly enough, Bushombe and Kankwanzi, who are humorous older transitional characters present throughout Urunana edutainment drama and who are used to transmit some health messages, are well remember by the audience. Thus, it may be better if among the positive characters transmitting messages on safe pregnancy, there is one young humorous couple who may ensure that safe pregnancy practice messages are more appealing and realistic to the rural married audience's daily activities.

Ranking of Urunana

The results indicate that Urunana edutainment drama is effective (79.7%) in promoting safe pregnancy practices to couples in the selected villages. However, based on the recall bias noted when participants were asked to mention any character from the program who was pregnant or who recently delivered, this finding may appear prone to the response bias. The researcher overcame this by asking participants to mention at least three things they do to ensure safe pregnancy. Almost every participant mentioned at least one practice they do to ensure safe pregnancy. Additionally, almost every participant was able to offer constructive feedback on how Urunana can be improved.

A good number of couples wished for characters of Urunana to reach them regularly. This response implies that the audience learns more from directly observing events taking place than from listening passively to the sequence of events in Urunana. It was requested that the program designers introduce in the drama more couples of reproductive age, to sustain the messages about safe pregnancy transmitted. Regular listeners observed that some topics, such as nutrition in pregnancy, were not dealt with deeply, leaving a gap in information. More importantly, information on micronutrient deficiencies during pregnancy, complications that endanger pregnancy such as anemia and hypertensive disorders and what to do to prevent them were not focused on by Urunana.

CONCLUSION

This study on the effectiveness of the edutainment radio drama Urunana in promoting safe pregnancy practices among rural couples in Rwanda confirmed that the objectives set have been achieved. The study answered questions about the level of knowledge of safe pregnancy practices among the couples living in rural areas, the effects of exposure to Urunana on couples' adoption of safe pregnancy practices and the extent to which the program helped to increase their knowledge and awareness of safe pregnancy practices.

The study identified Urunana's lack of information on the effects of alcoholic drinks consumption and smoking on pregnancy outcomes. The study also identified gaps in the information transmitted about anemia and hypertensive disorders. However, Urunana has contributed significantly to the promotion of birth spacing, nutrition for a pregnant woman, avoidance of heavy work, birth preparedness and complications readiness, attending ANC clinics and saving money for childbirth in rural families. De Fossard argues that the effectiveness of an edutainment program is shown when it helps managers meet objectives of changing a certain negative practice, increases the demand for services and motivates people to protect their health.[24] Thus, Urunana's themes on safe pregnancy practices may have almost fulfilled these characteristics.

It should be noted that this study did not measure the amount of information couples received; hence, there is a need for further research to apply statistical analysis to quantify the exact amount of information that couples receive from Urunana.

The findings from this study establish that the Urunana drama series may have been effective in promoting safe pregnancy practices in rural areas. However, there is a need to conduct a comparative study to show its exact place among other sources of information and other similar radio dramas.

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Structural and functional analysis of emergency departments in Amman, Jordan: implications for future development

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This study investigates the current state of emergency healthcare delivery in Amman, Jordan. The first of its kind, the study uses a cross-sectional questionnaire, distributed to 40 hospitals in Amman, in order to assess the accessibility of equipment and medication, as well as the structure and function of emergency departments. Results indicate that although emergency departments in Amman are generally well equipped according to World Health Organization guidelines, variability in departmental processes and available equipment as well as staffing, training and overcrowding remain significant challenges. Discussion revealed that many physicians felt that improvements in staff training would improve the delivery of emergency care. Overcrowding of emergency departments and unnecessary use by low acuity patients also interferes with delivery of appropriate care to critical patients and may drive up healthcare costs. Respondents discussed the need for the development of a formal trauma unit, priority triage screening for critical patients and pre-hospital care and coordination. Further studies are needed to explore these and other aspects of emergency care in Jordan.

Introduction

Deaths due to emergencies, which are acute illnesses or injuries that pose an immediate risk to the life or long-term health of an individual such as poisonings, seizures, cardiac arrest and motor vehicle accidents, among others, are the leading causes of mortality worldwide in individuals 46 years old or younger.[1] Thus, the availability of a well-equipped emergency department is a necessary component in the medical sector of any country aiming to reduce deaths by emergencies.

The vast majority of developing countries lack an efficient system for delivering emergency medical services to those in need because of the high costs of physical and organizational infrastructure such as adequate medical transportation and civilian response to an emergency scenario.[2] Smith and Haile-Mariam proposed that the following qualities are crucial for the development of emergency medicine (EM) in any country: 1) physicians interested in establishing EM as a specialty; 2) governmental support; 3) support from other physicians and hospital personnel and 4) infrastructural components, including facilities, training, transport and communication.[2] More recent literature indicates that the development of EM around the globe depends on a number of additional variables including status of health, burden of disease, resource availability and public demand.[3]

Many Middle Eastern nations are just beginning to develop emergency medical education and treatment programs. Lebanon's medical certification board, for example, recognized EM in 1993, 14 years after EM was recognized by the American Board of Medical Specialties in 1979.[4] An article published in the Journal of Emergency Medicine discusses the difficulties encountered during the development of Lebanon's emergency medical sector, which include a lack of physicians willing to practice emergency medicine, an underdeveloped insurance and physician compensation system and a shortage of residency opportunities.[5]

Overcrowding in emergency departments (EDs) has been observed as a factor that may negatively impact a department's ability to deliver medical care efficiently. An analysis of the utilization of EDs in Kuwait concluded that emergency physicians classified 61% of cases seen in the ED as urgent and only 2% as life threatening.6 A similar study from a Jordanian hospital in 2000 classified 8.8% of ED visits as urgent or life threatening.[7] The study further suggests that other elements, such as geographical, social and psychological factors—like travel distance to the hospital, advice from friends and relatives, and the patient's experience of illness—can play a role in a patient's decision to attend an ED for medical care, which may contribute to overcrowding. Many other articles have discussed the impact of the unnecessary use of emergency departments, particularly by patients who are seeking the services of a primary care physician, on treatment costs and the timely receipt of care.[8–10]

Background

An EM residency program developed in Jordan in 2003 and has expanded to 4 residency programs with 50 resident positions in 2014, all of which are sponsored and run by the Jordanian Ministry of Health (personal communication).

The Ministry of Health (MoH) is the major provider of healthcare services to Jordanian citizens. The Ministry is a government institution that operates 31 hospitals throughout the country and provides health care services to approximately 69.6% of the population. Approximately 30% of the population is uninsured. The MoH's outreach goal is to provide access to primary health care for all Jordanian citizens, and does so through its own insurance program (the Civil Insurance Program), in addition to providing full medical coverage for children less than six years of age.[11]

The Jordan Medical Council (JMC) is the only organization in Jordan responsible for the accreditation of medical training programs in the country. Until 1982, subspecialty training programs were not endorsed by the JMC, and only in 1989 did the JMC accredit a training program for family physicians with a desire to work in the EM sector. In 2003, emergency medicine was recognized as an independent subspecialty by the JMC, and residency programs were developed to train emergency medical specialists.[12]

Recently, the Ministry of Health has taken steps toward the development of the emergency health sector and published a set of service standards for general hospitals that includes recommended equipment and medication for the operation of an emergency department.[13] In 2007, the foundation of the Health Care Accreditation Council (HCAC) introduced a voluntary program to reward the delivery of quality care in several departments, including EDs. Currently, seventeen hospitals in Jordan hold HCAC accreditation, twelve of which are located in Amman (personal communication).

With the relatively recent establishment of the EM sector in Jordan, very little information regarding access or quality of emergency healthcare services in Jordan is available for analysis or review. The purpose of this study is to determine the availability of essential equipment and medication in a sample of emergency departments and to provide an informal assessment of conditions and opportunities for improvement of those departments in the capital city of Amman. Identifying strengths and weaknesses present in EDs may help to raise awareness about the current state of the emergency health care sector and help to address health inequities and improve patient outcomes. This study also aims to open a general discussion in the medical community about the development of emergency medicine as an indispensable specialty in the Jordanian healthcare sector.

Methods

The study was executed using a cross-sectional survey that consisted of 30 yes/no/sometimes questions and three short-answer questions (see Appendix). Since no widely-accepted standards for the quality of emergency services are known to exist, the researcher developed the questions using the Jordanian Ministry of Health and World Health Organization guidelines for emergency department service standards as references.[13,14] The questions developed were focused on determining the availability of essential equipment and medication in emergency departments. The short-answer questions were designed with the aim of identifying the perceived strengths and weaknesses in the emergency department as well as potential future developments in emergency care. Once the survey was developed, it was reviewed and approved by the School of International Training in Jordan's International Review Board (IRB).

This study was carried out in Amman, the capital city of Jordan, which hosts a population of approximately four million, making up 61% of the total population of the country. A list of all of the hospitals in Amman was compiled and then refined to include only hospitals with emergency rooms. The end result was a list of 43 hospitals from private, public and military sectors. The researcher visited and distributed questionnaires to 40 of these hospitals (two military hospitals and one private hospital followed protocols that did not permit undergraduate research). Ultimately, the study achieved a response rate of 57.5% (23 hospitals). Questionnaires were distributed to the physician director of the emergency departments of each of these hospitals, with the exception of two departments, in one of which the survey was completed by the head staff nurse, and by a medical resident rotating in the emergency department in the second.

Some respondents elaborated on certain aspects of the survey questions. The researcher carried out short interviews with the study subjects and recorded and analyzed the data along with answers from the corresponding yes/no/sometimes questions.

Quantitative data (Appendix) were coded and entered into a spreadsheet, and the percentages of EDs with essential equipment were calculated. In addition, trends regarding the quality and preparedness of emergency departments in the surveyed hospitals were evaluated. Qualitative data from the short-answer questions were examined and then condensed into keywords that reflected participants' thoughts about factors influencing the quality of care and working conditions in the emergency department. The keywords from each surveyed hospital were then compared and contrasted with one another in order to determine trends in physician attitudes towards the development of emergency medical services in Jordan.

Results

Quantitative Data

After review and analysis of the data, it was found that all of the responding EDs were open 24/7. An average of 9.3 physicians worked in each emergency department. Participants reported an average of 126.2 total hospital beds. Emergency departments averaged 15.4 beds per department; the largest had 60 beds, and the smallest, one bed. This statistic translated to an average of 12.1% of all hospital beds in the study sample being emergency department beds.

Of the 23 departments responding, 22 indicated that the hospital owned a private ambulance. A majority (73.9%) reported that patients accessed the emergency department via private transport (private vehicle or on foot). Six hospitals (26.1%) reported that patients arrived in equal numbers by ambulance and private transport.

61 percent of EDs reported having a system for screening and triaging undifferentiated patients based only on urgency of presentation (case urgency). The remainder of the hospitals employed single-discipline emergency rooms, in which the ED is divided into sections dedicated to the treatment of a particular subset of cases (case specialty)—for example, surgical emergencies, obstetric and gynecological emergencies, pediatric emergencies or medical emergencies (Table I).

Emergency Capabilities

Table II displays the percentages of departments that are equipped to handle particular classifications of emergencies. 91.3%

(21) of EDs reported having the capability to handle cardiac emergencies. 91.3% (21) reported availability of cardiac equipment. Only one department of the 23 respondents reported not having an electrocardiograph (EKG machine), and the same numbers applied to the presence of cardiac medication and access to ancillary electrocardiography services (Tables III-V). Burns are handled by 82.6% (19) of EDs (three departments responded "sometimes" for treatment of burns and are not included in this statistic). Only 47.8% (11) of departments managed ophthalmic emergencies. Those whose hospitals did not treat such emergencies stated that their hospitals had designated ophthalmology clinics that handled the majority of ophthalmic cases (Table II).

All emergency departments that answered the questionnaire had oxygen delivery capability, whether freestanding oxygen tanks or a central oxygen system. Code carts and pulse oximetry equipment were reported to be present by 95.6% (22) of respondents. Five departments (26.1%) did not have access to respiratory therapy services within their hospital, and two (17.4%) did not have access to an anesthesia department (Table III).

All emergency departments reported having anti-inflammatory medications. Only 17 EDs (73.9%) reported having antidotes for poisoning. One department reported not having medications for cardiac cases, seizures, respiratory distress and burns, and one department reported not having access to sedatives (Table IV).

One of the emergency departments reported not having or using personal protective equipment, including examination gloves, face masks and eye protection (Table V).

Qualitative Data

The first short-answer question on the questionnaire discussed factors that the department respondent felt would make working at the emergency department easier (Section VI, Appendix). The most common answer, suggested by eight participants (34.7%), was increased physician staffing of the ED. Many also added that additional physicians should be emergency medicine specialists. The one medical resident that completed the questionnaire mentioned that her colleagues were often frustrated to receive emergency medicine training from a general practitioner, and felt that a higher standard of care could be expected from residents trained by emergency medical specialists. Some participants felt that more nurses were needed on the ED staff, and some felt that their current nursing staff needed better training.

A number of respondents voiced interest in expanding the ED to accommodate a greater number of patients and ancillary services. Some physicians elaborated by including specific facilities that they felt should be present in the ED, such as X-ray and MRI machines, respiratory therapy, a pharmacy and triage beds. One physician mentioned that the insufficiency of equipment and services was aggravated by the absence of an organizational system for available resources, and that equipment often needed to be retrieved from other departments.

Respondents from seven departments cited the need for a formal trauma system, including priority triage screening, equipment and emergency or trauma specialists, to improve both working conditions and patient outcomes. Eleven respondents discussed the lack of proper pre-hospital care provided to patients, and two physicians felt outcomes would be improved if paramedics triaged patients in a pre-hospital setting. The same 11 respondents also suggested that a paramedic program should be developed, and that only certified paramedics should operate ambulances and provide pre-hospital care. One physician added that a way to communicate with Civil Defense (public sector) ambulances should be available to all emergency departments in order to allow the ED staff to assess and prepare for incoming cases.

Two respondents mentioned high rates of unnecessary emergency department visits from patients seeking the services of a primary care physician. Problems with overcrowding caused by the families of patients, even in examination rooms, were also mentioned. Both participants felt that patient education campaigns, including pamphlets, television programs and radio programs that instruct patients about what illnesses or injuries warrant a visit to the ED would be useful. One physician discussed the importance of promoting the role of primary health care clinics, both to prevent the abuse of the emergency department and reduce the incidence of ED visits. Two respondents indicated that an important reform of the emergency department would be to focus on triaging patients based on the urgency of presentation (case urgency) rather than the medical discipline of the emergency (case specialty). One department reportedly hoped to introduce the specialty-directed approach. However, all hospitals that commented on the availability of specialists agreed that a family medicine clinic (or a 'fast track' or 'urgent care') should be available to deal with non-critical cases that present to the emergency department.

Two departments commented on the need to reform the

Characteristic	Number of EDs (Percentage)
Open 24/7	23 (100%)
Own private ambulance	22 (95.6%)
Patients arriving by private transport	17 (73.9%)
Triage by urgency	14 (60.8%)
Triage by discipline	9 (39.2%)

Table I: General characteristics of reporting EDs (23).

Service	**Percentage**
Cardiac	91.30%
Obstetric	56.50%
Ophthalmic	47.80%
Orthopedic	86.90%
Burns	82.60%
Pediatric	78.20%

Table II: Percentage of emergency departments that provide specialty services

Ancillary service	**Percentage**
Lab	95.60%
Radiology	95.60%
Anesthesia	82.60%
Respiratory therapy	73.90%
Electrocardiography	95.10%

Table III: Percentage of emergency departments with access to ancillary services.

Medication	**Percentage**
Antidote	73.90%
Cardiac	95.60%
Seizure	95.60%
Inflammation	100.00%
Respiratory distress	95.60%
Burns/skin irritation	95.60%
Sedation	95.60%

Table IV: Percentage of emergency departments with access to medications.

Equipment	**Percentage**
EKG	95.60%
Code cart	95.60%
02 source	100.00%
Pulse oximetry	95.60%
X-Ray	91.30%
Ultrasound	91.30%
CT scan	82.60%
Personal protective equipment	95.60%

Table V: Percentage of emergency departments with access to equipment.

medical insurance programs available to patients. They reported that many patients are turned away from of important care after initial stabilization in the emergency department for financial reasons. They felt that it was their duty as physicians to provide care to all people who come to their department. The physicians suggested that the adoption of electronic patient record systems that would allow physicians and administration to access patient information including insurance status, family history and medication history may be helpful. One physician suggested that this information should be on a network accessible to all hospitals to reduce the number of patients seeking illicit medications from multiple hospitals.

The final question presented on the questionnaire inquired about future developments that physicians would like to see in their emergency department. The most common response was "more beds" (17.3%), followed closely by the adoption of a computerized patient record system (13%) and improvement of access to ancillary facilities (13%). Responses pertaining to both the development and renovation of the facilities in the department, as well as space and accommodation, were also common.

Discussion

Strain on Jordanian EDs is a very important issue. This strain leads to difficulties in providing the highest quality of care. Improving the quality of ED care entails adopting a priority screening system and ensuring the availability of equipment, medications and sufficient accommodation for incoming patients, according to the study respondents.

Improvement of pre-hospital care, particularly first-responder and emergency transport, was addressed by many of the respondents. Many discussed the fact that emergency medical technicians do not have to be licensed paramedics and that this negatively affects the outcomes of patients arriving via medical transport. Developing and implementing a graduate-level paramedic course at universities and health centers throughout Jordan would create a skilled workforce able to provide quality care on-site of an emergency.

Although this study suggests that emergency departments in Amman are generally well equipped and reasonably staffed, the data collected suggests that there may be inconsistencies in the available equipment and facilities between departments that may lead to significant variations in the quality of care. In order to reduce these variations, EDs should meet certain criteria in order to be classified as such. Criteria might include the presence of certain equipment and medication, the availability of trained EMTs and a rotating staff of specialized emergency physicians. Ideally, the criteria would be created and regulated by an objective third party, such as the Health Care Accreditation Council, in a similar manner to that of the Joint Commission in the United States. However, it is also important for departments to have the capacity to monitor their own performance and foster a culture of self-improvement.

Physicians included in the study mentioned that although space for patient accommodation was an issue in the ED, hospitals and EDs also need to consider the availability of physicians and other qualified medical staff. Participants perceived that there is a growing demand for emergency medical care. They felt that this demand is influenced by factors such as increases in population and urbanization and is outpacing the emergency physician supply. Participants felt that complex emergencies are difficult to deal with because of this. By supporting the development of emergency medicine as an independent specialty, physicians will be able to provide the highest quality of focused care to patients in need. The training of nurses as well as paramedics and non-medical staff rotating in the emergency departments should also be addressed. Many nurses educated in Jordan tend to leave the country following their professional education to work abroad for higher salaries. Hiring more highly qualified nurses and providing continuing education programs for nurses and physicians will keep staff members up to date on medical developments and findings, and help guarantee that patients are receiving the best quality of care available.

Promoting primary care and public health infrastructure is essential to reducing the incidence of medical emergencies. Identifying factors that have negative impacts on health, particularly accidents and injuries, and targeting them with programs that educate the public and reduce health inequalities may help reduce overcrowding, abuse and costs of receiving care in an emergency department. Doing so is equally important to forming a framework for the development and growth of the emergency medical sector in Jordan.

Conclusion

This study assessed the quality of emergency health care in Amman, Jordan as a function of the availability of essential emergency equipment and perceptions of ED workers, which are variables that may or may not reflect the actual quality of care delivered. In addition, it is possible that the EDs that did not participate in the study had significantly different characteristics, which may have affected the results. However, as the first study of its kind, it may help lay the groundwork for future studies of the emergency health care sector in Jordan. Future work is needed to explore these factors in more depth, including emergency medical services and transport, emergency medical education, public health education and the relationships between the EDs and the hospital system. Other topics for further research might be exploration of demographics of emergency patients and the opinions of patients regarding the quality and accessibility of emergency care. Expanding the focus of research to rural areas might also be helpful to the further development of the emergency sector in Jordan.

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Academic Research

Utilization Patterns and Perceptions of Mobile Health Clinics in Batey Libertad, Dominican Republic

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Mobile health clinics have become a popular means of providing care to low-resource areas in high-, middle- and low-income countries. In low- and middle-income countries, there is limited evidence for the effectiveness of mobile clinics as an alternative healthcare model for marginalized populations. A cross-sectional study was conducted on mobile health services in a Dominican agricultural community, Batey Libertad. This study describes the characteristics of the population that had previously utilized mobile health clinics as well as the perceptions of these mobile health clinics. Household surveys were conducted at each of the 173 households in Batey Libertad. The main variables of interest were previous mobile clinic use and patient perceptions, operationalized using ordered opinion-based comparisons. Bivariate analyses were conducted to find significant associations between these outcomes and socioeconomic and demographic variables. Socioeconomic and demographic variables with significant associations were then included in unconditional logistic regression models. Findings suggest that mobile clinics are utilized less by young adults and males. Overall perceptions of mobile health clinics were very positive. Based on these results, mobile health clinics in Batey Libertad should work to expand their outreach to males and young adults. In general, mobile health clinics should evaluate the coverage of their services in the communities they wish to serve. Future studies should seek to both verify these findings and also further evaluate mobile health care as a potential tool in reducing healthcare access inequities.

Introduction

Mobile clinics are temporary or seasonal units of healthcare professionals that aim to attend to patients in the patients' own communities. Globally, mobile health clinics have become an alternative model of healthcare to traditional permanent clinics or hospitals, providing both primary and specialty care to rural and marginalized communities.1 Mobile clinics can range in the type of services they provide, the regularity of their visits and the experiences of the health professionals involved.[2,3,4,5] In areas with limited health infrastructure, mobile health clinics are often coordinated by charitable organizations and staffed by volunteers, who are often international health professionals associated with a medical organization or faith-based organization.[3] In many contexts, they are referred to as medical mission trips. These clinics are usually free, and they can be stationed in a community for as short as a few hours to as long as a week in length. They provide services depending on the abilities of the medical professionals who volunteer to staff them. When the volunteer healthcare professionals are unable to provide a certain service, they refer the patient to another provider, a local practitioner or perhaps one related to a future mobile clinic. However, most mobile health clinics are not coordinated with one another, so patient information is not shared. Consequently, there is no official documentation of which clinics visit which communities or when these visits occur.[6]

A limited number of studies have been conducted to evaluate the services provided by mobile health clinics in low- and middle- income countries. Most present studies have been basic assessments of patient demographics, presenting symptoms displayed, diagnoses made and medicines dispensed, with no broader assessment of the quality or effectiveness of the services.[5,4,7] In contrast, more in-depth studies have been conducted in high-income countries. These studies indicate that mobile clinics can effectively target and provide care to high-risk populations such as drug users who use needles or HIV-positive patients engaged in prostitution.[8,9] In addition, mobile clinics have been found to be a successful alternative model of care for immigrant women in high-income countries.8 These studies and others, mostly conducted in the United States and England, suggest that mobile clinics may be a useful model of care for marginalized populations.8 Although the same may apply to marginalized communities and populations in low- and middle-income countries, the data from such settings are limited.

The Dominican Republic is a large recipient of international volunteer medical professionals who serve in mobile health clinics due to its proximity to the United States. Two organizations that provide such care in the Dominican Republic are the Institute of Latin American Concern (ILAC) and the Batey Relief Alliance. Currently, the Batey Relief Alliance directly serves 60,000 patients each year. The frequency of mobile health clinics depends on the number of organizations and groups of volunteers who volunteer their time to staff these clinics.9 ILAC is offering at least 6 programs for medical professional volunteers in 2016.10 Within the Dominican Republic, mobile clinics often serve bateys, migrant communities throughout the country that account for a total population of at least 200,000 people and are primarily composed of Haitians or Dominicans of Haitian descent.[11,12]

A three-month observational study conducted on mobile medical vans in a batey in the southeastern part of the Dominican Republic concluded that mobile healthcare might be an effective mechanism for providing acute and preventative care in these areas. The majority of patients served were 8 years of age or younger, with multiple presenting symptoms. Qualitative data from healthcare workers and community members identified the need for an integrative healthcare delivery infrastructure to offer pediatric treatment and provide education in bateys.[13]

Mobile clinics offer an important alternative to typical healthcare since Haitians or Dominicans of Haitian descent are often subject to discrimination within the Dominican Republic. The shared island, Hispaniola, has long been marked by violence between Haitians and Dominicans. Many Dominicans still remember the 22 years of Haitian occupation over 165 years ago. In 1937, the Dominican dictator Rafael L. Trujillo committed the worst atrocities in the island's history, massacring 12,000 Haitians or Dominicans of Haitian origin in the Northwest region of the country.[14] In 1978, the UNESCO Commission on Human Rights announced that Haitian migrant workers were being sold for human labor and that, since 2000, the Dominican government has forcibly rounded-up up to 12,000 migrant workers and settlers of

Haitian origin each year.[14] Bateys are often home to these migrant workers or descendants of migrant workers, and residents of bateys are usually geographically and economically isolated, with limited access to healthcare.[11,15] As a result, the bateys suffer worse health outcomes than other parts of the Dominican Republic. The infant mortality rate in bateys is 41 per 1000 live births compared to the national average of 33 per 1000 live births, and the incidence of diarrheal illness in bateys is 10% higher than the national average.[16]

With this context in mind, this cross-sectional study investigated which individuals in bateys utilize mobile healthcare services and how they perceive mobile health clinics relative to the formal healthcare system. The overall goal was to better understand the effectiveness and potential of the mobile healthcare model in providing care to marginalized populations in this context.

Methods

Setting

This study was conducted in Batey Libertad in the Valverde province of the Cibao region of the Dominican Republic from June to July of 2014. Every year for about the last ten years, four to six mobile clinics have visited the Batey Libertad community of about 1,100 people. The closest small town to Batey Libertad, Esperanza, is about 10 minutes away and reachable by private or public transportation for the equivalent of approximately 0.50 USD, where the community members have access to a public hospital, a public walk-in clinic (called a policlinic) and an assortment of private clinics. The public hospital works on a first-come, first-served basis and is commonly perceived as under-resourced and overcrowded. The policlinic takes a limited number of patients each day, which requires getting in line early in the morning and still may not guarantee a meeting with the physician. The private clinics offer a higher quality of care and can be more time-efficient, but their costs make them inaccessible to many.

Sampling Method

The sample for this study consisted of adults (≥18 years) who resided in Batey Libertad from June to July of 2014. Inclusion criteria included the competence to consent. Participants were limited to one adult per household in order to obtain a feasible representative sample within the study period. If a household had more than one adult present, the household could voluntarily select one participant since there were no criteria based on sex or age. As a result, the potential for selection bias to be introduced should be considered in the findings. Full saturation of the eligible population was achieved by interviewing one representative from each household in the batey during the time of the study. All 173 eligible participants consented to participating. Participants were interviewed based on personal experiences and were not asked about the experiences of other household members.

Households were identified based on a census performed by members of Yspaniola, an education non-governmental organization (NGO) working in the batey. A household was defined as a living space, either a stand-alone structure or as a unique entryway within a larger compound. Households were visited starting from the north side of the batey and working south. Data were collected both in the morning and the afternoon, and if no one was home to participate, households were revisited at another time during the study period. To account for high rates of illiteracy, verbal consent was obtained in the preferred language of the participant (Haitian Creole or Spanish). Questionnaires were also administered in the participant's preferred language. An interpreter from the batey was hired to conduct the Haitian Creole interviews and accompanied the research team for each interview in order to clarify any questions and to ensure no household was missed. Confidentiality was maintained by giving unique identifying codes to each survey participant with the code key locked separately.

This study design received approval by the Institutional Review Board of Yale University.

Data Collection Tool

The questionnaire was developed from four different validated survey instruments used in previous studies.[17,18,19,20] Questions from these four instruments were then combined in different ways to create four main parts: demographic information, health seeking behaviors, perceptions and evaluation of mobile health clinic services and general discrimination perceptions in different aspects of daily life. The data on perceptions of discrimination are not used in this study. Relevant questions were constructed in a variety of forms including open-ended, scales, comparisons, yes/no, etc. Each question and response was recorded by hand by one of the two field investigators using the data collection tool. Each week, all responses were entered into a FileMaker Pro database. Data were transferred to a laptop that was password-protected.

The questionnaire was first translated from English to Spanish by a native Spanish speaker on the research team, and then translated to Haitian Creole by the interpreter. Both translations were validated through pilot testing with two local members of Batey Libertad who were then excluded from study participation. The questionnaire in Spanish and Haitian Creole can be found in the Appendix.

Measures

The independent variables of interest included self-identified nationality, family descent, age, level of education, gender, household size, employment and a calculated socioeconomic proxy variable. Socioeconomic status was assessed based on the possession of a checklist of items suggested by community leaders to reflect an income gradient. These items ranged from mobile phone to a car. Socioeconomic status in this study was selected to reflect extreme poverty and was thus defined as a binary variable of having at least one possession compared to no possessions. Self-identified nationality and family descent were both used as measures of ethnic background since the Dominican Republic has a long history of discrimination based on skin color.[15,17] Three levels of nationality were constructed: Haitian, Dominican-Haitian, and Dominican, while Haitian descent was coded separately as a binary variable based on self-reported description of a family tree. Age, level of education, household size and employment were all coded as categorical, multi-level variables.

In order to describe mobile clinic usage patterns two criteria were used. The first criterion was mobile clinic attendance, which was measured with a binary variable representing whether or not a subject could recall ever having been to a mobile clinic. The next outcome of interest was perceptions of mobile clinic care. This outcome was operationalized with ordered opinion-based comparisons. The first perceptions involved comparing mobile clinics to Dominican local service, looking at overall quality of care between the types of facilities and medical knowledge of foreign versus Dominican healthcare providers. Perceptions of mobile clinics' ability to provide care and trust in foreign healthcare providers were also measured. For these opinion-based questions, previously validated scales and formats were employed, using the responses "Always, Sometimes, or Never" or "Better, Same, Worse" based on the nature of the question.[17]

Data Analysis

Data were cleaned and exported from the FileMaker Pro database for analysis using statistical software StataSE v 12.1. Demographic and socioeconomic information was expressed as frequencies and percentages. Bivariate analysis using Pearson's chi-squared test and unconditional bivariate logistic regression were conducted to investigate the association of demographic and socioeconomic variables with mobile clinic attendance. Variables with associations found to be statistically significant ($p<0.05$) were then included in an unconditional logistic regression model to estimate the adjusted strength and magnitude of these associations with mobile clinic attendance. Perceptions of mobile health clinics were expressed as frequencies and percentages. Bivariate analyses using Pearson's chi-squared test were conducted to describe the association between the perceptions and demographic and socioeconomic variables. Variables found to be significant in bivariate analysis were then included in an ordinal logistic model, chosen based on the ordinal nature of the perception questions. Because the reference category in some instances had a zero frequency, the proportional odds assumption could not be tested but because the outcome was designed to be ordinal, this model was still used.

Results

Study Population

Of the 173 household representatives that participated in this study, 62.4% (n=108) were females. Over half of the population was between 25-45 years old (55.5%; n=96) and less than 10% (8.1%; n=14) were more than 60 years old. The two most common occupations were agricultural work (32.6%; n=56) and domestic work (40.7%; n=70) with 74.1% of women performing domestic work and 80% of men perform-

ing agricultural work. More than 70% of the population did not complete primary school (n=126). The majority of individuals self-identified as Haitian (75.2%; n=131), while 21.4% identified as Dominican (n=37) and 2.9% (n=5) identified as Dominican-Haitian. [Table 1].

Mobile Health Clinic Utilization Patterns

Of the sample of 173 adults, 100 individuals (57.8%) had at one point visited a mobile health clinic. While 74.0% (n=74) of mobile clinic visitors were female, only 45.8% (n=33) of non-mobile clinic visitors were female ($p<0.05$). There was also a significant difference in the age structures of the populations of those who attended a mobile clinic and those who did not, with those who had attended a mobile clinic being older ($p<0.05$). A higher proportion of adults who had not attended a mobile clinic self-identified as Haitian compared to those who had attended a mobile clinic (86.1% compared to 68.0%; p=0.024). A similar trend was observed for those who declared Haitian descent. Among mobile clinic non-visitors, 91.7% were of Haitian descent compared to only 76.0% of mobile clinic visitors (p=0.024). Household size was found to be significantly associated with mobile clinic use as well (p=0.027). Specifically, 55% (n=55) of mobile clinic users had a household size of four or more compared to only 31.9% (n=22) of mobile clinic non-users. Of these individuals who had not visited a mobile clinic, 22.2% (n=16) lived alone while only 14% (n=14) of mobile clinic users lived alone.

In the constructed unconditional logistic model [see Appendix after tables and figures for full table of unadjusted associations], only gender and young age were found to be significant explanatory variables for mobile clinic use. No significant difference was found for socioeconomic status. Males were found to have an odds of visiting a mobile clinic that was 0.35 (95% CI 0.15-0.80) times the odds of females attending a mobile clinic, after adjusting for age, household size, economic status, self-identified nationality, and Haitian descent. The youngest adults were also significantly less likely to have attended a mobile clinic than older adults, after adjusting for the other covariates. Adults ages 25-45 years had an odds of attending a mobile clinic 5.86 times (95% CI 2.00-17.12) greater than the odds of attendance for adults 18-24 years. Adults ages 46-60 years and adults ages 60 years and over also had significantly higher odds of attending a mobile clinic than the youngest adults. [Table 3]. No significant difference was found in the self-reporting of various symptoms between males and females or of individuals in different age intervals [Table 4].

Perceptions of Mobile Health Clinics

Overall, mobile clinics were perceived very positively,as being of high quality and serving the needs of the batey population. These results were especially interesting in comparison to the overall negative perceptions of the local Dominican healthcare system. For 70.7% of the surveyed population, the last visit to the doctor for a consultation or appointment took six or more hours including travel, wait, and appointment time, although most visits were at a distance less than twenty minutes away. For more than half of the population, the most recently visited healthcare facility was a public policlinic. Only 51.1% of those that visited this policlinic described the quality as good. In comparison, 91.9% of participants described the quality of mobile clinics as good or better. Moreover, 75.9% of respondents reported that they thought the quality of healthcare in mobile health clinics is better than in Dominican facilities [Table 5]. These positive perceptions of mobile clinic services extended to the foreign healthcare professionals staffing them. About 88% of respondents said they always trust the foreign doctors in mobile health clinics, while about 72% reported that the medical knowledge of doctors in mobile clinics is greater than that of Dominican doctors [Table 5].

Moreover, across all demographic and socioeconomic variables, there were no significant differences in levels of trust in the foreign doctors staffing mobile clinics. In addition, no significant associations were found between demographic and socioeconomic variables and perceptions of mobile clinic treatment quality compared to treatment quality in Dominican hospitals.

In the bivariate analysis, significant differences across gender and Haitian descent were found for perceptions of the medical knowledge of foreign doctors compared to Dominican doctors. Both of these factors were found to be significant when adjusted for each other in an ordinal logistic model. Specifically, 77.8% of those with Haitian descent perceived foreign doctors to have greater medical knowledge than Dominican doctors compared to less than 50% of study participants not of Haitian descent (p=0.002). This difference corresponded with those of Haitian descent having an odds of perceiving foreign medical professionals to have greater knowledge 3.27 (1.33- 8.05) times the odds of those without Haitian descent. Moreover, 85.1% of males perceived foreign doctors to have better medical knowledge compared to only 64.8% of females (p=0.012) [Table 6]. Similarly, males had an odds of perceiving foreign medical providers to have greater knowledge that was 2.68 (1.05-6.83) times the odds for females [Table 7].

In addition, significant bivariate associations were found between perceptions of mobile clinic ability to provide care and self-identified nationality (p=0.031), as well as with employment (p=0.007). Table 6 shows that 55.3% of those who self-identified as Haitian perceived that mobile clinics had the ability to always provide the care they needed, compared with 31.4% of Dominicans and 20.0% of Dominican-Haitians. However, when self-identified identity was included in the ordinal logistic model adjusting for employment, it was no longer significantly associated with perceptions of ability to provide care [table 7]. Employment remained significant. Agricultural workers perceived that mobile clinics could always provide the care they needed significantly more compared to domestic workers after adjusting for self-identified nationality. Specifically, agricultural workers had an odds of perceiving mobile clinics to have greater ability that was 3.10 (1.31-7.33) times that of domestic workers. Students were also significantly less likely to perceive that mobile clinics were always able to provide the needed care compared to domestic workers, but the number of students in the sample was extremely small, so this finding should be interpreted with additional caution (n=4).

Discussion

This study aimed to describe the interactions of the community members of a batey with mobile health clinics. Understanding the utilization patterns of mobile health clinics can help identify those populations that are most at-risk of not receiving adequate medical care

Healthcare in rural and marginalized communities, such as bateys, can be extremely limited, especially when social barriers exist that inhibit populations from freely using mainstream healthcare facilities. Mobile health clinics have been previously identified as potential ways of serving the most marginalized in high-income countries,[8,21,4,22] but only 58% of this study population had previously used a mobile health clinic. In addition, some sub-populations, specifically young adults and males, were found to underuse mobile health clinic services. It is possible that young adults or males have fewer health concerns for which to seek care, but no significant difference was found between the self-report of symptoms (both past and current symptoms) for these groups [Table 4]. Bateys are known to be traditionally home to migrant workers, who are often young and male.[13,23] This study did not directly ask participants whether they were migrant workers. However, because this study found that young age and being male were significantly associated with lack of mobile clinic use, further studies should specifically include identifying questions about migrant worker status. This type of further investigation could help determine if migrant workers are a population that is missed in mobile healthcare provision. Employment status cannot be used as a proxy since many migrant workers may be currently unemployed or have transitioned to other work from that of which they originally came for. This study distinguishes itself from previous studies on mobile healthcare because it did not involve convenience sampling of individuals who actually attended a mobile health clinic but allowed a broader assessment of utilization patterns to be assessed through a valid sample of an entire community, using a census-like method.

Overwhelmingly, respondents had very positive perceptions of the quality of mobile healthcare. Agricultural workers are often migrant workers who do not have proper documentation. Thus, they could also be largely excluded from the Dominican health system, which might incline them to perceive that mobile clinics are always able to provide the needed care because they are their only option.[15,23] Moreover, differences observed in perceptions on the medical knowledge of foreign doctors also could be related to marginalization from the formal healthcare system. Those that self-identify as Haitian could have had prior negative experiences seeking care in the formal sector or could have been disenchanted by other experiences of discrimination. There are many individuals of Haitian descent who were born in the Dominican Republic or feel they deserve Dominican citizenship, and thus do not self-identify

as Haitian, potentially explaining why self-identified nationality was not also significant in bivariate analysis. Negative experiences with Dominican doctors, such as bigoted comments and dismissive attitudes for those who appear Haitian, have been documented and are more common in public facilities,[15] perhaps explaining why those of Haitian descent are more likely to feel that foreign doctors have better medical training than Dominican doctors.24 It is unclear why there are significant discrepancies between males and females, but no significant differences between those who work in agriculture compared to those who do not. Future research should explore why these differences could be prevalent in order to determine if they reflect actual differences in medical service provided or reflect the way in which treatment is delivered and how respected or accepted the patients feel with certain doctors compared to others.

These conclusions must be taken with caution, considering the study's limitations, the first of which is the study's cross-sectional nature. Because bateys are typically migrant, unrecognized communities, a snapshot description of current conditions could be unrepresentative of other points in time, and this batey could be unrepresentative of other bateys. Another possible limitation to the generalizability of this study is that Batey Libertad has a strong presence of foreigners and NGOs in multiple sectors beyond health, especially focusing on education and youth empowerment. Other bateys or marginalized, rural areas may not see this same degree of international presence. However, because participants often have relationships with foreigners outside the health-services context, they could trust that this project was being conducted independent from a health organization and that their answers would not compromise their future care. The study design attempted to maximize representation by obtaining one adult representative from each relevant household, a census of the households rather than all adults, due to time constraints. These households were allowed to self-select due to feasibility constraints, which could have introduced selection bias. Moreover, the education levels were extremely low in the study population. This raises the possibility that health literacy was also low, and responses to health-related questions must be interpreted with this mind.

Moreover, the purpose of this study was exploratory in nature with many independent variables of interest. The models were constructed based on what variables were found to have significant associations since there is little evidence on the subject suggesting which variables to include. With the numerous independent variables in mind, the findings must be interpreted carefully since there were no a priori hypotheses to test and multiple comparisons were conducted with statistical correction. Further research should attempt to replicate the associations found to be significant.

Conclusions

These findings have relevance to both current mobile clinics and the implementation of future ones as well. First, these findings suggest that mobile health clinics should seek to gain knowledge of who is using their services in order to evaluate the extent to which they are helping to provide care to those who lack it. Second, these findings suggest that mobile clinics serving Batey Libertad should expand their outreach to males and young adults or they should aim to partner with another organization to ensure that these individuals receive adequate healthcare.

Overall, participants had extremely positive perceptions of mobile health clinics, as negative perceptions were less than three percent by each measure. Understanding these perceptions can also bring a new perspective to the debate over the ethicality of medical mission trips and short-term mobile clinics involving delegations of foreign volunteers, which have gained popularity as a type of service or training experience.[3,7,25] This study attempted to bring to light how the beneficiaries feel about the presence of these sporadic services.

In terms of long-term healthcare solutions for bateys, there have been discussions of developing a more integrated primary care center system,[13] but little progress has been made. The results of this study further support the need for a more permanent health facility in Batey Libertad, and other similar bateys since mobile health care attendance still seems underutilized. Moreover, similar studies must be conducted in other bateys in the region in order to draw more comprehensive conclusions about the state of healthcare in the region and how those who wish improve access and coverage can best do so. Future studies could also further explore the underlying reasons for underutilization of mobile clinics, such as if marketing or timing could be improved to better reach those not currently using the mobile clinics. These findings should not be extrapolated to other contexts due to the unique social conditions of bateys and the varying aspects of mobile health care providers. However, this study should inspire similar endeavors in other contexts in order to better understand the effectiveness, quality and acceptance of a large type of service provider that often goes unevaluated. This understanding of a potential tool in reducing healthcare access inequities could contribute to the global work of working towards universal health coverage.

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Immigrant Health and the Intersection of Type 2 Diabetes and Non-Endemic Infectious Diseases in the United States

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The current type 2 diabetes (T2D) pandemic is expected to afflict almost 500 million people over the next 15 years. Its global burden is well publicized, but less attention has been paid to how it interacts with other conditions, particularly infectious diseases like tuberculosis (TB). T2D is characterized by insulin insensitivity, along with chronic low-grade inflammation and subsequent immunocompromise; when comorbid with TB, T2D tends to increase symptom severity and heighten mortality rates. Recent immigrants (both documented and undocumented, especially those from Latin America) and persons of Hispanic or Latino descent in the United States are particularly vulnerable to this comorbidity due to factors such as lack of access to healthcare, poverty and acculturation, meaning the process by which immigrants adopt American behaviors. The goal of this investigation is to elucidate the interaction between T2D and TB, thereby highlighting a troubling disparity in healthcare availability that is likely to apply beyond immigrants and affect other marginalized populations as well.

Introduction

Despite being a noninfectious, lifestyle-related disease, type 2 diabetes (T2D) is emerging as a pandemic with shocking rapidity. 90% of all diabetes cases are type 2, and the current estimate of 340 million T2D sufferers worldwide is expected to balloon to 439 million over the next 15 years.[1,2] This increase in global T2D burden is not particularly surprising given how the high-calorie, low-nutrition American diet and largely sedentary lifestyle associated with the disease are spreading to developing and rapidly industrializing countries.[3] More specifically, the interaction between genetic predispositions, which differ among various ethnicities, and environmental factors such as rapid urbanization, a major shift in the production and consumption of food products and a growing dependence on nutrition-poor processed foods in countries all over the world have spurred and will continue to spur the sharp rise in T2D.[1] Over the next 15 years, the sharpest increases in T2D prevalence are predicted to occur in sub-Saharan Africa (98% increase), the Middle East (94% increase) and the Indian subcontinent (72% increase).[1]

It is no secret that T2D is a global problem, but little attention has been paid to the interaction between T2D and other diseases. T2D has been shown to interact negatively with other conditions from non-communicable diseases such as Alzheimer's to various infectious diseases including tuberculosis, Chagas disease and dengue fever.[4,5,6,7] It is also important to note that diabetes exacerbates a variety of US-endemic infectious diseases, such as influenza, pneumonia and other respiratory infections and urinary tract infections.[8,9] In one striking example, along the Texas-Mexico border near Matamoros, Mexico, 28% of TB cases were attributed to underlying T2D.5 T2D also accelerates the acquisition of drug resistance in TB patients, which creates not only a public health issue but also an economic burden.

Undocumented and documented immigrants, particularly Hispanics and people of Latin American origin, are especially at risk for the T2D/TB comorbidity. In addition to discrimination and poverty, immigrants of this background face deteriorating physical and mental health that counter intuitively worsen the longer they stay in the US.[10] As immigrants acculturate to American diets and exercise habits, they also become at risk for developing T2D.[11,12] Their susceptibility to T2D, along with increased likelihood of coming into contact with other immigrants from TB-endemic countries—often in Latin America, Asia and South America—puts immigrants especially at risk for this underappreciated comorbidity.[13] Improving disease surveillance, initiating focused research efforts and increasing healthcare access are important strategies for tackling this growing problem of T2D/TB interaction.[5] Understanding the interactions between these diseases will be crucial to everything from global economic development to disease eradication to poverty alleviation and beyond.

Type 2 Diabetes (T2D)

T2D is a chronic disease characterized by insulin insensitivity, which causes glucose to build up in the bloodstream, eventually leading to damage of blood vessels and nerves, heart disease and kidney failure.[14] Patients with T2D also tend to have chronic low-grade inflammation due to the production of excess cytokines, which are immune system signaling molecules. These cytokines are produced by the pancreas and adipose tissue and can disrupt proper adaptive immune responses. The inflammation causes tissue damage in the pancreas and elsewhere, leading to an immunocompromised state with both abnormal insulin production and general insulin insensitivity within the body.[15,16]

Tuberculosis

TB is an infectious disease caused by the bacterium Mycobacterium tuberculosis, which is highly transmissible through the respiratory droplets of patients with active TB. People with compromised immune systems, such as those with T2D, are more

likely to develop active TB; those with healthy immune systems are better able to fight the infection. Symptoms of active TB include fever, cough with bloody sputum, weight loss and weakness, which can ultimately lead to death.[17]

TB is considered one of the 'Big Three' diseases, along with HIV/AIDS and malaria, which kill millions worldwide and are difficult to control. Infecting one-third of the world's population, TB is the second most prolific infectious killer.18 With the introduction of the Millennium Development Goals by the United Nations, fighting the 'Big Three' has become a priority. As a result of worldwide drug programs and treatment efforts, the rates of new TB infection have been slowly but steadily declining.[17] In the United States, 9,241 TB cases were reported in 2014, indicating a decline of 2.2% from the previous year; however, 66% of TB cases in 2014 occurred in immigrants.[19] More specifically, 20.6% of those cases were in Mexican immigrants. Members of the Hispanic/Latino ethnic groups who are not necessarily immigrants have TB rates that are almost eight times higher than that of whites in the US.[20] Texas, California, New York and Florida all had TB incidence rates that were higher than the US average in 2014 ; these states are also home to large immigrant communities.[20,21]

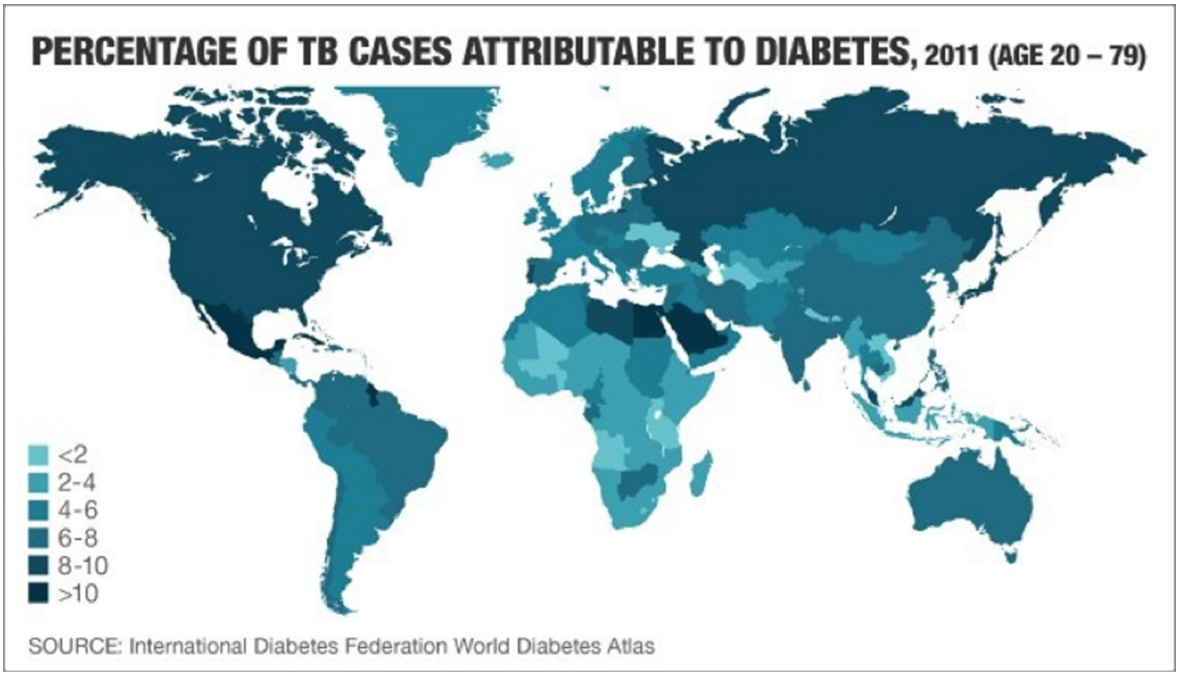

Figure 1. This map is almost a complete inversion of a traditional map of TB distribution alone, where TB rates are highest in developing countries. It is not TB, but T2D, that is the driving factor and the geographic determinant behind the rise and pattern, respectively, of the TB/T2D comorbidity. Figure reproduced with permission from the International Diabetes Federation.[23]

Intersection of T2D and TB

The existence of mutually negative interactions between T2D and TB is not a new discovery. However, only recently has the T2D/TB comorbidity become a problem as the ever-expanding T2D pandemic sweeps into areas where TB is endemic, such as developing countries in Central and South America and Africa (Figure 1).[22] A traditional map of TB distribution would show the highest TB prevalences in developing countries with almost no cases in the US. In sharp contrast, Figure 1 shows high TB prevalences in the US and other developed countries that are attributable to similarly high T2D prevalences in those areas. As T2D prevalence skyrockets in developing countries over the next 15 years, the T2D/TB comorbidity is likely to markedly increase as well.[1]

T2D affects the outcome and severity of TB in a variety of ways. Much still remains unknown about how these two diseases interact, but research has yielded several important insights: T2D heightens the likelihood of contracting TB, increases TB severity, encourages the development of drug resistant TB, disrupts the normal immune responses to TB and alters the profile of the at-risk TB population.[24]

A recent study looking at the Texas-Mexico border found that in this region, 28% of TB cases are due to underlying T2D.[5] The study concluded that the high prevalence of T2D around the border of southern Texas and northeastern Mexico and the increasing spread of the disease worldwide make T2D a substantial threat to TB control. In some areas, T2D is even more of a threat than HIV despite the latter's attendant immunocompromise and its ability to make those infected more susceptible to other infections.[5, 24]

Diabetic patients with TB exhibit severe symptoms and even resistance to standard TB treatment. Researchers have observed that diabetic patients suffering from TB are more likely to die than non-diabetic patients with TB.[5] Additionally, diabetic patients tend to have the more severe and infectious forms of TB, namely pulmonary and cavitary TB.[5] Pulmonary TB occurs when TB bacilli infect the lungs (as opposed to infecting other areas of the body), and in general, cavitary TB will appear in 40-87% of pulmonary TB cases. In cavitary TB, cavities form in the lungs and are colonized by high loads of TB bacilli, making this form of the disease especially contagious. Most drug-resistant forms of TB involve cavitation.[25]

One method of gauging TB severity is by examining bacterial loads in response to treatment. A study in Veracruz, Mexico, compared the responses of diabetic and non-diabetic TB patients to TB treatment over time. The researchers found that not only did the diabetic patients have higher initial loads of TB bacteria, but they also remained TB-positive for longer than non-diabetic individuals (Figure 2).[26] This result suggests that having T2D negatively impacts the effectiveness of TB treatment by delaying bacilli clearance, which can facilitate the spread of TB in vulnerable populations.[26] Another study by the same group in Veracruz found that diabetic patients are 2.8 times more likely to develop drug-resistant TB than non-diabetics.[27]

Researchers in Taiwan obtained similar results; their measures of severity included stage of infection, bacterial load, rates of treatment failure and duration of bacterial clearance. They found that diabetic patients scored higher on all markers of TB severity than did their non-diabetic counterparts. Additionally, they found that diabetics were more likely to develop multidrug-resistant TB (MDR-TB), which is non-responsive to the two most effective TB drugs. They suggest that higher bacterial loads in diabetic patients provide increased opportunity for mycobacteria to mutate and become drug-resistant.[28]

Generally, when external respiratory droplets from a person with an active TB infection enter the lungs of a non-diabetic patient, there are four possible outcomes. First, the TB bacilli in those droplets could be rapidly and effectively eliminated by the innate immune response. Second, the bacilli could replicate and initiate a primary TB infection. Third, the bacilli could establish a latent, non-contagious infection by becoming dormant. Fourth, the bacilli could revive the dormancy of a latent infection, result-

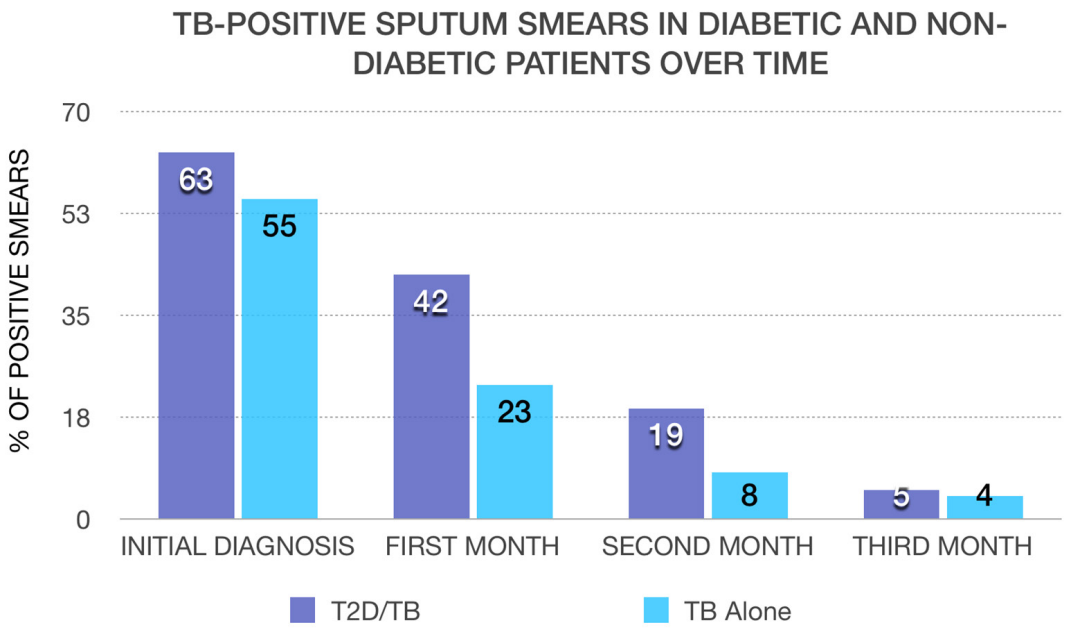

Figure 2. Diabetics remain TB-positive for longer than non-diabetics after initiating treatment. A longer period of infectiousness among diabetics could put contacts of those individuals at higher risk of contracting TB than contacts of non-diabetics. Adapted from Pérez-Navarro, et al. (2015).[26]

ing in reactivation TB.[29]

In vitro studies involving monocytes from diabetic patients challenged with TB bacilli have shown a reduced ability of these monocytes to phagocytose, or bind and engulf, the pathogens. The researchers suggest that this reduced binding is due to defects in complement or serum opsonins, which normally collect on the surface of a pathogen to mark it for phagocytosis.[5] These defects in phagocytosis often lead to unrestrained replication of TB.[5]

The defects in the innate immune response of diabetic patients to TB are compounded by the simultaneous alteration of the adaptive response. Studies have shown that diabetic patients tend to have a hyper-reactive adaptive response to TB, meaning T-cells proliferate at higher rates than usual in response to TB infection. This hyper-reaction may exist to compensate for the inadequate innate response and may be responsible for diabetics' higher susceptibility to TB, but the connection requires further study.[5] The failure of diabetic immune systems to properly eliminate TB infections helps account for the increased TB severity suffered by diabetics.

Interestingly, a study examining the Texas-Mexico border revealed that the at-risk population for the T2D/TB comorbidity is distinct from that for TB alone. In the United States, the populations most at risk for TB alone are young (<40 years old), HIV-positive homeless males with histories of drug or alcohol abuse, imprisonment and/or immigration. In stark contrast, the US groups at the Texas-Mexico border most at risk for the T2D/TB comorbidity are older (>40 years old), Hispanic females with none of the social risk factors (not including immigration) of the aforementioned TB-risk population. Importantly, the older age of the latter group corresponds with the typical age of onset of T2D.[24] T2D, like HIV, hinders the immune response and increases TB susceptibility. The typical TB at-risk population has immigration in common with the TB/T2D at-risk group, indicating that it is likely that TB is associated with the process of migration to America or possibly with contact with recent immigrants.

Immigration

Although immigrants to the US tend to have lower levels of obesity than those born in the US, the longer they reside in the US, the higher the likelihood of their developing T2D.[11] Recent immigrants from Mexico and Central America have a diabetes prevalence of about 8%, which is lower than the overall US prevalence of 9.3%.[30,31] However, later generation immigrants of Hispanic background in the US have a diabetes rate of 12.8%, suggesting that the risk of developing T2D increases over time and from generation to generation for Hispanic immigrants.[30] This increase in T2D development is a far-reaching problem, considering that the immigrant population in the US has more than quadrupled over the past forty years so that 13% of the US population was foreign-born in 2011. Of that 13%, the majority (53%) are from Latin America.[32] Interestingly, recent immigrants tend to have longer lifespans, lower disability rates and better overall health than their US-born counterparts. Researchers attribute this phenomenon to the 'healthy immigrant effect,' a term that describes how those who survive the journey into America are only those who are mentally and physically healthy enough to do so.[32] However, over time, immigrant health gradually declines to match or fall below the poor baseline of American health. Immigrants to the US face many challenges that interact to affect health outcomes, often negatively. Poverty, inadequate healthcare, poor education, discrimination and acculturation combine to cause mental and physical health deterioration.[10,32]

Lack of healthcare access among immigrants (both documented and undocumented) and their families as well as the process of acculturation are two major causes of declining health. For example, Hispanic immigrants live, on average, five years longer than the total US-born population. Strikingly, although the lifespan of US-born Hispanics is still higher than that of the total US-born population, it is approximately 2.9 years less than that of Hispanic immigrants, indicating a decline in lifespan.[32] Furthermore, in stark contrast to recent immigrants, later generation immigrant populations (i.e. those whose parents, grandparents, etc. were immigrants) exhibit sharp declines in both physical and mental health. For example, the rates of both chronic conditions, such as diabetes, asthma and obesity, and learning disabilities, such as ADHD, in children increase markedly in direct proportion to the mother's length of US residency.[12,32]

Undocumented immigrants or recent immigrants without health insurance especially suffer from a lack of access to healthcare, resulting in underutilization of healthcare services, which could result in an increased risk of disease. Poverty plays an important role in healthcare access; Hispanic immigrants have the highest poverty rates of all ethnic groups, with 26.9% of Hispanic immigrants extremely poor and an astonishing 57.2% in or near poverty, compared with a mere 13.5% of US natives extremely poor and 31.1% in or near poverty. Furthermore, 56% of Hispanic immigrants are uninsured and 51% are on welfare, indicating that this group is largely devoid of the finances essential to securing good health and procuring healthcare when necessary.[33] Although recent immigrants are in better health than their counterparts who immigrated less recently despite socioeconomic status, this difference quickly levels out. Acculturation puts immigrants at risk for a variety of health conditions. American habits such as poor diet, sedentary lifestyle and smoking contribute to the development of excessive weight and obesity and can eventually lead to more serious diseases such as type 2 diabetes (T2D).[12]

When these environmental and lifestyle-related risk factors are combined with a disparity in healthcare access between the US-born and the foreign-born, it is not surprising that immigrants are eventually worse off in terms of health outcomes than their US-born counterparts.

Immigrants provide an interesting case study for the diabetes/infectious disease intersection due to their susceptibility to T2D after American acculturation and their increased likelihood of contact with new immigrants from TB-endemic countries. Despite declining rates worldwide and low rates in general in the United States, immigrant populations in the US are especially vulnerable to developing TB. A recent study found that immigrant children have TB rates 32 times higher than their counterparts born in the US to parents born in the US. This elevation of TB rates extends to second-generation immigrant children as well; these US-born children with foreign-born parents have TB rates six times higher than their counterparts with US-born parents.[34] Hispanics made up the largest proportion of these second-generation immigrant children; additionally, two-thirds of TB exposures occurred in the US, underscoring the significant role of disease spread in immigrant populations coming from TB-endemic countries.[34] Immigrants, both undocumented and documented, enter into close-knit communities in the US, especially along the border in Texas. As immigrant communities develop, the US-born, later-generation population will inevitably mix with the recently arrived, foreign-born population. The US-born are more likely to exhibit a range of behaviors that put them at higher risk for chronic conditions such as T2D, which is a major risk factor for a variety of infectious diseases. For example, first generation Mexican immigrants have smoking rates of 8.5%, which, for later generation immigrants, jumps to equal the national average of 17.8%.[12,35] Therefore, as new immigrants or refugees from any countries endemic for diseases such as TB enter into communities in the US, they are potentially bringing deadly diseases to communities that are in a uniquely vulnerable position. [24,36]

T2D/TB Healthcare Requirements

As the T2D/TB comorbidity becomes more prevalent, especially in at-risk immigrant populations, interactions between T2D and TB medications must be considered. Diabetes care on its own is very complex and must be carefully managed; this kind of intricate treatment is difficult in low-resource or high-disparity settings, such as in immigrant populations in the US with inadequate access to healthcare.[37] When TB also becomes a problem, the healthcare requirements skyrocket to unsustainable levels for the populations most at risk for the T2D/TB comorbidity.

TB treatments do not work the same in all patients. Obese patients who receive TB drug dosages based on their total body weight could experience adverse effects due to drug toxicity.[38] Obesity can also inhibit treatment by altering the body's metabolism. In obese patients or those with poorly controlled T2D, the resultant hyperglycemia can lead to changes in how drugs are metabolized. This altered metabolism can negatively affect treatment for conditions such as TB by decreasing drug concentrations and reducing their efficacy, thereby making TB infections in diabetics more difficult to treat and eliminate.[26] More research is necessary to further elucidate how body weight influences the action and efficacy of drugs.

As TB/T2D comorbidity becomes more prevalent, interactions between TB and T2D drugs must be taken into account. The need for more integrated medical care with this comorbidity is highlighted by a recent study, which found that the standard TB drug rifampin could have negative effects in diabetic patients even if those patients are controlling their T2D. The study examined the interactions between rifampin and gliclazide, a common antidiabetic drug. They determined that rifampin increased clearance of gliclazide, therefore reducing the efficacy of the latter drug.[39] In this way, TB treatment can negatively impact the pharmacological control of T2D, thereby inducing hyperglycemia and making the TB drugs less effective, in a seemingly endless cycle of negative interactions.

Another standard TB drug, isoniazid, has been shown to be potentially harmful for immunocompromised patients in particular. A recent study found that isoniazid impairs adaptive immune responses to the TB bacterium through the apoptosis of Mycobacterium tuberculosis-specific CD4 T-cells.[40] Therefore, patients treated with isoniazid are more likely to suffer TB reinfection or reactivation.[40] In patients with already compromised immune systems, such as those with T2D, isoniazid treatment could further worsen their ability to fight infections. This view is complicated by the previously mentioned observance of a hyper-reactive T-cell adaptive response in diabetic patients; knocking down T-cell activity in these individuals may not be as devastating as it would for non-diabetic individuals with normal levels of activated T-cells.

Transmission and Infectivity

The US has a very low prevalence of TB and may therefore be more vulnerable to and less well equipped to handle a possible epidemic due to an influx of an immigrant source population.[41] The likelihood of such an epidemic depends on many factors, including contact between ill individuals (such as immigrants) and susceptible individuals (such as diabetic Americans). Given the 'othering' of Latin American immigrants in the US, immigrants tend to form tight, close-knit communities that separate them from Americans. Therefore, it is quite possible that immigrants entering the US with TB will inadvertently facilitate transmission within their communities. Immigrant populations in the US, although they do tend to cluster together, still interact on a daily basis with people outside of their communities. For example, children from immigrant populations go to school with children of a variety of ethnic groups, and adults have jobs that involve routinely interacting with unfamiliar individuals. Thus, the assumption that TB, once introduced to the US by an immigrant, would stay within that community is not realistic.[24]

It is possible that T2D will fuel a rebound in TB rates in the US, which have been steadily declining since 1992, in the same way that HIV/AIDS encouraged a TB epidemic in the late 1980s. The most recent TB crisis in the US occurred between 1985 and 1992, when the epidemic of HIV combined with increased immigration from TB-endemic countries encouraged high rates of TB transmission and subsequent infection.[41] If this past crisis is any indication, the US has been historically unprepared for TB epidemics. Additionally, the spread of TB beyond the population of those with HIV/AIDS highlights the relative ease with which TB can infect those outside of communities made vulnerable by chronic, immunosuppressive diseases. Furthermore, although the most recent rates of TB in the US show a decline from the previous year, this decline is the smallest in over a decade, indicating that other factors, such as the increase in T2D, may impede the success of TB control strategies.[19]

Many other factors complicate predictions about the potential for TB transmission in countries such as the US. These factors, in addition to prevalence of diabetes, include age structure of the population, population growth and urbanization. A recent study examined how these factors interact to affect TB rates in a high-incidence (India) versus low incidence (Korea) country. As for age structure, TB tends to affect the elderly more severely; it takes time to progress from infection to active TB with the median incubation period being within the first two years following infection; therefore, TB prevalence is higher in older populations.[42,43] Shifting age structure is related to population growth; an increase in elderly people could result in higher TB rates. Finally, urbanization has differing effects in a country like India versus a country like Korea.[42] In India, urbanization increases opportunities for TB transmission, thereby increasing prevalence rates in cities. Conversely, TB rates in urban Korea were lower than in rural Korea.[42] As a result of these various factors interacting, high-TB incidence India has an increasing T2D prevalence, while low-TB incidence Korea has a decreasing T2D prevalence.[42] As T2D becomes a pandemic and proliferates in areas that, like India, are undergoing an economic, structural and population-based transition, efforts to curb the rise of TB will likely be complicated.

As a country with a low TB burden but an increasing preva-

lence of T2D, the US seems to lie somewhere between India and Korea. The US has excessively high T2D rates, an aging population and immigration populations, such as those from Latin America, which could serve as TB vectors. Thus, there is a firm possibility that TB could take hold in the US unless, as the researchers suggest in relation to India and Korea, early TB drug treatment and surveillance are prioritized.[42]

Economic Burden

T2D encourages the development of drug resistant TB, which can be exorbitantly expensive to treat. In 2013, there were 9,582 newly reported TB cases in the US, with immigrants shouldering the majority of the case burden at 65%. After Asians, Hispanic populations have the highest rate of TB prevalence in the US at 28% of all US TB cases. Additionally, the majority (51%) of TB cases occurred in Texas, Florida, California and New York, all of which have large immigrant populations.[44] This TB burden represents an economic hardship for both those populations most at risk and the healthcare system that may or may not shoulder the cost of treatment.

The average cost of treating regular TB in the US is $17,000 per case. As drug resistance increases, treatment costs skyrocket. For comparison, the average cost of treating multidrug-resistant TB (MDR-TB) is $134,000 per case, and treating extensively drug-resistant TB (XDR-TB) costs, on average, $430,000, making MDR- and XDR-TB treatment often more expensive than the lifetime treatment of a patient with HIV or breast cancer.[45] Treatment for MDR- and XDR-TB involves expensive medications, lengthy hospital stays and extensive case management. Even though drug-resistant TB represents just 1-1.5% of all US TB cases, the enormous expense of treating these cases is a considerable problem, especially since public funding covers the majority of the expense. Between 2005 and 2007, treating these cases cost nearly $17.5 million and $2.1 million for 364 cases of MDR-TB and 9 cases of XDR-TB treatment, respectively.[45] Public funding covered 75% of MDR-TB costs and 100% of XDR-TB costs.[45]

As previously mentioned, T2D enhances the severity of TB and increases the likelihood of developing drug-resistant forms of TB.[27] It is possible that rates of drug-resistant TB among diabetics might rise in parallel to the rates of T2D and that the drug-resistant TB could spread rapidly and affect non-diabetics as well. Therefore, rising rates of T2D and MDR/XDR-TB would increase the US economic healthcare burden due to the exorbitant cost of treating drug-resistant TB. Improved access to healthcare among vulnerable populations, such as immigrants, would help to curb the development and spread of both diseases and could ultimately reduce current healthcare costs or prevent increasing future costs.

Conclusions

As has been discussed, the longer immigrants stay in the US, the more likely they are to experience a decline in health.[32] Immigrants may develop T2D and accompanying health deterioration as a part of the acculturation process, which could put them at risk for a variety of other diseases, such as tuberculosis.

Members of tight-knit communities, where new arrivals from Latin America and later-generation immigrants meet, may be uniquely at risk for infectious diseases. Recent immigrants from countries where diseases such as TB are endemic may bring the disease with them into these communities, thereby exposing later-generation immigrants experiencing the typical health decline to infections to which they are particularly susceptible.[24]

Given that T2D is a pandemic and not limited just to immigrants, the potential spread of infectious disease in immigrant communities is also dangerous for the greater US population. For example, the US does not traditionally vaccinate against TB, meaning the arrival of TB in the US in the midst of a diabetic, immunocompromised and unvaccinated American population could be an unprecedented public health crisis.

There is a host of potential measures to combat the looming threat of diabetes and infectious disease in immigrants and other populations, including both simple measures like better screening procedures and education and more complex measures like reformed immigration laws at the national level. Smaller scale measures to catch any infections before they even enter the US include better health surveillance, improved health screenings at borders and specific training of physicians to check for previously overlooked or misdiagnosed diseases, such as asymptomatic TB. Recently, Minnesota launched an initiative to screen for latent TB in immigrant and refugee populations. This initiative involves screening all foreign arrivals regardless of how long they have been in the US. Following screening, those with positive test results are more thoroughly tested with chest X-rays and physical exams, accompanied by an in-depth medical history. Physicians then counsel patients about what latent TB is and follow-up with appropriate treatment to avoid reactivation TB. This type of initiative is highly replicable within other states and would help reduce not only the burden of latent TB but also the possibility of reactivation TB among immigrants.[36]

The current surveillance in place for TB is the National TB Surveillance System, which relies on state and local health departments to report confirmed TB cases to the CDC.[46] However, the initial sources of TB reports are physicians. Because immigrants have poor healthcare access, it is unlikely that this surveillance system is capturing a highly at-risk population. Therefore, national TB reports may be underestimates of the true burden. To alleviate this problem, active instead of passive surveillance for TB may be necessary. Active surveillance could include calling households, sending out questionnaires, surveying doctors or other health professionals in immigrant-dense areas or even in-person canvassing of vulnerable immigrant communities. Active surveillance could not only identify undiagnosed TB cases but also provide encouragement to those afflicted to seek early treatment. Although active surveillance is expensive, the growing severity of the T2D/TB comorbidity warrants this increase in funding to limit this problem before it grows to be even more unwieldy. Another possibility to enhance surveillance is to adopt an entirely electronic reporting system, such as the Tuberculosis Information Management System (TBIMS) put in place in China beginning in 2005. TBIMS has proven to be remarkably effective, producing a vast amount of complete, real-time case data that can be accessed at all levels of TB healthcare and political organization.[47]

From a prevention standpoint, educational campaigns in immigrant communities about T2D risk factors such as smoking, poor diet and excessive weight/obesity could help improve health literacy and alter lifestyle behaviors that promote the development of T2D.[1] Furthermore, educational pamphlets or brochures handed out at the border could likewise disseminate actionable information about diabetes prevention to the persons most at-risk.

Larger scale measures include reformed immigration procedures that are able to better classify and handle immigrants escaping humanitarian crises, better access to healthcare for those most at risk of developing these comorbidities and research into how T2D and infectious diseases interact so as to be able to better treat comorbid patients and lessen disease severity and spread. Much of the research surrounding T2D/infectious disease comorbidities, particularly for Chagas disease, is limited to animal models, indicating how far away we are from really understanding this intersection in real populations. The larger scale measures suggested, with the exception of further research, would be the most difficult to implement. Immigration regulations are an incredibly controversial issue, which slows down the legislative process considerably. The complicated and therefore lengthy procedures of Congress present a time issue for those at-risk for T2D/TB because managing these comorbidities is an intricate process that requires access to significant amounts of healthcare as soon as possible. Given how poorly controlled T2D makes TB and other infectious diseases worsen, it is crucial that immigrants have improved healthcare access both for their own health and the health of their communities. Furthermore, increased access to healthcare would allow previously undiagnosed conditions in recent immigrants to be identified and treated before symptoms increase in severity and communities are exposed.[48] The skyrocketing cost of healthcare is a problem for all Americans, not just recent immigrants. Reining in these costs and making healthcare and health insurance more

affordable would greatly increase the likelihood of widespread access and coverage. Furthermore, prevention of TB through healthcare-provided screenings would save millions of dollars in TB treatment down the road.

Understanding the interactions between T2D and infectious diseases such as TB will become crucial as the comorbidities become more prevalent, especially in the US and developing countries. Immigrants to the US provide an interesting case study for T2D comorbidities as they experience the combined negative circumstances of being susceptible to T2D by virtue of American acculturation, experiencing potential exposure to infectious disease from other recent immigrants and lacking the healthcare necessary to treat these diseases. Preventing the compounded negative health effects of these comorbidities both in the US and globally will require a combination of political and social reforms and more intensive research to fill in the many knowledge gaps that remain.

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Sex Work and the Law in South Africa, Sweden and New Zealand: an evidence based argument for decriminalization

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Sex workers face a myriad of intersecting health and safety concerns including HIV transmission, access to health and social services, violence via clients, police harassment, social stigma and economic insecurity. A growing demand for the universal decriminalization of sex work has garnered significant media attention and has brought about heavy public scrutiny. The countries of South Africa, Sweden and New Zealand all employ different legal approaches to the sex trade, subscribing to prohibition, partial decriminalization and legalization, respectively. The impact of the three legislative models on the health and wellbeing of sex workers vary accordingly. This article considers South Africa, Sweden and New Zealand as proxies of the three legal paradigms, assesses the varying outcomes on the lives of female sex workers, and concludes that the overwhelming body of evidence points to a positive association between decriminalization and improved health and working conditions for sex workers. This article appraises the impacts of the various systems, analyzes pervasive themes and provides a brief assessment of innovative approaches used to address social stigma and health disparities.

Introduction

The prospective decriminalization of the sex trade has inspired some of the most divisive arguments in global health policy for decades. Recent calls for the end of prohibition of sex work by Amnesty International and other health and human rights organizations have garnered significant media attention and catalyzed a global debate.[1] This highly publicized policy initiative suggests a shifting mentality in the public opinion of sex work from a largely prohibitive stance toward an approach which seeks to advance public health. The prohibition of sex work, which has traditionally rested in ideology rather than evidence-driven policy, is a trend that has become increasingly anachronous in recent years.[2] Appeals to abolish the systems that criminalize sex work are gaining legitimacy in the public's consciousness and with stakeholders such as sex workers, advocates and legislators all over the world.

While some administrations prohibit sex work on grounds of cultural or religious opposition, others do so in an attempt to protect public health, limit disease transmission and deter the exploitation of women and other marginalized populations. Some countries, such as Sweden, penalize consumers of sex in efforts to empower women and promote gender equality. Proponents of decriminalization, however, argue that regulation, as opposed to prohibition, helps to promote the visibility of this traditionally clandestine practice and allows for more effective public health interventions. Yet despite recommendations from multinational organizations, such as The Joint United Nations Programme on HIV and AIDS (UNAIDS) and Amnesty International, many administrations remain staunchly opposed to legalization.[3]

Background

Legal approaches to sex work fall into one of three categories: full prohibition, partial decriminalization and legalization. South Africa, Sweden and New Zealand represent each of the three categories, respectively, and the impacts of these policies on the health and wellbeing of sex workers vary accordingly.

Discussions of the partial or total decriminalization of sex work have been ongoing in South Africa's parliament and media for several decades, but despite the vocal outcries of select politicians and global health entities, full prohibition of the sex trade remains intact.[4] In Sweden, clients can face fines and potential imprisonment for their role in sex-based transactions, while sex workers are legally permitted to provide services.[5] At the other end of the spectrum, New Zealand has legalized the sex trade and seeks to improve public health with regulation. This policy analysis will juxtapose the impacts of the policies on the health and working conditions of Female Sex Workers (FSW) in the three aforementioned countries in order to compare their outcomes and to advocate for the adoption of evidence-based policy that advances both public health and human rights.

The World Health Organization (WHO) defines sex workers as "Women, men and transgendered people who receive money or goods in exchange for sexual services, and who consciously define those activities as income generating even if they do not consider sex work as their occupation."[6] According to the Center for Disease Control (CDC), this may include escorts, exotic dancers, workers with legal recognition, people who work in massage parlors, people who work in the adult film industry as well as men, women and transgender people who participate in survival sex or street-based sex work.[7] The catalysts for engaging in the sex industry vary drastically between different individuals and populations. Due to the breadth of these circumstances, this analysis will focus primarily on cisgendered women who are street-based, who work privately out of residences or on the Internet, or who work in brothels or other similar establishments. However, the experience of cisgendered female sex workers cannot be assumed to translate directly to other vulnerable populations that are outside of the scope of this analysis. There is a need for greater research of the political implications for transgender and male sex workers, who often experience stigma, health disparities and violence to a higher degree than cisgendered women. Additionally, the field of sex work is exceedingly complex. This policy analysis seeks to provide an objective comparison of the body of evidence regarding sex work. However, as with any similarly charged subject, the pre-existing views of the author cannot be entirely extirpated from analysis.

South Africa

Background

South Africa's Sexual Offenses Act, 1957 penalizes "any person who knowingly lives wholly or in part on the earnings of prostitution."8 While these infractions are punishable by fines or imprisonment, sex work is nonetheless relatively common in South Africa.[9] With an unemployment rate of over 25% and an annual per capita GDP of $6800, many women turn to alternative markets to generate income.[10] In 2013, the South African National AIDS Council (SANAC) estimated that between 0.7% to 4.3% of the adult female population had participated in transactional sex.[11]

The legal status of sex work in South Africa has been periodically called into question by the public and by legislators. The drafting of the constitution during the early post-apartheid period inspired critical discourse amongst legislators regarding the criminalization of the sex trade.[4] In 1997, the Gauteng Department of Safety and Security established a taskforce which incorporated both sex workers and non-governmental organizations (NGOs) that focused on the potential benefits of decriminalizing the sex trade. This campaign was eventually adopted as a part of the 1998 ANC platform.[12] After the election, however, the issue was abandoned in the face of public opposition. The discussion was largely absent from civil discourse until 2010, when the National Commissioner of Police publicly advocated an injunction on the prosecution of sex workers in red light districts during the World Cup events.[13] While inspired by an effort to protect the health of sex workers and South African citizens amidst an anticipated influx of sex tourism, this injunction was ultimately denied amidst fears that it would incite human trafficking. Due to an increased police presence throughout the event, FSW noted an 11% increase in interactions with law enforcement during the World Cup and a 5% decrease in engagement with health services in Cape Town, Johannesburg and Rustenburg.[14]

Prohibition and Health in South Africa

Testimonials from 136 FSW in the southern African region reveal that the lack of legal recognition of the sex trade fosters a perceived sense of enmity from the state.[12] Women report that the fear of prosecution and maltreatment prevent them from engaging in healthcare and preventative services. Sex workers in South Africa frequently avoid healthcare facilities where they experience a lack of privacy and may be denied services.[15] Women who have disclosed their involvement in the sex trade to healthcare providers report having been denied Post Exposure Prophylaxis (PEP), substance use treatment, emergency contraception and condoms.[15] Barriers to accessing health services for FSW have significant implications for the transmission of HIV within this community. While the HIV prevalence rate is estimated to be 19.1% in the general South African population, it is thought to be between 44% and 69% in sex workers.[15] 20% of all new HIV infections in South Africa are estimated to be related to sex work.[11]

Medical advances made in HIV prevention are also hindered by the prohibition of sex work. The Treatment as Prevention method, established as an effective tool in preventing the spread of HIV since 2011, utilizes antiretroviral treatment (ART) to suppress HIV viral loads in those living with the virus. This method has proven to be extremely effective in preventing transmission, lowering the risk by as much as 96 percent in clinical trials.[16] However, the current reluctance or inability of sex workers to access preventative services restricts the epidemiological benefits of treating HIV as a preventative measure. Although HIV prevalence is significantly higher in FSW than the general population, this group is 12 times less likely to be on ART than other South Africans.[17]

The health and wellbeing of FSW in South Africa are not merely products of the legal system; researchers have found that social stigma and discrimination are also responsible for declining health conditions of FSW. A 2012 study of HIV prevalence found that much of the increased risk for FSW is a "manifestation of their extraordinary social and economic vulnerability and the high levels of stigma and violence attached to sex work."[18] Contempt for sex workers is prevalent in South Africa's political and social systems and prevents many women from receiving basic health services. FSW have reported being treated with malice from healthcare workers who suspect them of participating in sex work and can be subjected to inadequate treatment or denied treatment altogether.[15]

The severity of these trends has not been entirely overlooked by domestic health entities. In 2013, the South African National AIDS Council released an official strategy entitled The National Strategic Plan for HIV Prevention, Care and Treatment for Sex Workers. This strategy, developed with input from sex workers and advocacy groups, establishes an agenda for addressing the HIV epidemic among sex workers that includes increased dissemination of prevention materials, information and education, increased coverage of sex worker and client services, mobilization of sex worker advocacy groups and formal acknowledgements of the impact of stigma on the population.[11]

Prohibition and Working Conditions in South Africa

The lack of legal recognition for sex workers precludes the securement of occupational rights, and reinforces stigma against this population. FSW are viewed by the state as "reservoirs of disease" and are vilified as the source of the HIV epidemic in the country.[12] In a survey of street-based sex workers in Cape Town, FSW were asked how often they felt afraid for their safety. 28% of women reported "never," 41% replied "sometimes," 19% said "often" and 12% said "always."[19]

Police in South Africa are often the most severe perpetrators of violence toward sex workers. In 2008, the Institute for Security Studies partnered with the Sex Worker Education and Advocacy Taskforce (SWEAT) to conduct 164 interviews with sex workers. The researchers found that 47% of respondents had been threatened with violence by police, 12% had been raped by police and 28% had been blackmailed for sex by police.[19] Fifty-three percent of FSW polled stated that they always carried condoms and believed condoms to be essential in preventing the transmission of HIV.[20] However, many women reported a reluctance to carrying condoms as they are frequently confiscated by police or are used as a means of unlawful detention. One South African outreach worker stated: "[The police officer] said we are not allowed to give sex workers condoms because we influence them to do sex work and it is not allowed."[20] Additionally, formal documents issued by the National Prosecuting Authority in 2011 encourage police to make arrests based on the clothing a woman wears, the streets she frequents and whether or not she is a "known prostitute".[20] The maltreatment perpetrated by police in South Africa creates an environment in which women are afraid of law enforcement. The futility of reporting abuse and the fear of the police are widely shared sentiments that prevent women from interacting with police in any matter. In contrast to the legalization and regulation of the sex trade, which allows for women to freely access health services and to leverage their rights against harassment, this model puts sex workers at odds with the state and increases the risks of the trade.

Sweden

Background

The Prohibition of Purchase of Sexual Services Act, 1999 prohibits the purchase but permits the sale of sex.[21] The legislation is founded on the notion that women who are involved in the sex trade are inherently victims of male exploitation.[21] The authors of the law saw this measure as a step toward achieving gender equality. This model, also known as the "Nordic Model," has received widespread acclaim throughout Europe. The European Parliament endorsed this model in 2014; it has already been replicated in Norway and Iceland and is under consideration in many other countries in European Union.[22]

Kasja Wahlberg, Sweden's National Rapporteur on Trafficking in Human Beings, helped to introduce the legislation in 1999. In 2013, Wahlberg praised the law saying, "We have a small group of pro-prostitution lobbyists that are very powerful. The Sex Purchase Act was not passed for them; it was passed for the majority of women who suffer from prostitution. If women want to be in prostitution and don't want any help, we don't interfere."[23] However, many sex workers take issue with Wahlberg's claim, and have raised concerns about the absence of stakeholders in the drafting of the legislation. The World AIDS Commission states, "The 1999 law that criminalized clients was passed without any consultation with sex workers. When sex workers tried to raise their concerns, they were ignored, and accused of either being non-representative or of having a 'false consciousness'…This ignores and belittles the real experiences of sex workers."[9] Many FSW and scholars have since publicly denounced the legislation as paternalistic rather than representative of their needs.[9]

The Swedish Census states that between 1998 and 2003 there was

a 32% decline in the number of street based sex-workers in Stockholm, 65% in Gothenburg and 41% in Malmö.[24] In 2010, the Swedish Government published an evaluation of the act known as The Skarhed Report. The report is overwhelmingly favorable of the law, and cites its success in diminishing the presence of sex work in the country. Since the law was enacted, researchers agree that the number of street-based workers has declined.[9] The Skarhed report also states that the number of men who reported ever having purchased sexual services had decreased since 1999. However, the Swedish Institute, which published the report, acknowledge the dearth of empirical evidence on which to base their findings: "We realized that it would not be possible in the framework of this inquiry to produce the precise knowledge about prostitution that politicians and debaters request, but which no authorities or researchers have been able to generate in the nearly eleven years that the ban against the purchase of sexual services has been in place."[25] This lack of empirical evidence used to support the claims of the report raises concerns about the legitimacy of its findings.

Additionally, critics take issue with the formation of the report and claim that its premise is biased, as its authors explicitly state, "One starting point of our work has been that the purchase of sexual services is to remain criminalized."[26] In addition to the Skarhed Report, an external report commissioned by the Swedish Association for Sexuality Education (RFSU) and Malmö University found that the Act's benefits are "greatly exaggerated." [27] Kristina Ljungros, who chairs the RFSU, states, "The law has not had the intended effect, and has increased uncertainty for sex workers."[27]

The instability of client-flow destabilizes the market and creates new risks for women in the industry.

Critics argue that the decreased visibility of sex workers correlates with deteriorating conditions for FSW, while experts discredit the notion that the market for sex has diminished due to the legislation and assert that this trend was in progress prior to the enactment of the law.[28] Estimates of the number of women working in the industry before and after the legislation was enacted are highly variable. Michelle Goldberg of the Pulitzer Center on Crisis Reporting states, "No one knows precisely how the law has affected the number of prostitutes in Sweden, in part because its passage coincided with the coming of the Internet, which changed the way the market works."[28] Most researchers agree that in addition to the legislation, the use of cell phones and the Internet have contributed to the shift from street-based workers to workers based in more clandestine environments.

Partial Prohibition and Health in Sweden

Both supporters and opponents of the legislation acknowledge the difficulty of evaluating the impacts of the law on sex workers due in large part to the diminished presence of street-based workers. There are no reliable estimates of new HIV or Sexually Transmitted Infections (STIs) among sex workers since 1999. The lack of empirical data prevents a meaningful appraisal of the epidemiological impacts of the legislation. However, testimonies from FSW, healthcare providers and social service workers suggest that there have been several unintended impacts on the health of sex workers.[29] Reports by the Global Network of Sex Work Projects (NSWP) note an increased difficulty in promoting safer sex as the provision of condoms is now seen as a tacit endorsement of an illegal act. According to the NSWP, "Condoms are not seen as measures to promote health and to reduce harm, but instead as means with which to attract sex workers to the Stockholm Unit's offices (where condoms are available)."[29] These facilities are staffed by officers who are intended to divert women from the sex trade and many FSW avoid these centers out of a fear of judgment and to avoid agents of law enforcement. Additionally, street-level outreach to sex workers is non-existent, and access to condoms has been further diminished as they are withheld from FSW. The NSWP states that although The Swedish National Board of Health and Welfare explicitly targets sex workers and their clients for HIV and STI prevention, the breadth of their efforts is precluded by the Prostitution Units who oppose providing condoms to sex workers during outreach.[29]

The political structure of Sweden permits its municipalities and counties considerable power in policy implementation, specifically surrounding matters related to healthcare.[30] The interpretation of the Ban on The Purchase of Sexual Services has varied across the country. While Stockholm has been stringent with the interpretation of the law, and views the provision of harm reduction materials as aiding in an illegal act, Malmö's Prostitution Unit has embraced aspects of harm reduction.[29] The NSWP reports that Malmö Prostitution Unit actively distributes condoms to sex workers and their clients. The Unit also provides a "Harm Reduction Pack" which was written with input from sex workers and contains a guide to safer sex work. However, Malmo's efforts at reducing harm for sex workers have not been endorsed by the Swedish government and The National Coordinator Against Trafficking and Prostitution has stated that Malmö's policies encourage women who are not already involved in the trade to become sex workers.[29]

Social workers have commented on their diminished ability to track and assist FSW since the act took place, and many have voiced frustration that funds which would otherwise be used for outreach have instead been diverted to prosecution.[31] Providers have been outspoken about the deteriorating conditions for women who remain on the streets and assert that FSW who wish to engage in social services are expected to denounce their profession and to accept the victim narrative. If they fail to do so, they are said to have "mental health issues" and may be denied services.[29] There have also been instances in which Prostitution Unit Social Workers have refused to treat or provide referrals to sex workers until they have ceased working in the industry for a set period of time.[29] Testimonies from healthcare workers corroborate this finding. One Stockholm-based healthcare provider states, "The day when they don't like [prostitution] anymore, they can come to me. So I don't spend my energy on this group of people."[29]

Partial Prohibition and Working Conditions in Sweden

There are conflicting views on the impacts that the 1999 Act has had on working conditions for FSW. Pros-Centre, an organization that seeks to assist women exiting the sex trade, credits the law as creating an effective impetus for women to leave the industry. The group states that between 1999 and 2001, 60% of the 130 clients they reached had reportedly left the sex trade permanently.[31] However, the extent of the organization's follow-up with these women is unclear.

Many FSW denounce the Act and believe that it has brought about increased risks. FSW report that men are afraid to approach them on the street, and now prefer the anonymity of the internet. With less demand for their services, street-based workers must compete with one another for business. Women are less capable of determining whether or not clients could potentially be dangerous.[29] The NSWP states, "Services that they may not have provided previously may now have to be provided in order to make enough money; sex workers are additionally less able to reject clients they would have rejected before, and sex workers are not able to charge the same amount for their work."[29] The ability to appraise the safety of a client or transaction has led to a subsequent uptick in violence towards workers.[9]

Furthermore, relations between FSW and the police have deteriorated since the 1999 law went into effect. Women report having been videotaped having sex with clients in their cars in order for the police to collect evidence and report being strip-searched for condoms by officers.[9] The increased surveillance of the sex trade has also impacted living conditions for sex workers. Anti-brothel laws target property owners, who may be charged with pimping if sex workers are found to be operating within their establishment. The International Union of Sex Workers reports that the legislation has incited significant abuse via police including "being harassed at home, being made homeless due to police threats to prosecute their landlords as living off proceeds of prostitution, being told by police that sex workers cannot be raped and being gang-raped by a group of police officers."[32] Fearing eviction, homelessness and police harassment, women struggle to keep their identities hidden and are less likely to report abuse.[9]

Furthermore, sex workers have stated that in addition to their compromised ability to negotiate safer sex and their ability to receive health services, they also face discrimination when attempting to access social services.[9] A paradoxical stipulation of the Swedish tax system mandates that sex workers pay income taxes; however, sex work is not legally considered a profession or a business: "The government forces [sex workers] to break the law: they must either lie, register a business in another category, or not pay taxes. If they do not register, they cannot participate in the social security benefits that are available to other workers."[26] The National Board of Health and Welfare found that half of the FSW who had been polled believed that the Act

prohibits women from seeking the assistance of social services despite having paid into them.2[9]

The Swedish policy prohibits non-citizens from engaging in sex work. Immigrant women are subject to immediate deportation if found to be participating in the sale of sex. However, a substantial portion of FSW on the streets of Sweden emigrated from elsewhere in Europe.[26] This policy has made sex workers living in Sweden more vulnerable to abuse and pushes them further away from preventative services for fear of deportation. Don Kulick, Professor of Anthropology at Uppsala University in Sweden, recounts, "I don't think for example that a Russian woman would dare to report a man for violence against her, because then she would risk not being given a visa if she ever wanted to come back to Sweden, because it would have become known that she is a prostitute."[33] The government has recently slackened this policy for EU citizens, but women from other regions are still unprotected.34

The authors of the Act had intended for the ban on the sale of sex to deter human trafficking. In 2010, The Swedish Government reported that police believed that it "is clear that the ban on the purchase of sexual services acts as a barrier to human traffickers and procurers who are considering establishing themselves in Sweden."[25] However, the National Criminal Investigation Unit estimates that between 400 and 600 foreign women participate in Sweden's sex trade every year, and concludes that there is no evidence that the number of people entering the sex trade involuntarily has decreased since the implementation of the ban.[31]

New Zealand

Background

In 2003, New Zealand awarded full legal recognition to all sex workers under the Prostitution Reform Act (PRA). Prior to 2003, the sale of sex was not explicitly illegal; however, many ancillary activities surrounding sex work, such as operating a brothel, were prohibited.35A coalition known as The New Zealand Prostitutes Collective (NZPC) helped to catalyze the formation of the PRA. Active since 1987, this group worked in conjunction with many stakeholders and partner organizations such as The New Zealand Federation of Business and Professional Women and the Young Women's Christian Association (YWCA) to inform and promote the legislation.[35]

The PRA underwent multiple iterations from the time it was first introduced in 1994 to when it was adopted in 2003. When drafting the law, legislators consulted with the New Zealand AIDS Foundation (NZAF), public health and sexual health groups, minority and indigenous groups and other invested parties. The NZAF worked in tandem with policy-makers to create a final framework that would support sex workers. The act also set up a Prostitution Law Review Committee (PLRC), which was tasked with conducting a rigorous monitoring and evaluation process to assess the impacts of the policy. This committee was designed to be representative of the industry; three out of its eleven members must be nominated by the NZAF.[35]

Legalization and Health in New Zealand

In 2007, the University of Otego conducted an impact evaluation on behalf of the Prostitution Law Review Committee. This multi-methods study, entitled The Impact of the Prostitution Reform Act on the Health and Safety Practices of Sex Workers, included quantitative and qualitative data from Auckland, Christchurch, Wellington, Nelson and Napier. A similar study conducted in Christchurch in 1999 serves as baseline for comparison with the 2007 evaluation.

The PRA asserts that sex workers, their clients and auxiliary workers such as brothel managers must take all reasonable means to make sure that a protective barrier is in place during any act of penetration or any other sexual activity that may pose transmission of disease. The 2007 impact analysis found that 80% of female respondents reported always using protection for vaginal, anal and oral sex with clients, and around 90% of respondents had used a condom during every sexual encounter within the past month.[35]

Women who tended to work on the street were more likely to report not using condoms than women who worked in brothels or under management. The majority of women reported that they had turned away a client that they did not want to service in both 1999 and 2007. Managed workers, as opposed to private and street-based workers, were the only group which saw a statistically significant change in their ability to decline transactions; from 47% in 1999 to 68% in 2006 (p=0.0009).[35] More than 50% of the respondents reported having discontinued transactions when a client refused to wear a condom.[35]

FSW in New Zealand have a significantly higher rate of engagement in the healthcare system than sex workers in New Zealand and Sweden. The 2007 impact report found that 87% of survey respondents had a regular doctor, adding "few survey participants report non-attendance at sexual health check-ups, with most going to their own doctor, a sexual health centre, or NZPC [drop-in center]."[35] While only 3.7% of sex workers surveyed said that they had not seen a healthcare provider for a sexual health check-up, many women in the study revealed that they frequently do not disclose their profession to health care workers. Half of those who reported seeing a doctor regularly did not tell their physicians that they had participated in sex work due to fear that stigma would impact the quality of their care.[35] There were no marked changes in this figure since the baseline study. These findings indicate that despite the legal status of the trade, social stigma continues to inhibit access to care.

Legalization and Working Conditions in New Zealand

Under the PRA, sex workers are awarded the same rights as other workers, including the ability to sue for sexual harassment from managers, challenge unsafe practices and join unions. Owners of brothels are required to pass health inspections, obtain government certifications, display NZPC materials and inform workers of their rights. However, while most women report that the PRA has had a positive impact on their health and safety, some workers report confusion about their rights; still others have expressed that public displays of NZPC material have been bad for business.[35] Women who work in managed facilities have had mixed encounters with the implementation of their rights in the workplace. In qualitative interviews, one worker recalls, "They had nothing on STDs anywhere. They had no information about NZPC. They sold all their girls the condoms…None of the girls even knew that there was NZPC."35 Despite the potential discrepancies in implementation, over 90% of workers in the 2007 evaluation stated that they felt that their rights had improved under the PRA.[35]

The outcomes evaluation also reports reductions in violence toward sex workers. FSW reported sharing information on "bad clients" amongst each other and receiving alerts from brothel management, the NZPC, physicians, nurses and counselors regarding dangerous clients.35 Many women cited the "Ugly Mugs" book kept by some NZPC branches as a way to recognize dangerous clients.[35] This free flow of information allows sex workers to better avoid potentially dangerous interactions. The diminished threat of violence has had significant implications for this population; before legalization in 2003, 37% of sex workers felt that they had the ability to refuse to see a client. By 2007 that statistic had nearly doubled to 62%.[35]

One concern raised by Parliament members was the potential for increased human trafficking as a result of the liberalization of sex work policy. However, a formal committee organized by the University of Victoria determined that there is no connection between trafficking and the legal status of the sex industry and that the PRA has not caused an increase in the number of underage girls in the sex industry.[36] Since 2003, however, sex workers have reported a marked difference in their relations with the police. Over half of participants in the impact assessment stated that there had been a positive change in their relations with police since the PRA.[35] But while gains have been made between police and sex workers, this relationship remains flawed. The impact evaluation found that most acts of violence, theft and professional maltreatment still go unreported to police.

Despite advances in healthcare and occupational rights, about 10% of women in the 2007 assessment reported having been physically assaulted by a client in the past year, 3% reported rape and 8.3% reported having money stolen by a client.[35] While violence toward FSW has not been eradicated with the legislation, the majority of workers stated that they felt as if the risk of violence has decreased.[35]

Discussion

Overview

Stigma, violence, police harassment, the lack of bargaining power and misinformation regarding the routes of HIV and STI transmission are significant impediments to health of South African sex workers.

These factors intersect with and contribute to other health and social concerns of FSW, namely their ability to exercise control over working conditions. The illegal nature of sex work in South Africa impedes the ability of FSW to engage in formal health care services. When faced with these conditions, women avoid healthcare providers in order to protect themselves from persecution, placing them at a much higher risk of contracting HIV.

Likewise, the system of partial prohibition in Sweden has shown to be largely ineffective, if not detrimental, to sex workers. The implementation of the 1999 law, purportedly enacted on behalf of this population, has led to declining visibility and access to healthcare services. Due to the reported drop in the demand for services from street-based workers, their willingness to turn clients away has been constrained. Instead of lowering risk of harm via clients, this legislation creates a race to the bottom for prices and leaves women with less agency to negotiate safer sex. Women are forced to take more clients to maintain their income level and are unable to afford to advocate for their own needs when it comes to safety and health. And although the Swedish law does not criminalize FSW, it neglects to address the social stigma that they endure. The assertion that all sex workers are victims contributes to a sense of shame and stigma and makes women less likely to seek out services or to engage in candid conversations with health providers.

In contrast, the rigorous monitoring and evaluation process conducted in New Zealand reveals that legalization has decreased the risk of violence toward FSW, improved relations with police and lowered risks of disease transmission. The securement of occupational rights is a significant gain for the industry, as they necessitate safer working conditions and provide legal avenues for recourse. In contrast to Sweden, where FSW report a perceived inability to decline unprotected sex due to threats of violence or threats to their livelihood, women in New Zealand have comparatively more sovereignty and state support. In addition to providing tangible benefits, these rights are also affirming to sex workers and can help to ease anxieties and stress that often spur other health issues.[37] Women are better able to advocate for their health and safety knowing that they have the endorsement of the state.

Commonalities

Disparities in health infrastructure and conditions, political climate and culture in the three nations limit the ability to draw definitive comparisons regarding the impacts of legislation. Outcomes in individual nations are not directly interchangeable; policy on the sex trade does not exist in a vacuum, and the diverse conditions that support these three paradigms limit the generalizability of these results. However, despite the vastly different circumstances that FSW face in South Africa, Sweden and New Zealand, there were recurring themes in all three countries that are indicative of global trends.

Stigma

Social stigma against sex workers is prominent in all three countries and is impacted by their respective legal status. The United Nations Population Fund states, "Deeply entrenched social standards marginalize sex workers and seriously limit their access to quality health services."38 Even where legal systems attempt to enforce the legal rights of sex workers, fear of judgment still prevents many women from fully engaging with the healthcare system. An observational study conducted at the St James infirmary in San Francisco between 1999 and 2004 assessed the extent to which stigma impacts sex worker's likelihood of disclosing their profession to a healthcare provider in an environment in which sex work is prohibited. 70% of the 783 sex workers polled had never revealed their involvement in the trade with a health care provider. The authors state, "The reasons for not disclosing one's sex work history included negative past experiences with disclosure (4.8%), fear of disapproval (31.2%), embarrassment (7.6%) and not thinking their sex work was relevant to their health needs (31.8%)."39 This pervasive fear of disclosure is mirrored in communities of sex workers all over the world and introduces additional barriers for those attempting to obtain health and social services.

The stigma associated with the trade not only promotes disdain and violence toward sex workers, but also forces many underground, where they are less visible to outreach workers and less likely to receive essential services. According to the results of a needs assessment of Canadian sex workers, "When sex workers do not disclose their involvement in the trade, they increase their chances of not having their health and social needs met, do not receive preventative care and may not be referred to appropriate medical and social services to address other issues which they may be facing."40 The hesitancy of these women to disclose their profession to healthcare providers has serious consequences, specifically for street-based workers.

While stigma negatively impacts the lives of sex workers in politically sympathetic states such as New Zealand, the legal rights bestowed upon them validate their profession and limit the tangible impacts of stigma. FSW in Sweden occupy a more ambiguous role: while the state tolerates them, it simultaneously imposes a victim narrative upon all women involved in the sex trade. In contrast, South African sex workers are either ignored by the state or are direct targets of its persecution. These policies contribute to a culture that views them as subhuman and treats them as such.

While outcomes for sex workers in South Africa, Sweden and New Zealand reveal that social normalization of the industry via legalization is a significant factor in eradicating stigma, it also brings to light the damaging impact of the generalized contempt for the sex trade around the world. In order to realize the full benefits of decriminalization, administrations must actively engage with society's perception of sex work as a legitimate profession.

Economic and Health Disparities

Sex workers in New Zealand, Sweden and South Africa all experience economic inequity to varying degrees, both within their communities as well as in relation to the general population. Policies that seek to penalize sex workers or target the demand for sex undermine the health of FSW by crippling their earning ability. In a 2013 report entitled Health Care Among Street-Involved Women, Vicky Bungay, Associate Professor at the University of British Columbia, states, "Poverty, for instance, remains the most common shared experience among street-involved women."41 Reducing health disparities for street-based workers would entail the legitimization of the market for their services and the provision of adequate resources. However, it is clear that the economic insecurity that forces some women into survival sex work is not a phenomenon that can be addressed solely with decriminalization.

In 2008, the Office of Police Integrity in Victoria, Australia conducted an extensive literature review and in-depth interviews with police, sex worker organizations and other stakeholders. The subsequent report, entitled Risk Mitigation in High-risk Environments: street sex workers, found that street-based sex workers are more likely to experience aggravated sexual assault, unlawful imprisonment, kidnapping, robbery and non-payment than non-street-based sex workers. In New Zealand, street-based sex workers were more likely than non-street-based workers to have experienced the following adverse events: "refusal of a client to pay; having money stolen by a client; been physically assaulted by a client; threatened by someone with physical violence; held against their will; been raped by a client."[38] The study goes on to report that street-based sex workers were the most at risk and were significantly more likely to report accepting alternative forms of payment, such as food or shelter, than non-street based workers. The authors note that this was a clear indication of the elevated levels of poverty and homelessness amongst street workers compared to other sex workers.[42] A series of qualitative interviews conducted with sex workers in and around Sydney Australia found that 81% of the 72 respondents reported having experienced work-related violence, compared with only 48% of non-street based workers.[43] 99% of the street-based workers in this study reported having experienced at least one traumatic event in their lifetime, and 93% reported experiencing multiple traumas. The authors also conducted a review of existing literature and found ample evidence that drug-use among street-based sex workers is higher than that of the general population.

Similar evidence of diminished earning power and heightened risk for street-based sex workers has been found in other nations as well. Researchers in a 1999 study on social organization of sex workers in Russia assessed the hierarchy of sex work and estimated the following remuneration scale in Moscow: "Hotel sex workers (US$50 to US$200 per client); brothel, massage parlor and sauna sex workers (US$26 to US$150 per client); street sex workers (US$50 to US$100

per client); truck stop sex workers (US$4 to US$6 per client); and railway station sex workers (crust of bread to US$6 per client)."[44] The study found that the workers with the lowest earning power were more susceptible to STIs and abuse from clients.

The lack of social capital and the perceived inability to turn clients away has real health implications for this population. Studies show an inverse correlation between income level and HIV prevalence among sex workers.[41] Additionally, there is a correlation among street-based sex workers and the likelihood of developing chronic problematic substance use and mental health disorders. A multitude of studies have found that street-based sex workers are significantly more likely to be using drugs than in other sex sectors in the UK, Australia, Canada, Vietnam and New Zealand.[45, 43, 40, 46, 35] A cross sectional study on Post-traumatic Stress Disorder (PTSD) among street-based FSW in Sydney state, "Problematic substance use is also likely to complicate PTSD and response to treatment among street-based sex workers."[43]

There is evidence that workers who operate in private settings, such as brothels, tend to be more economically stable than their street-based counterparts.[41] The seemingly universal hierarchy of sex work corresponds with declining access and/or utilization of social services and demonstrates a need for low-threshold interventions that are targeted at the most marginalized sex workers. There are numerous harm reduction tactics that have proven effective in addressing these barriers for higher risk sex workers.

Innovative Approaches

Researchers, governments, multilateral organizations and NGOs have developed various strategies to help empower sex workers and combat discrimination. In a review of stigma against sex workers in Hong Kong, authors Wong, Holroyd and Bingham lay out a three-stage approach to address stigma. While sex work is not explicitly illegal in Hong Kong, the government considers most ancillary activities associated with sex work, such as "keeping an establishment of vice," or "living on the earnings of prostitution," to be illegal.[47] The first phase of Wong, Holroyd and Bingham's plan is to create campaigns which remove "the 'moral dilemma' associated with sex work by drawing comparisons to other professions, such as service industry workers.[47] For the next phase, the authors cite a 2006 study by Flora Cornish of the London School of Economics. This research found that the impacts of stigma on sex workers were lessened by campaigns that drew comparisons with professional groups that have had similar struggles in mainstream legitimization, such as trade unions. The final stage of the strategy calls for collectivization of sex workers in order to garner public awareness, accrue political leverage, and demonstrate successful "alternative ways of life" compared to those that have historically been considered to be culturally acceptable.[47]

Studies of Community-Led Structural Interventions (CLSI) also show promising results for lessening the impact of stigma. This model provides sex workers with training in skills that can be used to organize a cohesive grassroots movement with the goal of fundamentally altering the systems of oppression. Care-Saksham, a Southern Indian confederation of 10 community-based organizations (CBOs) is one CLSI that has witnessed considerable success in combating sex worker discrimination.[48] Funded by the Bill and Melinda Gates Foundation, this initiative has an educational and empowerment component that has been successful in combating HIV and STI transmission by tackling both internalized and external sources of stigma. The program started by identifying 32 social change agents in both rural and urban settings and training them to develop and manage the program within three years.[48] This multifaceted intervention, which now consists of about 2,890 sex workers, includes condom distribution, STI treatment, peer education, community building and advocacy work with police and the media to spread positive portrayals of sex workers. One street-based sex worker reports;

"Once, a sex worker who I knew took a party [client] to a lodge. The police came there. I was there but I hid in the bathroom. The police took her and wrote in bold letters on a slate that she is a prostitute and hung it in her neck and made her walk. They threatened that she should not be seen again. We saw the problem but could not do anything. Our sympathy was with her but we could not approach her as we were not intelligent then and we were also afraid. Now we have our CBO. I can say boldly I am from Nari-Saksham [a division of Care-Saksham], a sex workers' organization. We do not let the police harass sex workers like that.[48]

Some communities have also undertaken large-scale efforts aimed at poverty-alleviation among high-risk workers. One such measure is the collectivization of sex industry workers. Workers in many countries have banded together to form unions or organizations in order to gain bargaining power and to better advocate for their own interests. The Rose Alliance, a Swedish sex worker organization, was incorporated in 2009 after decades of failed efforts to unionize.[49] The Rose Alliance is a member of larger representative bodies including both the International Committee on the Rights of Sex Workers in Europe (ICRSW) and the Global Network of Sex Workers (NSWP).[50] This collective recently published a letter of support for Amnesty International's call for the global decriminalization of sex work stating, "We might not feel valued in our own country, but it would be invaluable to have Amnesty International stand firmly by our side reminding the world that our experiences are valid and what we have to say is important."[49] The New Zealand Prostitutes Collective also provides benefits to its members including community drop-in services, sexual health clinics, needle exchange services, legal and tax advice and information on starting a brothel.[35]

Another intervention which has had much documented success is street-based harm reduction outreach. This model provides pragmatic and low threshold services aimed to lower the inherent risks in sex work. In 2001, the Open Society Institute (OSI) funded the International Harm Reduction program (IHRD). This pilot program selected 33 organizations from 12 Eastern European countries to deliver services and materials to high risk sex workers in the areas where they work.51 Each organization was tasked with engaging workers in initial and follow up informational sessions, counseling and referrals, legal advocacy, HIV and STI testing and treatment, and other harm reduction interventions. While some programs experienced difficulties in executing the initiative, namely with administrative and safety concerns, the pilot exceeded expectations during its first six months: "Compared to a targeted mid-year goal of approximately 5,700 sex workers reached and 3,500 sex workers engaged in services, the 30 projects reported reaching a total of 6,421 sex workers at least once with any form of outreach or service, and reported engaging 6,254 sex workers in follow-up harm reduction activity."[51]

The establishment of safe houses is another initiative that has been adopted in places where sex work is wholly or quasi-legalized. These regulated spaces offer street-based workers a safer place to take clients as opposed to working on the street, out of cars or in public places. In Sydney, Australia, safe houses charge around $13 an hour and offer free condoms, clean syringes and safer sex information.[42] In some countries where they exist, safe houses are subject to the same laws that govern brothels, while others are under less scrutiny. The results of this intervention have been varied. New Zealand's safe house initiative was piloted in Christchurch but was shuttered due to a high level of criminal activity stemming from mismanagement. Sydney's safe house initiative has had greater success in engaging the population. A 2005 study found that more than half of the 72 women interviewed had utilized safe houses.[43] The researchers, however, call for further investigation as to why these spaces are underused.

Conclusion

The continuum of policies that span South Africa, Sweden and New Zealand embody three divergent paradigms on sex work policy. This analysis of legal systems demonstrates a correlation between increased criminalization and declining health and working outcomes for FSW. Evidence points to a reduced risk of disease transmission and violence where sex work is decriminalized, as well as a greater sense of autonomy and engagement with preventative services for sex workers. Relations between FSW and police are more amicable where workers have legal recognition and are confident that the judicial system is working to protect them and not against them. Additionally, FSW were found to have greater economic stability and have better health outcomes in states where the demand for their services is not targeted by law enforcement.

However, despite the varied outcomes of legal approaches to sex work, stigma and economic instability are ubiquitous across all three countries and have been found to contribute to poorer health out-

comes around the globe. This effect is magnified among the world's 42 million sex workers, who are already one of the most marginalized and least visible populations in society.[52] Although legal structures significantly impact the lives of sex workers, in order to truly address the needs of this population it is necessary to challenge the health disparities perpetuated by stigma and health disparities endured by sex workers around the globe.

While health conditions for sex workers seem to improve where there are fewer legal restrictions, legislation alone will not ensure that this population's needs are met. The recent resurgence of support for sex workers and political backing of decriminalization have positive implications for sex workers and the protection of their rights and health. However, the benefits provided by collectivization and low-threshold harm reduction services are precluded by the legal status of the trade. Until sex workers have more state-sanctioned support, efforts to enhance their health and wellbeing will be inhibited.

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Post-conflict healthcare reconstruction: Yemen and the window of opportunity for primary care

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Primary care, a key component of healthcare systems, is defined by the World Health Organization as "first-contact, accessible, continued, comprehensive and coordinated" care. It is cost-effective, equitable and leads to improved whole-person and population outcomes. Despite such benefits, primary care is often poorly promoted in developing countries, especially in post-conflict settings. This study considers the paradoxical benefits of primary care reported in Western countries and explores whether these benefits might make it particularly appropriate for post-conflict developing states. Yemen was chosen as a topical example to illustrate challenges facing understudied fragile states. The authors conclude that, given the progress in healthcare coverage achieved by neighboring Oman through primary care, Yemen would do well to adopt a similar approach. For Yemen to focus on primary care, political stability is essential and early steps towards primary care are imperative.

Introduction

Primary care is a key component of many healthcare systems and is defined by the World Health Organization as being "first-contact, accessible, continued, comprehensive and coordinated."[1] It is cost-effective, equitable and reported to lead to improved whole-person (i.e. rather than individual disease) and population outcomes.[2-4] Many explanations have been advanced for the benefits associated with primary care-based healthcare services in Western countries.[3,5-9] By drawing upon such sources and our training in and experience of general practice, we describe below the narrative of the benefits of primary care for improved access, comprehensive and coordinated care and a systematic population approach.

Improved access results from the proximity of local clinics to the community being served and the provision of confidential reception and consultation spaces that empower vulnerable patients to present complicated or embarrassing problems. Access is also facilitated by eliminating user fees or making them affordable to hard-to-reach populations. At the same time, primary care doctors contribute to improved access to secondary care (i.e. hospitals) by undertaking appropriate referral "gatekeeping."[10] In this way hospital resources can be used more efficiently, i.e. by patients who have been assessed in the community and found to have problems needing secondary care.

The provision of comprehensive and coordinated care can promote patient engagement and reduce cost where a wide range of common conditions are treated in the community. By becoming experts in managing early presentations of illness, primary care doctors can reduce upstream costs. Observant primary care doctors can reduce the need for diagnostic tests when patients first present, i.e. at times of clinical uncertainty. Providing care that is coordinated and not confined to an individual disease is increasingly relevant given the global rise in chronic illness and multimorbidity (the co-occurrence of two or more chronic medical conditions in one person).[11,12] All these benefits are enhanced by trust between doctors, patients and the community. Patients are more likely to engage when relationships with clinicians are long-term or established prior to illness onset and preventive interventions.[9] Likewise, effective primary care must be built upon positive relationships and long-term collaboration with specialist colleagues.[9] Finally, additional benefits may accrue where community doctors become even more engaged in communities by serving as advocates, for example spearheading local health campaigns to promote road traffic safety.[13]

Finally, population-based patient registration in primary care and unified electronic medical record (EMR) systems that are not confined to individual specialities or providers are beneficial to the community. These data also facilitate quality improvement activities (such as audits) and research.[13] In primary care, EMR systems can promote community-based universal coverage of preventive interventions by identifying unreached patients alongside implementation of national screening programs: the high consultation rate in primary care permits opportunistic interventions for patients who do not respond to formal invitations but attend with other symptoms.[14,15]

Despite the benefits of an effective primary care system described above, much of the public still believes it to be inferior to secondary care, particularly with regard to disease-specific treatment.[4] That perception may arise from the fact that primary care in many countries is a public service charged with providing universal coverage on a finite budget. In this situation, demand inevitably outstrips resources and frontline workers struggle to meet expectations of all users.[16] Public health services are particularly vulnerable to media reports about negative patient experiences and easily succumb to comparison with private alternatives. Therefore, market-based commercial services can become appealing to politicians and healthcare system planners who seek rapid, self-funding solutions to healthcare delivery.

Primary care, the UK National Health Service and international development

There are many countries that illustrate the positive impact that the primary care approach can offer in post-conflict healthcare reconstruction. The United Kingdom National Health Service (NHS) is one such example. The establishment of the NHS in 1948 represented a radical reconstruction of the healthcare system through social cohesion and a collective vision in the aftermath of the Second World War. Central to promoting universal access and containing costs was the decision to continue and expand a system based upon general practice. The belief that general practice should be affordable, equitable and accessible is just as important today and this belief explains why the UK government continues to promote general practice as the bedrock of the NHS. A preference for primary care is built upon evidence of its health benefits.[17] This includes international comparisons of healthcare systems led by the late American primary care researcher and advocate Barbara Starfield. Her research found better health outcomes for the primary care oriented nations even after controlling for income inequality and smoking.[18] Further evidence comes from British primary care researcher Dr Julian Tudor-Hart, whose data is considered to be the only controlled evidence of the long-term effect of any system of care.[19] Despite this affirmation of family medicine as key to a successful, multi-tiered healthcare system, health services in many countries remain dominated by specialist care, and primary care is only provided under the guise of emergency medicine within hospitals.

Primary care and social and economic development are also closely interwoven in less developed countries. This link is clearly made in the Alma Ata Declaration, a milestone in global public health adopted at an international conference held in Alma-Ata, Kazakhstan in 1978.[20] The declaration called for a wider vision of primary care under the umbrella of primary health care, a radical vision of universal health coverage, community engagement and rallying calls to address the economic determinants of global health inequalities.[21] Since Alma Ata, however, factors such as the debt crisis and the imposition of loan-linked structural adjustment programmes (SAPs) by the International Monetary Fund (IMF) and World Bank have undermined the ability of developing countries to shape their own healthcare agendas. SAPs are based on a free-market ideological approach and promote private local healthcare services over those provided by the state. Although impacts have been somewhat mixed in terms of healthcare provision, this trend has often been at odds with the effective implementation of state-run primary care systems.[22,23] As comparative studies on the impacts of SAPs across the developing world have shown, in many cases government-provided health services have been undermined and privatized services have led to higher service charges.[23,24] This privatization of healthcare, in turn, has contributed to rising inequality, reducing healthcare coverage and worsening health outcomes, consequences consistent with the perverse relationship described in the inverse care law.[25] This law was espoused by the Tudor-Hart study and seeks to account for inequality in health access that is observed both locally and internationally. The inverse care law also highlights the impact of profit driven services on access by making the following two fundamental claims about healthcare provision:

"The availability of good medical care tends to vary inversely with the need for it in the population served. The inverse care law operates more completely where medical care is most exposed to market force and less so where such exposure is reduced."[25]

Despite the above trends, certain countries have managed to resist the pressures to dismantle state-led healthcare systems and have fared better at shaping their own development trajectories. In this regard, the Cuban and Brazilian cases illustrate the positive impact primary care can have in periods of reconstruction following conflict, revolution and dictatorship. In Cuba during the late 1960s, for instance, the health care system was rebuilt from the bottom up following Fidel Castro's overthrow of the Batista dictatorship in 1959 and the six further years of regional rebellions which followed.[26] In Brazil, a period of military dictatorship that lasted from 1964 to 1985 had left a legacy of inequality, including unequal access to health care. Implemented in the face of pressures to privatize, the Brazilian primary care reforms provide further compelling evidence in support of primary care.[27]

Cuba is arguably the most striking example. There the market-driven privatization drive behind SAPs was side-stepped in favour of a primary care system funded by very low levels of spending and has led to health outcomes comparable to that of the richest countries. For instance, Cubans have the same life expectancy (78 years) as Americans but spend annually only 4% of the US expenditure per person.[28] Cuba has also shown remarkable success at reducing infant mortality rate (IMR) and controlling infectious and chronic diseases. For example, between 1975 and 2003, Cuba experienced one of the most rapid declines in IMR ever recorded.[24] Moreover, by combining primary care provision with a more general public health approach and community participation, Cuba's campaign against infectious diseases has been very effective. Indeed, a number of diseases have been eradicated, such as poliomyelitis in 1962 and measles in 1993, in many cases for the first time in any country.[29]

In 1988, following two decades of military rule, Brazil transformed its healthcare system from secondary and tertiary care (regional specialists or centers) to a comprehensive primary care system, directly inspired by Alma Ata.30 In a short period, this 'Unified Health System' has had a remarkable impact on Brazilian population health. Between 1995 and 2010 the proportion of underweight children under 5 fell by 67% and IMR dropped to 17 per 1000 births from a high of 48 per 1000.[31] Thus, if the Cuban and Brazilian primary care models could be successfully exported to other developing nations, the health benefits would be significant.

A "window of opportunity" for primary care: the example of Yemen

The concept of the "failed" or "fragile" state emerged in the early 1990s and remains a controversial interpretation of the social, political and economic situation in countries such as Yemen.[32,33] The current state of health and healthcare in Yemen has its roots in a turbulent series of political and economic events. Between 1988 and 1993, the nations of North and South Yemen experienced a traumatic civil war that ultimately led to their official reunification as a single country in 1994.[34] Early hopes of development and prosperity were quickly scuppered by internal political disputes, intra-religious clashes and the emergence of terrorist groups. In this precarious situation many citizens have become victims of violence, and the fragile economy has continued to deteriorate.[35] As a result, the public sector has been neglected, and government spending is often redirected to other areas such as fuel subsidies and defense, slowing reconstruction of the healthcare system.[36] This state of affairs is evident in the total annual expenditure per capita on health of $63, a level significantly lower than neighboring countries such as Saudi Arabia ($608) and Oman ($520).[37]

Only a fraction of healthcare expenditure is covered by the government, with 73% of health costs being met throughout-of-pocket payments.[37] Where government health services do operate, there is significant urban-rural inequality; although the majority of the population lives in rural areas, they receive only a quarter of total health service expenditure.[29] Recent media reports state that 70% of the Yemeni population has no access to healthcare at all, and no national vaccination programs exist.[38] At the same time, there is evidence of significant mortality associated with chronic diseases; as late as 2002, death from chronic disease was believed to account for 43% of all deaths in Yemen.[39] A further problem has been the emergence of terrorist attacks that target hospitals.[40,41] Given these challenges, it is unsurprising that Yemen should have poor key health outcomes such as high maternal and infant mortality rates.

Improving healthcare and public health services in Yemen is clearly dependent upon achieving political and economic stability. At that moment, politicians and the international community will face a choice over the direction of healthcare provision. One way

forward is a primary care-based sustainable and equitable model of healthcare. This approach has borne fruit in Yemen's neighbor, Oman.[42] In Oman, near universal access to health care was achieved within a generation by adopting a primary care approach. This choice makes sense as both countries share similar geographic and cultural characteristics, such as significant rural populations.[43] Central to making healthcare acceptable in the Middle East is delivering it in a way that is sensitive to both culture and religious faith. The community-based approach of family medicine is ideally placed for those needs, in part because it values the role of female healthcare professionals within the primary care team. Through trusted relationships with patients, female clinicians have privileged access to women and children, in particular for delivering key antenatal care interventions (such as triaging cases that are safe for community delivery) and childhood immunization. In Yemen and neighboring countries, this increased role for female doctors is essential as it is culturally unacceptable for female patients to consult male clinicians.44 These challenges highlight the importance not just of cultural sensitivity but also the need for local leadership in healthcare service development.

Conclusion

Primary care offers advantages to patients and can reduce upstream healthcare costs for service planners. Many of these, however, are not immediately obvious and may be eclipsed by hospital-based, high-tech solutions. One situation in which private providers and technological solutions can be particularly tempting is in the post-conflict setting. However, in countries such as Yemen, the challenges of high chronic disease rates, poor infrastructure, insurgency and its citizens' lack of experience of hospital medicine clearly favor a primary care approach. The adoption of a primary care-based healthcare system is contingent not only upon political stability and leadership but also on a willingness to recognize the "window of opportunity" for determining the direction of a country's healthcare services post-conflict. Grasping the nettle at the start is critical because the experience of countries such as the USA and Saudi Arabia highlights significant barriers to converting a specialist-based health service to a primary care one.

By adopting primary care, Yemen would be building upon not just the examples of the UK, Cuba and Brazil but also its neighbor Oman. A future commitment to primary care could lay the groundwork for a coordinated, culturally-sensitive healthcare service to provide preventive medicine and high quality community-based care. A primary-care based healthcare system would also endorse the value of integrated care by implementing primary care before (or, at least, alongside) hospital-based services. To that end, primary care is the first step toward and logical foundation of an integrated, multi-tiered system in the reconstruction of healthcare services, including in the redevelopment of "fragile" states. Central to such development is promoting primary care with local leaders and healthcare planners. Key selling points include reduced costs, improved coverage (particularly in rural areas) and a community-based approach. This would allow governments to gain trust from their citizens, something that in itself represents a first tangible step towards healthcare development.

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The Islamic State (Daesh) Healthcare Paradox: A Caliphate in Crisis

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At the height of the Arab Spring protests in 2011, Syrian civil society entered a downward spiral into chaos. Initially peaceful protests against President Bashar al-Assad eventually morphed into an armed rebellion. As the war has grown exponentially, so has the devastation of Syria and Iraq. The issue of healthcare is often left silent in the backdrop of issues prevalent in the war. Three years of government bombings and Daesh expansion have ravaged Syria's health capacity. Daesh militants are embarking on a brutal campaign against health providers and infrastructure throughout Syria and Iraq in controlled territories. Meanwhile, Daesh is attempting to promote a healthcare delivery system among other social services in order to gain support from local populations in controlled territories, but these actions are inconsistent.[1] This requires research into how Daesh attempts to create a functioning apparatus for healthcare delivery. Scholarly analysis on the topic of Daesh and its administration of healthcare remains sparse. This paper will explore the paradox in which the terrorist group operates, the bureaucracy it has created to deliver health services, the deficiencies preventing effective delivery and its governing philosophy on health. To win the war against Daesh, the traditional counterterrorism strategy advocating military force must be coupled with effective social service delivery to win over the hearts and minds of the local populations under Daesh control. In this strategy, healthcare is a crucial component of understanding and defeating Daesh.

A Diagnosis of the Problem: Health as an Instrument of Warfare

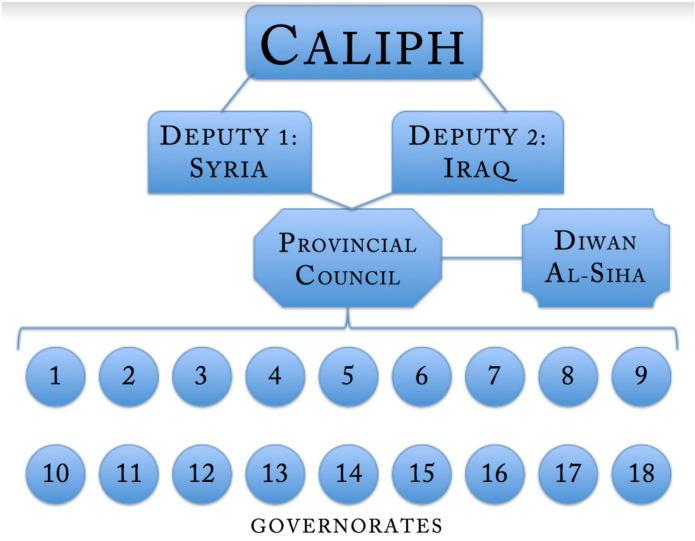
> "One doctor in Mosul said that earlier this month, he witnessed a patient arguing with a physician affiliated with the Islamic State. The next day, militants brought the patient to the hospital lobby, where they whipped him and forced him to apologize to the physician. Of course, those of us who didn't join them, we are all living in fear."[2]
>
> - Personal Account from a Syrian Physician

In Arabic, there is an adage, "المؤمن مصاب (il-mo'men muSaab)," which in English roughly translates to, "the righteous always suffer." Since the onset of the Syrian Civil War in 2011, following what was at the time a peaceful protest by righteous civilians against an authoritarian regime, a variety of social structures—human rights and peaceful co-existence among differing demographic, income and racial groups—have collapsed, corroding the essential fabric that holds Syrian and Iraqi civil society together. Social dynamics, having been exploited by all actors in the conflict, have internally disintegrated, exposing brutal sentiments among government bureaucrats, civilians and insurgents engaged in warfare. Over the past four years, the power dynamics within Syria have transformed as Hezbollah, other non-state military groups and the Islamic State of Iraq and the Levant (ISIL, ISIS, IS, or Daesh) have entered the conflict. Civilians trapped in the middle of a war with no apparent solution have since been lost within the epicenter between government forces and terrorist factions. The tides have turned in favor of The Islamic State of Iraq and the Levant (ISIL), alternatively referred to as "The Islamic State (IS)" or "Daesh" in Arabic. This paper refers to the group as "Daesh" in order to de-legitimize the narrative that promotes their status as a state or as a valid Islamic entity.

Thus far, the West has heavily securitized the war. That is, the West has viewed the war primarily from a military perspective, concentrating on varied prescriptions of armed force to combat the growing extremist threat.[3] Washington's policies toward Daesh have centered on traditional counterterrorism strategies; in fact, the Obama administration recently convened a summit on countering violent extremism in which leaders reinforced that Daesh was "primarily a counterterrorism challenge."[3] However, Daesh has proven to be more than just a terrorist threat that can be addressed using only traditional counterterrorism strategies. Instead, "what's needed now is a strategy of 'offensive containment': a combination of limited military tactics and a broad diplomatic strategy to halt ISIS' expansion, isolate the group and degrade its capabilities."[3] This involves the use of soft power to win over the hearts and minds of the locals, i.e., coupling social services with military force.

Against the backdrop of military and politics within this conflict bubble, however, have existed largely ignored yet crucial narratives of civilian life, most notably in the health sector. One of the most distressing aspects of the war has been the sheer devastation of health architecture throughout Syria and Daesh-controlled regions in Iraq, alongside the persistent denial of aid delivery, access to care and health infrastructure as a means of protecting wounded and fleeing civilians.[4] The injuries to both civilians and institutions have been catastrophic. In the past three years of the war, Syrian armed forces and Daesh extremists systematically targeted civilians followed by their health facilities and personnel, reflecting a new and horrific trend, a departure from previous wars—no longer indiscriminate devastation that affects health infrastructure, but rather, the destruction of health infrastructure as one of the primary goals of the oppressing faction.

The aggregate consequences are clear when comparing the situation in Syria before and after the war. Prior to the conflict, "Syria's healthcare system was thriving, with hospital and doctor levels equivalent to other middle-income countries such as Brazil, Turkey and China. Life expectancy was 76 years. Over three-quarters of the country's disease burden was of the Western, non-communicable type (hypertension, diabetes and so forth)."[5] Today, according to the Syrian American Medical Society and the World Health Organization, approximately 60% of hospitals and 90% of the local pharmaceutical industry have been destroyed, 78% of ambulances are severely damaged and 70% of the remaining medical staff cannot access their workplaces.[6] In certain provinces, upwards of about 90% of all physicians have left or have been killed, and in the stronghold of Aleppo less than 250 physicians remain, creating a physician-to-patient ratio of about



1:500,000.[6] This mass campaign against physicians has been wholly arbitrary, for physicians are either severely punished or killed for expressing even the slightest antagonism toward Islamic State fighters.[7]

Polio has returned to Syria after fourteen years, and infectious disease outbreaks—"hepatitis, measles, leishmaniasis, multi-drug-resistant tuberculosis, [and] typhoid"—are on the rise as the provision of vaccinations has fallen drastically.[5,6] Daesh is not the sole culprit for the majority of these issues. Physicians for Human Rights found that the Syrian government is overwhelmingly responsible for the deaths of medical personnel throughout the country.[8] Since 2011, the government has been "bombing hospitals in opposition-held areas and detaining, torturing and executing doctors who were adhering to medical ethics by treating the wounded regardless of their political beliefs."[9] The doctors who have risked their lives to remain in Syria and treat the injured have been decimated by Bashar al-Assad's forces, which consider it a crime punishable by death to provide medical treatment to "the other side."[9] Simply put, medical personnel are the unfortunate victims of the Syrian civil war because they are viewed as allies of the rebel forces.[5]

Since its rise in 2014, Daesh has been compounding the government's violence with destruction of its own. Daesh fighters have, to date, been attacking numerous civilian hospitals and foreign health providers serving with organizations such as Doctors without Borders, abducting and killing patients, doctors, nurses and international health aid workers, etc.[10] Kurdish media reports indicate that Daesh militants have been targeting and killing physicians that refuse to provide treatment for wounded Daesh soldiers.[11] Last December, a group of Daesh fighters executed two top emergency surgeons within the Mosul Health Department by firing squad for their unwillingness to transfer to a field hospital.[12] Daesh's "drive against hospitals has led to an exodus of doctors from Syria, adding to an already severely strained health care system."[10]

The human rights situation for female physicians has been particularly concerning. Female doctors interviewed about conditions in Daesh-controlled hospitals explain that in Mosul, women are denigrated as objects of a religious will, and rather than being viewed as providers of service, women are objectified as receivers of the terrorists' imposition of control. Women are forced to wear the veil against their will, and female practitioners who choose not to wear a veil over their face at health facilities are barred from entering hospitals. Such decrees are highly reminiscent of Taliban rule in Afghanistan.[13] A Syrian, female gynecologist reflects on a time when she was scheduled to perform a surgery, but she was denied access to the surgical ward because she was not wearing a veil. The Daesh militants told her to "let the patients die…what matters is your veil."[13] Accordingly, in the Daesh stronghold of Raqqa, hospitals are almost completely devoid of female doctors, and the few female nurses there are forbidden to work in a healthcare setting without permission and physical company of a male mahram, a designated male watch guard.[14] What's more, Daesh militants have subjugated and sexually abused women and girls in controlled areas as documented by the United Nations.[15] Clearly, from a human rights angle, the atrocities perpetuated and magnified by Daesh factions have created an exceptionally hostile environment for healthcare providers, fundamentally altering the dynamic of the war against civilians who are constantly barraged by government weaponry and militant barbarity. In many ways, there seems to be little hope for survival, ergo the only solution is to flee, intensifying many pre-existing spillover issues, such as refugee displacement, unstable medical geography and mass death. According to Amnesty International, more than 10 million people—45% of Syria's population—have been displaced, and nearly 190,000 people have been killed. 10.8 million people require urgent humanitarian assistance in Syria alone.[16]

The potential short-term solutions to mass health catastrophe for most wars would be the obvious provision of healthcare by international agencies and relief organizations. This is not feasible with Daesh. Not only has Daesh refused to negotiate with international third parties to allow for foreign medical aid delivery, but they have also obstructed the importation of medicine for hundreds of thousands people, for example, in the Al-Hasakah governorate.[7,17] Furthermore, Daesh has periodically and systematically been diverting food and health aid meant for the most disadvantaged Syrians to its own militants and militant families in order to maintain power. For example, Daesh militants have stolen German generators worth at least $300,000 and denied food aid for over 600,000 Syrians in Deir Ezzour and Raqqa provinces.[18] Furthermore, when Daesh negotiates aid delivery convoys to territories under its control, it places at least one of its members in charge to work out the terms of the agreement with the other party. This leads to the diversion of aid to terrorists.

This paper focuses on Daesh's violence because of the indiscriminate destruction of those healthcare apparatuses that remain following government bombardment. Daesh is committing violent atrocities against civilians and health providers in areas under its control. However, in order to assert their control, they are also trying to create an apparatus for social service delivery for civilians.[19] Daesh cannot hope to both create a sustainable model of governance and embark on a killing campaign against the preexisting health infrastructure in order to establish said model. This is a fundamental weakness of the terrorist organization that the West must exploit to defeat them.

Rationalizing Daesh's Psychology and Modus Operandi

The Qur'an's preaching on health is extremely positive and peaceful. According to Islamic scholars, health is considered one of God's blessings, for "He [Allah] formed humans both beautifully and in an environment of general well-being (Qur'an 40:64)." The hadith, literature that records the Prophet Muhammad's quotes about the Qur'an (the hadith is considered significant for understanding the Qur'an and its commentaries), endorses similar views.[20] Thus, the two holy texts used to develop Islamic jurisprudence only speak of health in a positive, humanitarian light.

Former Islamic Caliphates, or Islamic states, have endorsed these messages on health. The Abbasid caliphate, which ruled from 750 to 1258 AD, was based on "multiculturalism, science, innovation, learning and culture, in contrast to Daesh's violent puritanism."[21] Even in the 1800s, Arab nationalists admired the West and what they perceived as the modern world.[21] Terrorist groups like Daesh grew from the Western-created vacuums of instability following World War I. First, following the war, Britain, France and Russia carved up the Middle East (Sykes-Picot Agreement) with little attention to social structures.[21] Arab intellectuals lost faith in the European powers but continued to have faith in the United States. Following World War II, however, America began propping up a string of dictatorial autocrats, leading to mistrust and resentment toward the United States.[21] The collapse of tolerance, peace and cohesion mirrored by growth in corruption, oppression and subservience to the West led to a backlash against secular politics. Islamic fundamentalism grew out of this tension with the goal of declaring jihad against foreign "unbelievers" and Arab society itself in order to create a pure Islamic state based on extremely conservative beliefs.[21] The destruction of Iraq during the War on Terror created a power vacuum that "takfiri" groups such as Al Qaeda and Daesh have filled.[21]

Daesh has one ideological foundation that serves as its driving force: the 14th Century Scholar Ibn Taymiyya's teachings of Salafism.[22]

The Salafist interpretation of Islam "demands the harsh and absolute rejection of any innovation since the times of the Prophet…diversion from puritanical precepts that they [individuals] draw from a literal reading of the Qur'an and the Hadith is blasphemy, and must be eradicated."[22] Also known as Salafi Jihadism, Salafism promotes violence, warfare and intolerance of pluralistic beliefs. Salafism thereby rejects Sufism, a mystical interpretation of Islam that believes in spirituality for inner purification; Shi'ism, an interpretation of Islam where a succession of scholars called Imams are revered as spiritual and political leaders; and any other interpretation or religion in favor of uniting the Muslim world under "truly Islamic rule" and "fulfilling God's desires."

Rationalizing every Daesh action under a lens of Salafism beings to put everything into perspective. Daesh sees no harm in executing physicians or other related healthcare providers because its aim is to create a healthcare apparatus that serves the interests of its fighters—this is to ensure that it has the necessary power to enforce its agenda, quell resistance among dissatisfied Sunnis and prevent rebellion. Daesh functions in a similar manner to an ineffective totalitarian dictatorship, but its foundation is derived from Salafi Jihadism and is thereby a caricature of Islam. Insertion of this pseudo-religion that preaches violence and intolerance into daily life makes Daesh an apathetic organization, incapable of empathizing with human emotions and thereby incapable of humanitarianism pursuits. In sum, Daesh attempts to fabricate an apparatus that treats its wounded fighters and falsely demonstrates to local civilians that it is a legitimate Caliphate with a capacity for bureaucratic administration, analogous to other states. That said, Daesh's philosophy on health fits within the context of the harsh, conservative amalgamation of Salafism and civil society.

Daesh's narrative is not a new phenomenon in history. One of the first groups to engage in anticolonial jihad and state-building was the fighters led by Abd al-Qadir, who challenged the French imperial invasion of North Africa in the 1830s and 1840s. Qadir declared himself 'commander of the faithful' — the title of a caliph — and founded an Islamic state in western Algeria, with a capital in Mascara, a regular army and an administration that enforced Shariah law and provided some public services.[23] Likewise, the Mahdist state in Sudan, led by the self-proclaimed leader Muhammed Ahmad, called for Jihad while establishing state structures under a Sharia Law framework.[23] Both conflicts had a common theme with Daesh today: a caliph, a theoretically disciplined state and a social service apparatus. They all believed in militant Islamism and denounced modernity and alternate faiths. Nevertheless, they were both completely destroyed by Western nations—France and Britain. Here's why: "While jihadist networks or guerrilla groups are difficult to fight, a state, which can be invaded, is far easier to confront. And once there is a theocratic state, it often becomes clear that its rulers are incapable of providing sufficient social and political solutions, gradually alienating its subjects."[23]

Dissecting Bureaucracy: The Daesh Governance Model and Medical Apparatus

How has Daesh adapted itself to the challenges of governance and disease growth? Documents obtained by German media outlets shed light on these complicated matters; a close look at Daesh's structure reveals a highly organized bureaucratic system operating on many similar levels as would a state.[24] After capturing municipalities through brute force, suicide bombings and calamitous violence, Daesh attempt to ensure an "egalitarian provision" of services, most applicable to infrastructural needs like electricity, water, gas and food.1 To expand its ravaged healthcare capacity, Daesh opened a "free" hospital (note that free largely pertains to fighters as outlined above) in Mosul after its capture.[1] In many ways, Daesh has the fundamentals for a working state apparatus: Daesh manages its people through police and security forces, operates a health system (albeit very poorly), provides social services for individuals and operates a justice system based on sharia law. Daesh employs between 20,000 – 31,500 fighters alongside administrative staff who serve from abroad or who stay in their positions.[22] To persuade workers in existing state apparatuses to retain their positions following Daesh-takeover, militants provide said workers with a consistent salary. However, to prevent disloyalty, essential staffs—Daesh supervisors—oversee operations in all facilities and departments.

Daesh hierarchy as it relates to healthcare is as follows: A single self-proclaimed caliph, or religious leader, (in this case, Abu Bakr al-Baghdadi) is the first in command. Abu Bakr has two deputies who respectively oversee operations in Syria and Iraq.[22] Below Abu Bakr and his two deputies is a Cabinet comprised of eleven officials, one of which oversees civilian matters like health within The Council on Provincial Administration.[22]

Rationalizing the overall structure gives one a better understanding of how, much like a state, Daesh operates to provide healthcare for its citizens. The Provincial Council is divided into 18 provinces, with a governor for each province who presides over the local structure for civilian administration.[25] Each governor is responsible for coordinating funding of infrastructure and capacity building projects along with running programs like healthcare.[26] Out of all the cities under Daesh control, Raqqa, which has established itself as a de facto capital of Daesh, is the most developed governorate with the widest range of social service delivery.

The Provincial Administration is divided into its respective departments like education, healthcare, etc., but the enforcement of those departmental specifics lies within the jurisdiction of the governors for each region. Figure 3 shows a simplified diagram summarizing the power divisions as they relate to health within the Daesh governing apparatus.

The Health Department—The Diwan al-Siha—presents itself as a guarantor of health services along with establishing regulations for smoking, consumption of alcohol, recruitment of volunteers and medical personnel, pharmaceutical price controls, gender segregation, medical supply distribution, etc.[27] The subdivisions of each governorate's authority complicates the bureaucracy further, and for the purposes of time and relevancy this paper refrains from more specifically describing those agencies.

A marked distinction with Daesh when compared to other terrorist organizations like Al-Qaeda, the Taliban, etc. is Daesh's use of local bureaucrats already in charge of hospitals, law enforcement and municipal services to remain in their positions as to avoid inadvertent placement of a fighter in a position of administrative authority—a situation that could prove deleterious to the welfare of both fighters and civilians.[28]

The Dual Identity of Daesh

Daesh is an anomaly among all terrorist organizations that have operated following the commencement of the War on Terror. Wherever Daesh gains territory, they seek to consolidate control in a central governing body and declare the rule of law over the local population.[29] For example, following the takeover of Mosul, Iraq in June 2014, Daesh gunmen paroled the streets

In their fight to win over the support of the locals, Daesh attempts to project an image that it cares about them. For example, while executing doctors, bombing hospitals and sexually oppressing females, Daesh militants attempt to demonstrate to local people that they are capable of running a city and thereby provide social services for the locals.[30] More specifically, immediately following the takeover of territory, Daesh militants begin instituting services by policing streets; performing community outreach by repairing damaged electricity infrastructure, operating bulldozers to remove garbage and concrete, planting flowers for beautification projects, apologizing to residents for gaps in certain social services, giving money to beggars and distributing food to needy people.[30]

To further its image and expand recruitment of foreign medical professionals, Daesh, in April 2015, Daesh released a new propaganda video boasting a new healthcare system with advanced medical schools and emergency care equipment to treat citizens in controlled areas. Analogous to the North Korean's state-sponsored totalitarian propaganda scheme, Daesh marketing and promotional strategy radically exaggerates its healthcare capacity in an attempt to grow its "service" and recruit foreign physicians to operate in Daesh-controlled areas.[31] The service, modeled after the British National Health Service, features a savvy commercial featuring high-end graphics, a foreign physician and innovative medical technologies that appear to rival those of advanced hospitals in Western countries. The strategy has been working effectively: Nine British medical students and graduates recently traveled to Syria to work in controlled areas.[32]

The healthcare system itself is predicated on a lie, for the majority of the benefits accrue to fighters instead of local civilians. In

Al-Raqqa, foreign Daesh fighters receive free health care while local Syrians are treated like slaves; in fact, private health clinics are closed and the public hospital in Tel Abyad had exorbitant prices for different treatments, discriminating against the socioeconomically disadvantaged.[33] Daesh-only hospitals are home to the best doctors—many of them are doctors who could not or chose not to flee due to fear of reprisal, or they are foreign physicians recruited via savvy propaganda videos—and most advanced technologies.[34] Citizens in Raqqa report that even in the areas with the most optimal healthcare facilities and capacity, militants are given priority in special areas restricted for their families.[35] Civilians are left outside the system.

On one hand, Daesh systematically targets and eradicates any healthcare infrastructure that could otherwise serve its own interests; on another hand, Daesh attempts to recruit doctors and showcase to the people under their control that they will receive the health services they request (this is, of course, a false promise for militants have always been given priority over civilians). One face of Daesh is callous and calculative; the other exemplifies compassion.

Success or Caliphate Fantasy? Straddling Between Two Competing Narratives

To effectively analyze a group as advanced as Daesh, this paper digresses from cherry-picking arguments and rather holistically examines those who both claim and defame the model upon which Daesh operates.

Individuals who support the model believe that Daesh's ability to deliver services and regular paychecks for professionals such as doctors make them a better administrative body than the Iraqi or Syrian governments.[26] Rather than functioning as a mere terrorist network, such as Daesh's predecessors or peer terrorist networks like the Tablian, al-Nusra Front and Al-Qaeda in the Arabian Peninsula, Daesh has been able to take over and subordinate many existing government healthcare institutions to the Daesh bureaucracy.

The other narrative argues that Daesh has managed to replace the state with sufficient results in the fields of justice and education, but "one of the organization's major policy failures lies in the health sector."[34] The public clinics are reserved for the impoverished, and hospitals suffer from power shortages and resource undersupplying. Their abusive treatment of female personnel in Mosul Hospital triggered a strike in August 2014, and, as a result, Daesh was forced to compromise and tone down the severity of certain restrictions.[34] When civilians want medicine, they must shuttle to regime-controlled areas to purchase said medicine that is unavailable in Daesh stronghold cities like Raqqa and thereafter smuggle them through special corridors at upwards of two or three times the average price.[34] Moreover, Daesh charges civilians for any medical service it provides; this is a marked deviation from the former decades living under the authoritarian Baath Party, which had offered free healthcare.[36] In al Mayadeen, Daesh charges 15,000 Syrian pounds for a Caesarean birth, or about $80, which is very costly in a nation where the gross domestic product per capita is only $1,700.[36] For blood tests, Daesh charges the equivalent of $10 in public hospitals and $20 in private hospitals (provided Daesh allows doctors to provide these services). Shortages of wheelchairs and high-end biomedical technologies have rendered long-term treatments and care for paraplegic and elderly patients impossible, among other treatments.[2] With the advent of the United States-led coalition bombings, hundreds of Daesh fighters have been regularly injured, and doctors have since been ordered to use blood for transfusions solely for fighters; civilian patients have been ordered to supply their own blood by contacting donors privately.7 This is highly ineffective, for not only is it the patient's obligation to seek out a donor, but much of the blood cannot be stored safely in a lab setting due to haphazard electricity.[34] With dire circumstances, Daesh recently issued an ultimatum to physicians that had fled to return to their work or have their property seized.[7] These actions have collectively compromised the quality of care for civilians, ultimately alienating and stigmatizing patients without proper access to medical resources. By enforcing rigid, segregationist and gendered divides between physicians, the efficacy of hospital management has declined, as females cannot treat males unless given very specific permission, and men until recently could not perform any services for women. As consolation, Daesh maintains the health system by compromising on certain measures for women and men. For example, Daesh permits a single hospital employee to travel to a city hospital controlled by the Kurds in order to acquire cash from government-approved banking facilities; likewise, Daesh has begun allowing certain female patients to see male physicians for concerns that do not relate to sexual organs, such as a broken arm.[2]

Local residents are largely displeased with the quality of care they are receiving. According to civilians living under Daesh control in Raqqa, "health services were better when the city was still under control of President Bashar al-Assad's regime. For one thing, the Assad regime would cover most medical costs, whereas now the national hospital in Raqqa charges for services. Drugs are hard to find at pharmacies. And Daesh-governed hospitals can't carry out more complex surgeries and procedures, or cope with cancer patients."37 The lives of civilians whom Daesh understands it must gain support from are deteriorating largely due to the implications of haphazardly applied Daesh decisions. The rhetoric is pretty, in that the organization is "providing social services" and "promoting its own health architecture," but the voices on the ground paint a very grim portrait that indicates that by all standards, Daesh-run healthcare is complicating the refugee exodus and the pre-existing health crisis in Syria and Iraq.

Conclusion and Further Discussion: Exploiting Existing Social Dynamics to Degrade and Destroy the Caliphate

Healthcare is a critical, overlooked component of the Syrian Civil War that feeds into a wide gradient of new research that could reap innovative solutions to defeating and degrading Daesh. The current state of healthcare throughout Syria and Iraq lies in broken shackles, and the role of Daesh in desecrating health providers and infrastructure plays a role in propagating a humanitarian crisis. Daesh's two-faced nature, one which seeks to coddle and cajole people under its rule into holding faith in the caliphate's ability to deliver promises of universal welfare, all while hypocritically denying important services to people or perhaps destroying said services entirely, has poisoned its ability to govern justly and effectively.

The question now becomes how to find a solution. There is no singular policy solution to this crisis. However, this paper hopes to generate further discourse on this overlooked topic that could lead to policy solutions over time. In Inside Rebellion, Jeremy Weinstein argues that terrorist organizations face a core dilemma when they attempt to govern: they cannot attain their goals if they do not govern; yet, they repeatedly fail at governance efforts, exposing their greatest weaknesses.[38] The international community should begin implementing a strategy that exploits Daesh's key weaknesses in healthcare and social service delivery to internally cripple the organization as a whole.

More specifically, this evidence suggests that to defeat Daesh, the United States must work in tandem with the international community to advise local governments, aid agencies and nongovernmental organizations to outcompete the insurgents' attempted provisions of social services in controlled regions. Healthcare is one of the most crucial social services, partially due to its emergency condition, but also because healthcare is a fundamental security necessary for enjoying the value all other freedoms such as free speech; freedom of movement; and freedom of thought, conscience and religion.

Daesh has faced little resistance from local Sunni populations for two reasons: the discriminatory sectarian policies under former Prime Minister Nouri Al-Maliki and the lack of social services.[39] The goal of outcompeting the insurgents in social service provisions would be to shift the attitudes of local citizens within communities under Daesh control in favor of the Iraqi government or the international coalition aiming to destroy Daesh. In a research study published in Foreign Affairs, Professors Eli Berman, Joseph Felter and Jacob Shapiro from the University of California, San Diego, explain that "this objective is often termed 'winning the hearts and minds' of the population, and its logic is simple."[40] Insurgents cannot operate without civilians learning something about their location and identities: recruiting, raising funds and preparing weapons and explosives all entail observable actions. The more effective the government is at providing services to civilians, the more likely it is that they will prefer the government over the insurgents. In turn, the population will provide the government with a steady stream of tactically useful information -- calls to anonymous tip lines about the location of weapons caches, for example -- that the government can use not only to defeat the insurgents but also to pre-

vent their reappearance."[40]

As military forces combat Daesh fighters on the ground, Provisional Reconstruction Teams, NGOs, the Iraqi Government and the coalition governments can finance the construction of social service apparatuses. As forces recapture towns and cities, for example, they can provide social services—electricity, water, food, health and other humanitarian aid—in tandem with one another. United States forces and partners can work in conjunction with the Iraqi government and Iraqi military to coordinate social service provisions in conflict-ridden areas. In Daesh stronghold cities like Raqqa, Syria, it is more difficult to directly implement this strategy given the lack of Syrian government cooperation and situation on the ground. To stymie Daesh's progress, its propaganda machine must be deconstructed. As shown in this paper, foreign physicians are flocking to Syria and Iraq because they perceive the system to be flourishing. By demonstrating weaknesses in Daesh's healthcare system, foreign medical personnel would theoretically be less inclined to go to work for the caliphate. Furthermore, the international coalition can provide salaries for workers in Daesh-held areas as to outcompete the terrorists' control on people. There are a plethora of additional strategies; this paper's primary focus is to incite discussion on an area of further study and debate.

The quantitative research on this topic corroborates a direct relationship between increased social service spending and reductions in violence. In the Journal of Political Economy, the same group from the University of California, San Diego calculated that during the Anbar Awakening in 2007—the Anbar Awakening describes the military strategy in Anbar Province in which social services were coupled with targeted military force in order to win over the hearts of locals and ultimately oust Al Qaeda from the region—for every dollar per capita spent (calculated using their model) after 2007, there were 1.[59] fewer violent incidents per 100,000 (statistically significant) population per half year.[41] In other words, the "combination of military operations and the provision of social services [in Al Qaeda controlled areas] was effective in reducing insurgent violence in affected areas by bringing local Sunnis back into the fold."[39] The implications of these findings resonate with potential policy frameworks for the fight against Daesh. This paper hopes to introduce ideas that generate further discussion on this niche focus area.

Many Muslims living under the caliphate's rule regard Daesh as the better option when compared to the government, and thereby those individuals tacitly consent to the systematic oppression and brutality. An extensive research study involving over one million interviews across Iraq and Syria both before and after Daesh assumed control found that "the Islamic State is ideologically incompatible with many of the residents of the territory it now occupies."[42] Unlike Hezbollah in Lebanon or Hamas in Palestine, which are sufficiently able to provide social services in areas that the government was unable to provide those same services, Daesh is widely disliked; survey results indicated that more than 90% of Sunni Muslims living under Daesh control view Daesh as a terrorist organization—not a state—and 80% of citizens support the international coalition effort to degrade and destroy Daesh.[42] This feature of the caliphate is a vulnerability that Western nations and the coalition must exploit in order to win this war. Rather than prescribing solely military solutions to extremist problems, nations must amplify group resistance against Daesh control by outcompeting the terrorists on social service provisions.

In order to replicate the results witnessed during the Anbar Awakening on a grander scale, it is crucial that the United States and its partners begin to shift their strategy away from a "counterterrorism" operation toward a holistic perspective that takes into account the impact of social services and population dynamics on the organization's ability to command control. As the Daesh power dynamics shift with growing resilience among Sunni Muslims under Daesh-control, and as new outbreaks of disease and maltreatment of medical professionals is exacerbated by greater violence, Western powers can begin framing discourse under a light of health and humanitarianism coupled with military decision-making.

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From words to action: comparing the disparities between national drug policy and local implementation in Tijuana, Mexico and Vancouver, Canada

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In 2009, Mexico passed a national drug policy reform decriminalizing the possession of small amounts of certain drugs for personal use with the aim of diverting drug-dependent individuals from prison and towards addiction treatment. However, the public health approach codified by the reform has not yet led to a meaningful change in local police practices nor contributed to the meaningful scale-up of harm reduction and addiction treatment services in many Mexican cities. Specifically, in Tijuana, Baja California, there continues to be a variety of local level barriers – including arbitrary police behaviours – that hinder the ability of people who inject drugs (PWID) from accessing vital harm reduction services. This has implications for the growing HIV epidemic in Mexico's northern border region, given that access to harm reduction interventions has been shown to effectively reduce the risk of HIV infection among PWID.

In contrast to the largely enforcement-based local response seen in Tijuana, the municipal Four Pillars approach implemented in Vancouver, Canada in 2001 was passed as a public-health oriented response to the rising prevalence of HIV/AIDS among PWID in the Downtown Eastside of Vancouver. Centered on the balancing of four approaches – harm reduction, treatment, prevention and enforcement – the Four Pillars approach in Vancouver has led to a well-resourced local harm reduction and addiction treatment system. This local emphasis on harm reduction contrasts with the Canadian federal government's opposition to harm reduction approaches. However, police-public health partnerships along with strong political support have led to the substantial scale up of harm reduction services as well as the reduction of HIV/AIDS among people who inject drugs in Vancouver, unlike what has been observed in Tijuana.

This commentary therefore aims to assess the discrepancies between federal policy and local responses to drug-related harms in order to fully understand the impact and implications of national drug policies in shaping local response to drug related harms among populations of PWID. Through a comparison of the drug policy landscape in two cities linked by a large North American drug trafficking route—Tijuana, Mexico and Vancouver, Canada—this commentary suggests that drug policy reform in and of itself will have little impact at the local level unless it is appropriately resourced and meaningfully supported by key stakeholders.

INTRODUCTION

Over 30 years ago, the first cases of HIV/AIDS in the U.S. were reported; since then, many more cases have been reported in the spiraling HIV/AIDS epidemic.[1] By 2012, approximately 35 million people were infected with HIV/AIDS worldwide.[2] As a major leading cause of HIV transmission, needle sharing associated with injection drug use has been a key contributor to the spread of the pandemic.[3] Overall, three million of the estimated 16 million people who inject drugs (PWID) worldwide are believed to be HIV-positive.[4]

The HIV epidemic among injection drug users can be attributed to many factors, one of which is the criminalization of drug use as codified by international drug polices, such as the Single Convention on Narcotic Drugs (herein referred to as the "Single Convention"). Signed in 1961 by 73 countries, the Single Convention aimed to unify previous international drug policies to create an unprecedented global system for international drug control.[5] Poised with the concern for the "health and welfare of mankind,"[5] the Single Convention further aimed to limit the non-medical and non-scientific use of narcotic drugs, with the view that "addiction to narcotic drugs constitutes a serious evil for the individual that is fraught with social and economic danger to mankind."[5] Further restrictions to the global drug policy landscape were cemented with the 1971 and 1988 amendments to the Single Convention, which outlined limitations on the trafficking of narcotics as well as the traditional use of plants like coca and further mandated that any behaviours contrary to the limitations of the Convention were punishable offences to be enforced by "imprisonment or other penalty of deprivation of liberty."[6–8] These measures have caused tension between the tenets of the Single Convention—which is still in effect to this present day—and concern for the health of PWID. In this context, the criminalization of drug use and possession codified by the Single Convention and subsequent agreements have hampered the efforts of evidence-based public health and harm reduction initiatives, which are defined as "policies, programmes and practices that aim to reduce adverse health, social and economic consequences of the use of legal and illegal psychoactive drugs use without necessarily reducing drug consumption."[7,8,9] These harm reduction initiatives, such as needle and syringe distribution programs (NSP), supervised injection facilities (SIF) and methadone

maintenance therapy (MMT)—methadone being a synthetic opioid agonist used to treat opioid addiction—have been shown to decrease the risk of HIV transmission among PWID. Despite the criminalization of drug use as codified by the Single Convention, these preventative harm reduction services, specifically NSPs and MMT, have nevertheless been adopted as part of a comprehensive package for HIV prevention by international bodies such as the World Health Organization and UNAIDS.[10,11]

Within this global drug policy landscape, Canada and Mexico—two signatory countries of the Single Convention linked by a North American drug trafficking route spanning from the Andean region in Latin America (i.e., Colombia, Bolivia, Peru) to the Mexico/USA border—have experienced HIV epidemics among PWID populations in certain urban areas.[12–15] This drug trafficking route ensures that illegal drugs—and consequentially high rates of injection drug use—are plentiful in Mexico, the US and Canada.[16] In Vancouver, a western port city located near Canada's southern border, the Downtown Eastside (DTES) neighbourhood is characterised by an open-air illegal drug market.[17,18] By 2011, although the HIV prevalence was 0.2% in Canada overall, HIV incidence was at 12.1% among PWID.[13,19] Similarly, Mexico has a low country-wide HIV prevalence of 0.3%; the distribution of HIV infection, however, varies throughout the country, with concentrated epidemics among PWID in certain municipalities.[12,20] The Mexican border city of Tijuana, located along Mexico's northern border in the western state of Baja California, is home to approximately 10,000 PWID, among which 4% of males and 10% of females are estimated to be HIV positive.[12,21,22] Although Vancouver and Tijuana are both experiencing HIV epidemics among large populations of PWID, the drug policy environments in both settings differ drastically.

At the national level, the Canadian federal National Anti-Drug Strategy, launched in 2007, explicitly removed harm reduction as a key tenet of the country's drug policy.[23–25] This was largely a result of the election of a Conservative federal government in 2006, which perceived harm reduction as enabling of drug use.[24,25] Currently, the federal drug control budget allocates 40% of resources towards drug law enforcement, which aims to strictly criminalise possession and use of illegal drugs such as cocaine, marijuana, methamphetamine and heroin (among other substances).[23] In contrast, in 2009, the Mexican federal government instituted the Narcomenudeo law, a national drug policy reform that partially legalizes the possession of small amounts of narcotic drugs, specifically methamphetamine, cocaine, heroin and marijuana, for personal use.[26–28] This major policy reform was instituted with the primary aim of having police divert PWID away from prison and towards addiction services, as well ensuring scale-up and availability of harm reduction services such as NSPs and MMTs.[26–28]

In both Tijuana and Vancouver, however, the policy frameworks instituted at the national level are at odds with the local drug policy realities in each city. At the local level, strong provincial, municipal and community support in Vancouver led to the institution of the municipal "Four Pillars Approach," which was launched in 2001.[15,29] Centered on a balance of "four pillars"—harm reduction, treatment, prevention and enforcement—the Four Pillars approach in Vancouver has led to a well-resourced, comprehensive and expanding local harm reduction and addiction treatment system.[15,17,18,30,31] This unique local emphasis on harm reduction stands in contrast with the Canadian federal government's opposition to harm reduction approaches.[29,32] The success of this unique local response is due to support from key stakeholders, such as the provincial and local government, the Vancouver police department, as well as the Supreme Court of Canada.[15,29,33] In Tijuana, however, the public health approach codified by the federal Narcomenudeo law has not yet led to a meaningful change in local, street-level law enforcement practices or contributed to the meaningful scale-up of harm reduction and addiction treatment services.[28] Specifically, there has been a lack of scale-up of both NSPs and MMTs in Tijuana, and substantial barriers to their use remain, critically undermining the effectiveness of Mexico's federal public health-oriented drug policy reform.[22,28] For example, even though drug possession is decriminalized under the Narcomenudeo law reform, many local police in Tijuana are either unaware of changes in policy or do not abide by the new law.[28] As such, the experience of PWIDs in both Vancouver and Tijuana differs dramatically from the nationally mandated policy environments of Canada and Mexico.

Similar discrepancies between national policy reform and local implementation have been previously reported in other settings, such as Australia.[34,35] It is important to assess these discrepancies between national governance and local responses to drug-related harms in order to fully understand the impact and limits of drug policies in controlling HIV epidemics among populations of PWID. Through a comparison of the 'on the ground' impact of drug policy on harm reduction scale-up and the prevalence of HIV/AIDS among PWID in Tijuana, Mexico and Vancouver, Canada, this commentary aims to describe factors contributing to successful policy implementation in order to provide insight for other countries undergoing drug policy reform at the national level.

VANCOUVER AND TIJUANA: UNIQUE POLICY ENVIRONMENTS

Vancouver, Canada

In the late 1990s, the epidemic of HIV/AIDS among PWID in Vancouver led to vigorous political mobilization by community groups, such as the Vancouver Area Network of Drug Users (VANDU) and From Grief to Action (FGTA).[15,29] These community groups pressured municipal and provincial governments to support harm reduction initiatives in the DTES and increased public awareness by speaking to the media and actively protesting.[15,29] While these lobbying activities were underway at the community level, political leaders at the municipal and provincial level were in discussion about the success of drug policy reform and harm reduction initiatives in other global settings, such as Frankfurt, Germany and Geneva, Switzerland.[15,29] The lobbying activities by local groups such as VANDU and FGTA along with evidence-based research and support from local political leaders led to the eventual adoption of the Four Pillars Approach in 2001—approximately 10 years after the first indication of HIV/AIDS crisis in the DTES in 1990.[29]

The ongoing success of the Four Pillars approach in Vancouver is a result of continuing local partnerships.[36] For instance, the local Vancouver Police Department (VPD) has participated in a police-public health partnership that has increased PWID attendance at Insite, Vancouver's SIF.36 In a study completed from 2003 to 2005 in the DTES of Vancouver, researchers found that 16.7% of 182 PWID study participants were referred to Insite by VPD officers.[36] Indeed, the VPD has explicitly expressed that they "support the Four Pillars approach in the City of Vancouver" including the "public health objectives of needle exchange and the Health Canada mandated research project at the Supervised Injection Site."[33] Further support for Insite occurred in 2013, when the VPD released an advisory urging PWID to use the SIF after two individuals died of heroin overdose.[37] Even though drug use is criminalized by federal law, these reports suggest that local police in Vancouver are responding to drug-related harms among PWID in a manner that appears to seek a balance between police and public health goals.[36]

In addition, Vancouver has also experienced a substantial local expansion of evidence-based harm reduction and addiction services such as NSP and MMT.[18,38] NSPs in Vancouver expanded significantly from one site in 1996 to 29 sites in 2010, while British Columbia's provincial MMT program—the largest in Canada—has also increased significantly.[18,38,39] In British Columbia, primary care physicians are responsible for prescribing methadone to individuals enrolled in MMT, who are then able to receive methadone free of charge at many local pharmacies throughout Vancouver.38,40 In a prospective study from 1996-2005, researchers found that MMT attendance in a cohort of PWID in Vancouver was 11% at baseline in 1996, but increased by an additional 31% during follow-up from 1996 to 2005.[38] Along with the scale-up of antiretroviral therapy as well as the ongoing operation of Vancouver's SIF, this harm reduction expansion has contributed to a significant reduction in HIV incidence among PWID in British Columbia, from 30% in 1998 to an incidence rate of 12.1% in 2011.[19,32,41]

This highlights how an effective "on the ground" public health response to drug-related health harms can be scaled up within an enforcement-based policy environment to effectively reduce HIV transmission.18,42

However, despite support for evidence-based harm reduction initiatives (i.e., NSPs, MMT and SIFs) from the Vancouver Police Department, as well as municipal and provincial policymakers, the Canadian federal government has employed considerable resources to limit the expansion of harm reduction interventions.[42] Indeed, in 2006, Canadian Prime Minister Stephen Harper announced that "we as a government will not use taxpayers' money to fund drug use" and placed a moratorium on the further expansion of SIFs in Canada.[25] Despite the Canadian federal government's efforts to shutter Vancouver's SIF in accordance with the National Anti-Drug Strategy's rejection of harm reduction, the Supreme Court of Canada ruled harm reduction services as "essential health services" in 2011 and upheld the legality of Vancouver's SIF, given its proven medical benefits.15 This decision by the Supreme Court was appealed by the federal government, but nevertheless the legality of Insite has still been upheld by key political and legal stakeholders.[25] This episode highlights the importance of support from multiple stakeholders—such as the judiciary—in the success of the Four Pillars approach in Vancouver.

Tijuana, Mexico

The disparities between local response and national policy in Tijuana may be attributed to a variety of factors, including lack of knowledge of the new national policy as well as ambiguous changes to state level criminal code.[28,43] For instance, under the Narcomenudeo law, small-scale drug dealers are distinguished from large-scale traffickers through the institution of quantity thresholds (eg. ≤50mg for heroin, ≤5g for marijuana, ≤0.5g for cocaine and ≤40mg for methamphetamine) that define possession for personal use.[27,43,44] Under the new law, responsibility for small-scale drug dealers was transferred to the state-level, with the intention of allowing the federal system to focus attention to large-scale drug trafficking within Mexico.[26,28] However, even after institution of the Narcomenudeo law, small-scale possession still accounted for up to 57% of federal drug cases in Mexico, with over 140,000 people legally processed for consumption of illicit drugs, and a further 300,000 people processed for possession from 2006 to 2013.[43] By 2013, one-third of Mexican states still had not changed their criminal codes to reflect overarching national policy changes.[43] These disparities may be a residual result of the "War on Drugs" mentality in Mexico, wherein drug crimes are still punished more harshly than many other crimes.43 Indeed, during the War on Drugs administered under President Calderon from 2006 to 2012, federal forces increased the number of militarized anti-drug operations in an attempt to curb drug trafficking and violence.[43,45] Even today, wherein possession of certain amounts of drugs is legal as codified by the Narcomenudeo law, the military still enforces anti-drug laws in accordance with previous administration.[43] In 2013 alone, 7000 Mexican civilians were arrested by federal forces on small-scale drug related charges.[43] This is of major concern, as it appears that changes to national level policy have yet to transcend into meaningful implementation at the local level, creating an environment of legal uncertainty for local police forces as well as PWID within Tijuana and other Mexican municipalities.[43]

Policing behaviours in Tijuana remain a major barrier to public health responses to local drug-related harms despite the passage of the public health-oriented Narcomenudeo law at both the federal and state level.[26,28] Policing in Tijuana has been shown to significantly reduce the capacity of PWID to access treatment and harm reduction services by discouraging PWID from carrying injection equipment or from accessing NSPs, thereby increasing their risk of HIV infection and injection related harms through needle-sharing.[22,28,44] A recent study assessing the impact of the Narcomenudeo law found that 76% of PWID in Tijuana reported being stopped or arrested two years after the law was passed, and only 2% of those arrested reported being directed to addiction services, which is a key aspect of the Narcomenudeo law.[28] Further, arbitrary policing behaviours such as the confiscation of syringes, physical abuse and extortion continue to occur at a high frequency among PWID populations in Tijuana.[28] Such practices are not only inconsistent with the public health objectives of the Narcomenudeo law, but they also directly decrease the ability of PWIDs to adhere to safe injection practices and create an environment of legal instability that increases the risk of injection-related harms.[28] This policing strongly suggests that the potential public health benefits embedded in the Narcomenudeo law have not translated into effective public health interventions 'on the ground' in Tijuana. In contrast, in Vancouver the police have openly expressed support for harm reduction initiatives and the public health policies as codified by the Four Pillars Approach, as will be further described in later sections of this commentary.[33]

There are many aspects of the municipal Tijuana police department that may be influencing these arbitrary behaviours, including police knowledge and beliefs as well as individual pay scales. For example, the annual salary of a Tijuana police officer is only $11,000 US dollars, as compared to the average per capita household net-adjusted disposable income of approximately $13,000 US dollars a year in Mexico overall.[46,47] This difference in salaries may contribute to corruption among officers whose job demands do not line up with the reality of departmental pay scales.46 Indeed, in a prospective study from 2008 to 2009, researchers found of those PWID that reported syringe confiscation (i.e. police interaction), 91% experienced financial extortion, and a further 71% were robbed by law enforcement.[48] This finding suggests that policing behaviours that put PWID in risk of injection related harms (such as syringe sharing) may be due in part to police corruption fueled by financial constraints. To that end, previous research has found that police corruption and engagement in extra-legal activities is often motivated by profit and power, as well as a perceived inability of police to have an effect on the problem.[46,49] Therefore, educating local Tijuana police department on the beneficial tenets of the Narcomenudeo law, as well as ensuring a higher salary, training and accountability of local officers, is likely needed in order to see a police-public health partnership and effective local policy implementation as seen in Vancouver. In order to address these extra-legal police behaviours, a new education program facilitated by a bi-national collaboration between University of California, San Diego, and the Tijuana police department is currently underway.[50] The implications of this program will be discussed further in later sections of this commentary.

The effectiveness of the Narcomenudeo law is further compromised by the lack of scale-up of addiction and treatment services in Tijuana and a large deportee community. While in Vancouver organized community groups pressured local and provincial stakeholders for the adoption of an extensive harm reduction program, in Tijuana the PWID community is largely made up of deportees from the US as well as migrants from within Mexico and from Central America.[12,51,52] Indeed, approximately 300 Mexican deportees are displaced to Tijuana daily, with 135,000 deported in 2010 alone.[51] Deportees are especially at high risk for HIV acquisition, as they are often deported with a drug use history from the US and lack many essential resources such as identification and healthcare documents.[51] This risk is only further compounded by the lack of harm reduction services in Tijuana. Currently, there are only three MMT clinics in Tijuana, all of which charge user fees for service.[22] As such, despite the implementation of the Narcomenudeo law, there remain significant obstacles to effective treatment utilization among PWID.[22] For example, a recent prospective study in Tijuana from 2011-2013 found that among the 80.8% of PWID participants reporting opioid use, only 7.5% reported accessing MMT.[22,26] This is of major concern, particularly given that 47.3% of PWID also reported a desire to initiate addiction treatment.[22] In addition, ongoing arbitrary policing practices such as extortion and physical abuse have been shown to severely limit the ability of PWID to access these services.[26,28] For example, a 2015 study by researchers at the University of California San Diego found that 50% of the study participants at baseline reported paying a bribe to police in the previous 6 months, which was significantly associated with an increased likelihood of accessing MMT, while other studies have found that fear of police interaction is one of the major barriers to NSP use in Tijuana.[22,53] This highlights how reform

in drug policy in and of itself may not have positive impacts on reducing HIV prevalence among PWID in Tijuana if local-level barriers continue to hamper the use of harm reduction services.

Comparing Tijuana and Vancouver

There are many potential explanations for these disparities between Vancouver and Tijuana. First, PWID in Vancouver formed politically mobilized community groups, such as VANDU, that pressured the local and provincial governments for the eventual adoption of a well-resourced, well-supported, comprehensive and expanding harm reduction and addiction treatment system in the DTES.[25,42,54] In contrast, the PWID community in Tijuana is largely made up of deportees from the US or migrants from within Mexico, who are often without social or physical capital, and have limited resources for contacting relatives, let alone mobilizing against government policy or creating community groups.[51,52] Second, there continues to be a scarcity of resources allocated towards drug treatment program scale-up in Tijuana, while in Vancouver there are well resourced systems and institutions in place that have allowed for the expansion of harm reduction services.[55] Third, there remain significant barriers to enrolment in addiction treatment and harm reduction services in Tijuana—including arbitrary policing behaviours—in contrast to the police-public health partnership present in Vancouver.[22,28] Fourth, unlike Vancouver, law enforcement in Tijuana lacks resources such as proper salary and training, which has incentivized arbitrary policing practices, including bribery and extortion, among law enforcement officers.[22]

Indeed, there are substantial disparities between local policing activities in Vancouver and Tijuana. While law enforcement in Vancouver are increasingly supportive of addiction and harm reduction services, ongoing arbitrary policing practices in Tijuana continue to be a risk factor for injection-related behaviors associated with HIV transmission among PWID populations.[26,28,36,44] The influence of local level policing practices on the success of national drug policy implementation has been previously observed elsewhere.[34,56] For example, while Australia has a national drug policy that emphasizes harm reduction in a similar manner to the Narcomenudeo law, previous research has found that PWID in certain Australian municipalities reported fear of accessing NSPs or carrying needles due to pressure from local police.[34,35,56] These examples highlight the limits of written national drug policies in influencing local responses to injection-driven HIV epidemics, and further suggest that other countries undergoing similar reforms to national drug policy should pay special attention to local-level implementation—including ensuring education and inclusion of key stakeholders such as law enforcement in decision making—in order to ensure that the reform is meaningfully implemented and does not result in unintended consequences.[56,57]

FUTURE RECOMMENDATIONS

It is valuable to consider Tijuana's challenges in effectively implementing a public health-oriented drug policy within the context of Vancouver's success. For instance, the meaningful participation of the Tijuana Police Department as full partners within the city's public health sector, as has been the case in Vancouver with the VPD, is likely critical to the implementation of the public health approach codified within the Narcomenudeo law.[28,22,36] Furthermore, educating police in Tijuana could potentially reduce arbitrary policing practices that are contrary to the public health goals of Mexico's drug policy reform and thereby reduce barriers to NSP and MMT uptake among PWID.[28] This will require ensuring proper salary and pay for police officers in order to strengthen the rule of law in Tijuana as well as improving management practices, reducing staff turnover and limiting police corruption.[26,28] A binational project between the University of California, San Diego School of Medicine and the U.S.-Mexico Border Health Commission, Mexico Section, is currently in the process of creating a police education program in collaboration with the Tijuana police department.[50] The project, called Proyecto ESCUDO (SHIELD), aims to integrate education on occupational safety—including avoiding needle stick injuries (NSIs)—with education on the prevention of HIV/AIDS as well as police behaviours that may interfere with these preventative measures.[50] This represents a promising step towards reducing arbitrary policing behaviours, and ongoing research will determine the impacts of this partnership in reducing injection-related harms among PWID in Tijuana.

However, addressing policing behaviours alone will not sufficiently reduce injection-related harms if there is no concurrent scale-up of treatment and harm reduction services for PWID.[22] In Vancouver, scale-up of NSP and MMT is due in part to the presence of well-resourced systems and institutions such as Vancouver Coastal Health—the local health authority responsible for Vancouver's Downtown Eastside neighbourhood, and which manages a range of harm reduction initiatives—along with support from regional and local stakeholders.30,38,58 Furthermore, the decentralization of NSP services and the provision of MMT free of charge has been critical to reducing barriers to NSP and MMT access by PWID in Vancouver.[30,41] In order for a similar scale-up of NSPs and MMT in Tijuana to be successful, municipal and regional Mexican stakeholders —such as police and politicians—will need to advocate for coverage of MMT under Mexico's universal healthcare system, Seguro Popular, in order to reduce economic barriers for PWID. While other strategies may exist for increasing MMT use among PWID in Tijuana, ensuring methadone free of charge and increased access to services has previously been shown to be effective for increasing MMT enrollment in various settings internationally.[59] An increase in the number of accessible NSPs in areas with high prevalence of injection drug use across Tijuana is also needed.[30,22] The simultaneous scale-up of harm reduction services along with the meaningful participation of the Tijuana police in seeking to achieve the public health goals of the Narcomenudeo law may result in substantial reduction of injection related harms among PWID including HIV infection, similar to what has been observed in Vancouver.

CONCLUSION

Vancouver and Tijuana are two border cities linked by a large North American drug trafficking route that has ensured easy access to narcotic drugs and subsequent high rates of injection drug use in both municipalities. However, in both cities, drug policy implementation at the local level differs drastically from their respective overarching national policy environments. In Mexico, and in Tijuana in particular, the Narcomenudeo law is a potentially meaningful step towards addressing the high rates of drug-related harms including HIV transmission among PWID. However, there are two overarching barriers to the success of this drug policy at the local level, including the education of Tijuana's local police force and the scale up of addiction and harm reduction services. The Four Pillars approach in Vancouver, implemented within a national policy environment hostile to harm reduction, may be a potentially useful framework for Mexican cities such as Tijuana, wherein structural barriers to drug policy reform—such as a lack of evidence-based addiction treatment and arbitrary policing practices—remain. This is especially important given that national drug policy in Mexico is supportive of harm reduction services and a public health approach to drug related harms, unlike what is seen in Canada. Ultimately, in an era where drug policy reform is expanding to a number of settings worldwide, the experiences in Tijuana and Vancouver can provide insight for effective policy implementation in different settings internationally.60,61 For example, Tijuana's experience in failing to meaningfully operationalize a national drug policy that prioritizes a harm reduction approach makes it clear that there may be a variety of barriers to successful implementation at the local level. As such, determining what barriers exist prior to legislation may allow other countries undergoing drug policy reform to avoid similar challenges to policy implementation. By contrast, given that many countries are still steadfastly opposed to harm reduction, the example of Vancouver makes it clear that effective public health responses to HIV risk among PWID can still occur within enforcement-based policy environments through strong political mobilization and community support.[15,29] Given that the 2016 UN General Assembly Special Session (UNGASS) will focus on international goals with respect to addressing "an integrated and balanced strategy to counter the

world drug problem," further research and reports on the implications of national policy and local implementation of drug policies will likely emerge in the near future.[62] Ultimately, through a comparison of local drug policy environments in Vancouver and Tijuana, it is apparent that drug policy reform in and of itself will have little impact on HIV risk reduction among PWID populations unless it is appropriately resourced and meaningfully supported.

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AIDS Denialism: Conspiratorial Ideation and the Internet

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Presentation of AIDS denialist literature in the media has an important influence on policy-making and public health education. However, the mechanisms by which AIDS denialists use media to carry out their movement and the interdependence between denialists and mass media remain inadequately examined. In this paper, the ways in which the media may sustain the HIV/AIDS denialism in South Africa were analyzed, followed by suggestions for mitigating the negative effects of AIDS denialism. In brief, it appears that modern mass media, especially the Internet, has become a fertile ground for propagating denialist literature by facilitating and empowering three defining features of AIDS denialism: (1) conspiracy ideation, (2) manipulation of fake expertise and (3) selective attack of "bad science." Regardless of whether AIDS denialism is an organized movement or simply an outlier of the scientific community, a greater understanding of the ways in which AIDS denialists utilize the Internet to sustain their presence may elucidate more effective strategies for reducing the negative impact of science denialism on public health, particularly its influences on public attitude towards the crucial implementation of future HIV/AIDS treatment and prevention services.

INTRODUCTION

Denialism is broadly defined as the "employment of rhetorical arguments to give the appearance of legitimate debate where there is none, an approach that has the ultimate goal of rejecting a proposition on which a scientific consensus exists."1 Therefore, denialists often use logical fallacies without "evidence" to sow doubts against sound science to cultivate pseudoscience.[2] In particular, incorrect statements, including "evolution does not exist," "preservatives in vaccines cause autism" or "HIV does not cause AIDS" all constitute a type of denialism that we may collectively call science denialism.

Science denialism, when propagated by politicians and rogue scientists, has serious potential to undermine the effectiveness of public and global health educations as well as the implementation of health policies.[3,4] One example of science denialism is AIDS denialism. In addition to the central argument that HIV does not cause AIDS, other myths, such as HIV is harmless or antiretroviral (ARV) drugs themselves cause death, remain a great impetus behind the AIDS denialists' challenge against the accuracy and even the existence of HIV testing and treatment.[5] Claims asserting the lack of scientific evidence behind the cause of AIDS by HIV or even the mode of viral transmission via heterosexual intercourse are also quite common in the AIDS denialist literature.[6]

Indeed, AIDS denialism has compromised HIV treatment and prevention programs, especially in South Africa, a region with the largest number of HIV infection cases in the world since 1980s.5 At the surface, AIDS denialism can cause people, even HIV-infected individuals, to reject proven antiretroviral therapy (ART), a combination of potent ARVs that are important to suppress the viral replication, delay disease progression and reduce transmission. Consequently, this effect had prevented governmental agencies and non-governmental organizations (NGOs) from implementing HIV/AIDS programs in high-risk populations.[3,7,8,9] Moreover, AIDS denialism can also influence politicians on their health-related policy-making. Most notably, during the early 2000s, former South African President Thabo Mbeki and Minister of Health Manto Tshabalala-Msimang publically denied that HIV caused AIDS and opposed funding for the science-based application of ART.[3,7] Interestingly, it was later shown that his decision behind denying ART distribution programs was partly due to the fallacious materials Mbeki found on the Internet.[3] In fact, President Mbeki was so persuaded by online AIDS denialist literature that effective ARTs were completely replaced by unproven application of various alternative therapies using vitamins, music and light—a deleterious recommendation that were included in the 2001 South Africa's Presidential AIDS Advisory Panel report.[10]

Due to the resulting denialism-driven policies in which AIDS was erroneously attributed to poverty and malnutrition instead of a virus, AIDS denialism in South Africa has been shown to account for hundreds of thousands of preventable cases of AIDS-related deaths as well as several hundred new HIV infections.[1,9,11] Therefore, AIDS denialism is not only a threat to the public's understanding of legitimate science, but it is also a public and global health conundrum.[12] In order to solve the science denialism conundrum, one must move beyond the science itself to address the many loopholes through which media, especially the Internet, propagates denialism in the general public and governing body.

THE INTERNET: THE FREE VEHICLE OF EASILY ACCESSIBLE MISINFORMATION

The Internet has revolutionized the way people communicate and exchange knowledge, including scientific data.[13] The abundance of information presented freely on the Internet has increased individual freedom to access information regardless of whether that information is accurate. As Klaus Minol and others point out, the Internet has evolved into 'lay journalism' and the 'wisdom of the masses,' where the quantity of such information is enhanced at the expense of its quality and authenticity.[13] However, the solution to this problem is not to limit access to information, but rather to educate people in critically evaluating the presented information. Given the potentially damaging consequences of easily accessible misinformation, the Internet thus serves as an important consideration in our effort of tackling AIDS denialism.

Since its appearance in the 1990s, the Internet has not simply served as an advanced data transferring system at universities, but also as the most popular medium of mass communication among various entities from both the 'licensed elite' of research institutions and 'anyone capable of operating a browser.'[13,14] These entities include established science media organizations, higher research and education institutions, scientific societies, individual scientists, NGOs and, most importantly, laypersons.[13] A simple Google search for "HIV does not cause AIDS" or "HIV AIDS cure found finally" generates millions of results, many of which lead directly to denialist information. In fact, several major types of Internet-specific media, including websites in the form of blogs, forums and e-zines, have been shown to play a major role in facilitating the pseudo-scientific debate and opinionated communication among Internet users.[13,14] As Internet-specific media significantly influence the "interactivity," "speed," and "availability" of information in both formal and informal communication between the scientific community and non-scientists, the highly integrated communication by the Internet poses a problem in the public sphere where 'false' information is ubiquitous.[13] In addition to the vocal denialism of public figures, these corners where the Internet communities generate and distribute denialist materials anonymously on behalf of not only the individuals, but also the associated institutions, to the general

public thus become problematic.[13,14]

In this paper, various forms in which AIDS denialist literature may manifest on the Internet, including e-zines, applications (apps), blogs and forums, will be examined.[3,4,15,16,17]

E-zines

E-zines are a type of Internet portal in the form of a magazine. The contents of an E-zine include magazine articles, opinions (columns) and interviews with prominent personalities.[3] The AIDS denialist movement is fueled in part by Christine Maggiore's "Alive and Well" (http://www.aliveandwell.org) and the site moderated by the San Francisco chapter of AIDS Coalition to Unleash Power (ACT UP), an international advocacy group working with people with AIDS. Both of these sites advocate that, "HIV [did] not cause AIDS… [and] AIDS drugs [were] poison."[3]

Moreover, online magazines also contribute largely to the AIDS denialist movement through journalism. The freelance denialist journalist, Celia Farber, brought AIDS denialism to a climax in Spin and Discover magazine via public influences of her boyfriend, Bob Guccione, who was also the magazine's publisher. In addition to actively promoting that HIV was harmless, she erroneously denied that HIV caused AIDS in Harper's magazine multiple times, helping form the public's misconceptions of HIV/AIDS during the 1990s. One of her most controversial articles in this publication was the report "Out of Control. AIDS and the corruption of medical science" in which she, a non-scientist, vocally discredited scientific institutions, scientists and the science behind HIV, including ART effectiveness, as irresponsibly falsified.[18]

Under the similar anti-scientific ideology of science denialism, recent emerging websites, such as the World News Daily Report (http://worldnewsdailyreport.com), indirectly fuel information that could contribute to the sustainment of science denialism in the name of free-market entertainment. Although it is not necessarily the responsibility of the news sources to disclose the satirical nature of the website, its potentially deleterious effect becomes obvious when the conspiratorial contents are widely shared among people around the globe without the appropriate disclaimer.[15] For instance, an article citing the United Nations and World Health Organization (WHO) on this website that links pregnancy to the flu shot with the erroneous claim that over 4,000 people each year become pregnant after vaccination has been shared over 300,000 times.[19] Regardless of whether or not people shared the article in jest, the detrimental impact of irresponsible distribution of this type of misinformed information on the web becomes problematic with hundreds to thousands of "likes" and "shares" from daily viewers. Even though liking or sharing a page does not imply approval and endorsement of its messages, indirect disseminations of media in this fashion can lead to fallacious information being mistaken for scientific fact, thereby facilitating science denialism.[19,20]

Apps, Blogs, and Forums

Another feature of the Internet that allows the sustainability of denialism is the unlimited venues for input and output of information. In addition to search browsers and more traditional online publications, these evolving venues include software and applications (apps) that are often free to install and distribute. Even radio and newspapers, which arguably are the most popular forms of media used by the older generations, have been increasingly integrated into the Internet-specific media (e.g. Pandora or Flipboard). Although not yet documented in the literature, apps such as Yik Yak and Reddit, or even Facebook and other social networking apps, have a great potential to be transformed into an interactive 'read-write-web' tool.[13] Through this transformation, the Internet serves not only to store information, but has also evolved into a platform for mass communication and distribution of knowledge, including the aforementioned denialist literatures, many of which are self-generated and exchanged irrespective of geographical limitation.[13]

Additionally, the Internet can also manifest denialist materials through blogs and forums, such as those monitored by prominent HIV/AIDS denialists, Lawrence Broxmeyer, Henry Bauer and Stephen Davis. These forums and blogs facilitate discussions and even self-publication of denialist materials. For example, articles such as "AIDS: "It's the bacteria, stupid!," "'Truth Stranger than Fiction: HIV is NOT the Cause of AIDS" and "FACT #2: The HIV test you took was not a test for AIDS, or even a test for HIV" have been published through these forums.[21-23] With a great capacity to recruit thousands of readers on the Internet through commentaries on their blogs and forums, active journalists also administer several other denialist websites of their own.[24, 25] MIndeed, most of these blogs and forums both in the website-format or integrated apps are often successful at casting just enough skepticism in the general public to make the readers more easily discredit any statements about HIV/AIDS from mainstream scientists.[26]

TIndeed, the content in most denialist websites, magazines, blogs and forums as well as other forms of Internet-specific media tends to be overwhelming and contain many broken web links. This complicated presentation often portrays medical facts about HIV/AIDS as chaotic and doubtful and thus subject to skepticism. As a result, the scientific facts may be perceived as untrustworthy.[14] Therefore, even though the Internet-specific media created by AIDS denialists does facilitate the exchange of knowledge, it does so in a passive readership fashion in which the information given to the non-expert audience is an altered presentation and misinterpretation of scientific facts.[13]

Additionally, while in the past the media used to tell the audience what to think about, now it has been noted that the audience instead tells the media the subjects that they want to think about.[27] Thus, it may not be too hard to appreciate how AIDS denialists could manipulate the information via the Internet to sustain and broaden their influences. That is, it appears that the AIDS denialism media may be controlled by a small number of particular interest groups consisting of vocal AIDS denialists serving as the main generators of denialist materials. Through the Internet, erroneous knowledge is thus able to be manipulated and made widely accessible to the public.[14] In this regard, a small and selective group of individuals, who may or may not be legitimate scientists, become the most significant contributors to a conversation where the audience is no longer engaged, but rather act as passive recipients.[13]

CONSPIRACY IDEATION

Taking advantage of public concerns and anxieties, denialists exploit the easy-to-access-and-distribute features of the Internet to exaggerate while legitimizing discredited arguments and polarized beliefs scientifically, culturally and traditionally through various of Internet-specific media as presented.. In other words, the Internet provides immediate and highly accessible "conspiracist hypotheses" through a process known as conspiracist ideation.[3,4,15,28]

The hypotheses in conspiracist ideation are often constructed using highly opinionated and false analogies for publication in multiple venues.[15] In so doing, this process further facilitates the denialist media strategy to attract attention and profit while enabling the AIDS denialists to exacerbate the ignorance and misinformation of the general public.[3,14,15] Consequently, the people behind the denialist media delay the "free development of science" while painting real science and proven consensus as groundless faiths in the aim of profitable marketing.[3,4,15]

As rejecting sound science may imply the total rejection of scientific research that is often funded by larger institutions of science and medicine, conspiracist ideation tends to emphasize the general public's distrust of governmental authority.[3] This effect of conspiracy ideation in AIDS denialism is evident by a survey linking the HIV/AIDS conspiracy belief to negative attitude of condom use among African Americans. Over 40% of the respondents in this study believed that ARVs were part of the experimental process by the government and about 26% reported that AIDS was actually produced in a government laboratory.[29, 17] Interestingly, a separate study also reported that even though African and Mexican Americans were more likely to uphold HIV conspiracy beliefs than whites, they were found to be more willing to participate in HIV vaccine research.[30] HIV conspiracy belief, therefore, may be associated with particular race or ethnic groups, but conspiracy belief alone may not completely explain why AIDS denialism is more prevalent in African and Mexican Americans.[30] Nevertheless, it is interesting to note the potential link among the observed conspiracy attitude, public distrust of experimental science and AIDS denialism.

FAKE EXPERTISE

In the US, major figures of the AIDS denialism community include Christine Maggiore, the founder of the AIDS denial organization, Alive & Well AIDS Alternatives, mathematical modeler Dr. Rebecca Culshawl, practitioner Dr. Mohammed Al-Bayati and many others. Most importantly, the movement is traced back to a successful scientist, Dr. Peter Duesberg considered one of the most vocal AIDS denialists.[31] Dr. Duesberg was a professor of Molecular and Cell Biology at the University of California, Berkeley. His radical view, arguing that all retroviruses were harmless in an article titled "Retroviruses as carcinogens and pathogens:

Expectations and reality," published in Cancer Research in 1987, contributed significantly to the AIDS denial movement. He claimed that the AIDS virus could just be the most common infection in those at risk for AIDS and that "vaccination is not likely to benefit virus carriers, because nearly all have active antiviral immunity."[32] Another of his papers, titled The chemical bases of the various AIDS epidemics: recreational drugs, anti-viral chemotherapy and malnutrition published in 2003 in the Journal of Biosciences further claimed the cause of AIDS was a "collection of chemical epidemics, caused by recreational drugs, anti-HIV drugs and malnutrition." It elaborates that "AIDS is not contagious, not immunogenic, not treatable by vaccines or antiviral drugs and HIV is just a passenger virus."[33] His last published paper titled, "AIDS since 1984: No evidence for a new, viral epidemic – not even in Africa", in the 2011 Italian Journal of Anatomy and Embryology erroneously spoke against the application of ARV drugs to all HIV-infected patients, especially for "pregnant women, newborn babies."[34]

In South Africa, fake expertise in formulating "AIDS science" once came from the Presidential AIDS Advisory Panel consisted of leading AIDS denialists who were invited by President Mbeki and a German vitamin supplier, Matthias Rath, who was later invited by the Minister of Health Tshabalala-Msimang.[3,7] Interestingly, the initial opposition against ARVs from Dr. Duesberg appeared again in South African Minister of Health Tshabalala-Msimang's claim that malnutrition is the primary cause of HIV and application of traditional medicine of garlic, beetroot and African potato is the most effective treatment and cure.[35]

Indeed, it is important to note that degree-holding scientists can be non-experts with views entirely inconsistent with established knowledge.[35] As a result, to the general public, AIDS denialism seems to retain scientific credibility notwithstanding scientific affirmations to the contrary. One such affirmation rejected by the AIDS denialists was the Durban Declaration, signed by 5,000 physicians and scientists from over 50 countries attesting that HIV causes AIDS.36 Despite the voluminous literature proving the importance of safe sex practices and ART in HIV treatment and prevention, denialist belief – substantiated by fake expertise – has been shown to result in negative attitudes about condom use and ART adherence.[29,37] Moreover, through the media, President Mbeki's assertion at the 2000 International AIDS Conference, arguing irresponsibly that HIV does not cause AIDS, has generated much momentum in the AIDS debate in the general public.[14] Therefore, denialism may exist not because of a deficit in knowledge or ability to comprehend scientific evidence, but rather the facilitated manifestation and presentation of error-laden knowledge in the media.[15] Furthermore, the rejection that HIV causes AIDS in AIDS denialist literature boils down to four principles that are aggravated by the mass media: (1) confusion in the general public, (2) interruption in implementation and education of essential intervention programs and information, (3) decreased public trust and (4) polarized public attitudes toward scientific research.[15]

CONFIRMATION BIAS

Confirmation bias in denialism is a strategy employed by denialists to attack the weakest published papers in a given literature.[3] Denialists, through the help of the Internet, successfully amplify their support by targeting flaws in studies and even sometimes broadcasting the inherent limitations of especially poorly designed studies to the general public in order to discredit the entire field. Although most research scientists would be able to recognize these false claims, many people, including highly educated professionals, may be tricked into believing in the denialist propaganda. The target population of such propaganda may also include the frustrated population of people who distrust the established authority of politicians, scientists and medical professionals.[14] In addition, individuals who have recently tested HIV-positive and are in denial of their infection statuses could also easily fall victim to this tactic of AIDS denialism.[14]

Interestingly, evidence of this selectivity may be similar to that in climate-change denialism. The followers of this movement, as described in the U.S. Congress of the Waxman-Markey climate-change bill, thought often do not think "hard about a crucial issue, are trying to do the right thing," and as they often "don't like the political and policy implications of climate change, … they've decided not to believe in it – they'll grab any argument, no matter how disreputable [the argument would] feed their denial."[4] Even though highly subjective, the opinions raised in this bill present an important point that is common in science denialism; that is, when one constructs and processes his or her internal discussion by excluding all but easy-to-obtain arguments, such as those provided by the media, he or she may fall into the trap of the denialists. Furthermore, this population of individuals who distrust science and the government, is also often emotionally distraught and thus is more likely to become vulnerable to denialists' attack.[14] Hence, the American public is susceptible to denialist's confirmation bias approach in which the enhanced availability of denialist-generated and population-specific arguments facilitates the confirmation bias tendency within the general public in workforce mobilization and sustainability.

STRATEGIC RESOLUTIONS OF AIDS DENIALISM

Many studies have suggested a variety of ways to address HIV/AIDS, especially in reducing the HIV-related stigma, preventing new infections, fundraising and advocating for the rights of those infected by this virus. These solutions include using music, sports and storytelling to increase public discussion and dissemination of accurate HIV/AIDS-related information.[38] However, the potential consequences of sustained AIDS denialism warrant more direct solutions.[39] Although diverting attention of the general public towards legitimate resources in hope of overwhelming the denialist literature may be effective, such effort will not be complete until the denialist movement is targeted consistently, elaborately and systematically, starting from the most current sustaining force, the Internet. Here, the issue is revisited with some practical suggestions based on the analysis of the underlying mechanism on which the Internet operates to sustain AIDS denialism.

Although it may be hard to change individual beliefs, it is possible to stop the growth of denialismdenialism's growth in the general public. One potential approach is thus to not only increase the volume of legitimate information specifically in response to denialist's arguments, but also to incorporate these materials in a broader educational initiatives among youth. These materials could be collectively synthesized and distributed frequently and periodically. Perhaps a single document of all reported AIDS denialist arguments contrasted by scientific evidence could be considered. This inter-organizational and national document could serve as one-stop resource for everyone in multiple languages. In fact, smaller efforts along these lines have already begun to emerge to refute denialism. Examples include the immediate comprehensive responses by Seth Kalichman (2015) and Alexey Karetnikov (2015) to denialist Patricia Goodson's article published (and later moved to the Opinions section by the publishers) in Frontiers in Public Health journal inon February of 2014 claiming that in which HIV does is once again challenged to not cause AIDS.[5,28,40]

Moreover, papers responding to biased denialist literature face the difficulty that they must be comprehensive yet accessible to the population that is most likely to fall for denialist literature. Thus, the materials to tackle AIDS denialism must not be oversimplified or incomplete, in case they miss out on central arguments that in turn may discredit the original central thesis. One solution could be to present information in concise bullet-point format accompanied by links to foundational studies. For example, the fact that HIV causes AIDS is well established; however, the studies that support this connection may not be cited by the original study but instead through a reference mentioned in secondary resources, such as review articles. In other words, if we desire to educate the public about scientific knowledge, we must not consider the general public as incapable of understanding legitimate scientific materials. Furthermore, small-scale social media surveys, utilizing the vast variety of contemporary apps, including Grindr, Tinder, Jacked, okCupid, Facebook, Yik Yak, or Craiglist could be conducted informally, as part of user registration, to gather public attitude and apprehension about HIV/AIDS to further focus on the populations that may be falling under the AIDS denialist attack.

In addition, engaging a public celebrity as a role model has also worked well in the fight against HIV-related stigma and it could be well adapted to fight against AIDS denialism once denialism receives adequate attention especially among youth populations. Additionally, aAddressing AIDS and science denialism must also happen in the education system, both private and public institutions, starting from as early as middle school. Indeed, this implementation may face opposition from the governments in developing countries and even certain state officials on the basis of the federal-state sovereignty in the U.S. This bureaucratic conundrum in addressing AIDS denialism, however, may be addressed by focusing on young scientists and pre-doctoral candidates in all fields and

areas including psychology, biological sciences, biomedical sciences, social sciences, marketing and even economics and business. Specifically, guidelines should be developed to help these developing scientists to not only become aware of but also respond to the denialist movement, including in the clinical and research laboratory settings.[41]

The previously discussed excessive accessibility of falsified information about HIV/AIDS is magnified by the availability of the Internet. However, this problem may be different in certain countries, such as the case in southern African countries where many people still do not have Internet access.[14] Yet, one would quickly recognize the potential tension created if "the West" compensates for this inadequacy either through importation of medical books or Internet infrastructure. Therefore, although changing one's fundamental ideology and/or behavior that is rooted in one's tradition is not the focus of this paper, it is important to acknowledge the social and historical implication of outside interventions within a given country in examining AIDS and science denialism.[15]

For this reason, it seems necessary to enhance people's' knowledge about HIV/AIDS and AIDS denialism, especially in developing countries where Western interventions have not been well accepted. One strong tactic would be a community participation approach, perhaps in other non-Internet avenues, such as music composition. Lastly, it may also be beneficial to address such issues by collaboration with the community of traditional healers and other focus groups to ensure complete dissemination of accurate and quality HIV/AIDS education.

CONCLUSION

It is a fact that HIV infection, without ART, will lead to AIDS; Since the Nobel Prize in Physiology was awarded to Luc Montagnier and Françoise Barré-Sinoussi were awarded the Nobel Prize in 2008 for this discovery their discovery that HIV is the cause of AIDS in 2008, it has become a fact that HIV infection, without proper ART, will lead to AIDS.5,42,43 Yet, AIDS denialism, despite being discredited beyond a reasonable doubt by the many authoritative national and international scientific communityies, still persists. Its persistence has great potential to cause damage to current and future public health programs against HIV/AIDS, especially in South Africa where there still exists a large number of new-infectionHIV-infected cases.9,44 Mass media, especially the Internet, serves as a platform for conspiracist ideation. Blogs and other online outlets do not only facilitate the existence of pseudoscience in informational campaign, but they also foster a damaging worldview through which AIDS and science denialism are sustained.

Science denialism is a motivated reasoning; by examining the ways in which denialists are using media to sustain their influence, potential strategies may be developed to address the issue more effectively. Furthermore, since most science denialists manifest similarly, the strategies developed for AIDS denialism remain applicable to address other science denialist movements.[14] Lastly, science denialism prevents the smooth translation of scientific research into practical health-related policies while compromisingdisintegrating the public trust and attitude towards sound science. Hence, it is ourone's moral and scientific obligation to not only provide accurate health-related information, but also to fully rectify public health education about HIV/AIDS by stopping the spread of denialism.

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A qualitative study exploring effects of the 2003 coalition-led invasion of Iraq on the quality of medical care provided to patients at a local Iraqi Kurdish hospital

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Media reports have suggested that the Kurdistan region is the only state to have economically and politically benefited from the Iraq War. However, the literature regarding the impact of the war on medical care in the region is minimal. A descriptive, interview-based study was conducted with the aim of assessing whether the quality of medical care provided to patients in a local Kurdish hospital has improved since the fall of Saddam Hussein's regime. With more studies such as these will improve the breadth of knowledge surrounding the changes to Kurdistan following the Iraq War.

Twenty patients from a local district general hospital were interviewed: 11 men between the ages of 35 to 70 and nine women between the ages of 33 to 60. The data were interpreted and coded into specific and fundamental themes. The derived themes included lack of punctuality (90% of patients described this), long waiting times (70%), lack of one-on-one patient-doctor consultations (95%), lack of female doctors in the hospital (50%), financial incentives by inappropriate private clinic referrals (100%), lack of vital investigations (100%), lack of anesthesiologists and cancellation of surgical operating lists (100%), lack of documentation (40%) and poor hygiene (100%).

There was general dissatisfaction with the quality of services provided at the local hospital, and all of the patients stated the quality of healthcare had remained the same or declined since the Iraq War. The authors attributed this to the lack of medical resources and funding, inconsistent disciplinary tribunals, poor internal auditing system and breakdown of communication locally and nationally that were consequences of the war.

Introduction

Media coverage suggests that there has been a general increase in the standard of living in the Kurdistan region since the invasion, but less is known about healthcare trends.[1,2] This descriptive study aimed to interpret patients' personal views to determine whether there has indeed been an improvement in the quality of health care provided at a local Kurdish hospital since the 2003 Iraq War. In more economically developed countries, effective health service is dependent on the feedback of the patients served and that their views should be at the heart of any policies made.[3] Due to cultural and social differences, the feedback process is less consistent in Iraq, so this project provided a relatively novel opportunity to interact with patients in this way.

The Kurdistan region is a semi-autonomous state within the Republic of Iraq. Since the 1991 uprising, in which the Kurdish political parties regained control of major Kurdish cities from Saddam Hussein's regime, the Iraqi Kurds have enjoyed the privilege of self-rule. They currently have their own regional government, national assembly and ministries that are democratically elected every four years.[2,4]

Since the liberation of the Kurdish cities by the Patriotic Union of Kurdistan (PUK) and Kurdistan Democratic Party (KDP) in 1991, the Kurdistan region was divided among two different political ideologies for an extended period of time. New borders were defined: the Duhok Province and the majority of the capital Irbil were under the control of the KDP, while the entire Sulaimany Province and the remaining portion of Irbil fell under the jurisdiction of the PUK.[5,6]

In 2003, a United States-led coalition invaded Iraq to end Saddam Hussein's reign.[7] Since then, a democratically-elected federal government was installed within Iraq, while simultaneously the Kurds were granted semi-autonomy in the North.[4] The Kurdish leaders decided to end their localized tiers of government and unite to form the Kurdistan Regional Government. Interparty conflict was resolved to form a single government covering the entirety of the Kurdistan region.[5]

In this political context, we focused specifically on the Shahid Doctor Xalid Hospital which is located in the town of Koysinjak, situated within the Irbil province with a population of approximately 200,000. The Shahid Dr Xalid hospital was the only public health providing service in the area at the time of this study. A relatively small hospital, it consists primarily of an emergency department that serves 500 to 600 acutely unwell patients each day. There are also general surgical, general medical and pediatric departments within the hospital that work both acutely and electively in an independent manner. The closest alternatives to the Shahid Doctor Xalid Hospital

are the various private- and state-owned hospitals in the cities of Irbil and Sulaimany, which are 70 minutes and 100 minutes away respectively. These are tertiary hospitals and therefore provide a wider range of services to treat a broad spectrum of diseases and ailments. Since 2003, the town has been a strong supporter of the PUK, and prior to the Iraqi invasion it was part of the Sulaimany Province.[5] There is speculation that political divisions still exist within the Kurdistan regional government, with each party only serving the regions previously under its jurisdiction prior to the war. Koysinjak, although a supporter of PUK, is currently governed by the Irbil province, which is predominantly controlled by the KDP. As a result, support and provision of resources have been inconsistent and insufficient.[4]

During Saddam Hussein's four-decade reign, medical education and healthcare in Kurdish regions were neglected: the hospitals lacked basic medicine and equipment to deliver standard care to their patients. Not much is known or understood about health trends in Kurdistan before the war due to the lack of health governance and health economics in the region since 1991.[1]

Since 2003, the Kurdistan Ministry of Health has invested a substantial amount of capital into its hospitals in hopes of increasing the overall quality of medical care.[3,8] The Shahid Doctor Xalid Hospital is representative of a majority of hospitals in the Kurdistan region in terms of size, locality and medical resources available. The town's political affiliations and complexities make it an ideal place to study trends. The literature currently available on the operations of Iraqi Kurdish hospitals before and after the 2003 war is minimal. This study will add to that literature and support increased health promotion in the region.

Method

This descriptive, interview-based study was conducted in May 2011. Any patient present at the hospital was considered eligible for participation, provided that supervising clinical staff deemed it safe for the patient to do so. Safety was assessed by determining whether partaking in the interview posed a threat to patient's life or to the lives of immediate friends or family.

Patients were included in this study only if they had experienced both the previous and current healthcare systems, so that comparisons could be drawn from their responses. Patients suspected of being coerced by an external individual (family member or staff) were excluded from the study. This suspicion was evaluated by analyzing the patients' communication and body language towards the researcher and others in the immediate vicinity. Patients under the age of 16 and individuals who lacked capacity to answer questions (e.g. known learning difficulties) were also excluded. Prior to the interview, all patients were assessed for capacity. They were each asked a direct question, and if they were able to understand, retain the information, make a decision and communicate the answer coherently, then they were allowed to proceed with the interview. Patients who aired concerns that were not resolved effectively by the lead researcher at the beginning of the interview were also excluded. Ethical approval was granted by the directors of the Shahid Doctor Xalid Hospital.

Using convenience sampling (based on availability, wellness and access), patients were randomly recruited, asked for consent and interviewed about their personal experiences. Patients awaiting outpatient appointments were approached and asked whether they would like to participate in the interview. Patients were recruited daily over two weeks. Semi-structured interviews were conducted to obtain data verbally. Questions invited patients to reflect upon how medical care had changed since the invasion.

Interviews were conducted in Kurdish by Lawen Karim, a fourth-year medical student studying in the UK. He had familiarity with the cultural setting and spoke the native language fluently. He was not known to patients as one of their care providers, and his relationship with patients was developed only during the study period. Participants were made aware of the purpose of the study at the introduction of each interview, and any concerns highlighted were addressed promptly prior to starting.

If a patient was clearly uncomfortable or appeared unable to answer the question freely, the interview was terminated.

With patient consent, voice recorders were used to record the interview, supported by hand-taken notes. The former was not used if the patient expressed any discomfort or concerns. All verbal data were transcribed and analyzed for themes using hand coding prior to their destruction. At the end of each interview, the researcher summarized key messages and themes back to the participant for comment, confirmation and/or correction.

Results

Eighty patients were approached, and 23 gave their consent to being interviewed. Twenty had attended the hospital prior to the Iraq War in 2003. The three patients who had not been present during Saddam Hussein's regime were excluded. Participants included 11 males aged 35-70 and nine females aged 33-40.

The 20 patients interviewed all concurred that they were not satisfied with the quality of medical services provided in the hospital since the Iraq War. Fifteen patients stated that the quality of health care had not changed since Hussein's era, and five mentioned that there had been a severe decline.

Nine themes emerged in the patients' responses that were described as areas of serious concern, regarding conditions that had deteriorated since the Iraq War. These existing issues from Saddam's era had been exacerbated due to political, social and economic turmoil. Each concern is presented below.

(1) Punctuality

Eighteen patients were concerned with the doctors' punctuality in attending ward rounds and out-patient clinics. Doctors are expected to arrive every morning at the ward around 8AM. This arrival time is vital, as it allows doctors to assess new admissions and follow up on the care of current patients. A full history is taken, followed by the booking of relevant examination and appropriate investigations. The doctor is then expected to attend an outpatient clinic relevant to their specialty until midday. These were derived by the hospitals internal guidelines and the researchers' observations. However, patients stated that doctors would take leave without alerting the administrative team.

"The doctors were taking two, maybe three days off without letting the hospital know." Patient, male, aged 38.

Members of the administrative team are often unable to find replacement doctors at such short notice. However, even more common was the problem of clinicians not attending ward rounds and outpatient clinics at the times allocated to them.

"We would go days without seeing a doctor because they are always turning up late, and sometimes they just would not attend. This was happening in Saddam's time as well. We thought it was going to stop. It hasn't—it's just getting worse." Patient, female aged 55.

In the hospital there is no employment of a "disciplinary tribunal" (or the equivalent) to prevent and investigate uninformed absences and poor punctuality. Many patients believed that doctors were taking advantage of the lack of repercussions. Acutely ill patients with red flag symptoms were denied basic medical care necessary to ensure a good prognosis. "I have been waiting here from 8:30AM to see the doctor (she points to clock), it is 11:04AM and the doctor is still not here." Patient, female, aged 43.

(2) Long waiting times

Of the 20 patients, 14 complained about the long waiting times for a consultation with the doctor. For each specialty, there is a maximum of two clinicians available every day from 9:30AM-1:00PM. This means that patients are being seen at a slow rate. "There are too many patients for the doctors to deal with. There are many people who go days without being seen by a doctor." Patient, female, aged 33.

Like many other hospitals in the Kurdistan region, there is no appointment system in place to allow patients to contact the administrative team in advance to set a time and date convenient for all parties involved. "The waiting times just seem endless, there appears to be no system in place like a queue or an appointment system like there is in Europe." Patient, male, aged 69.

As well as the obvious frustrations for the sick and their fami-

lies, these waiting times make it difficult for doctors to predict the number of patients that will be at the outpatient clinic. With limited number of clinics and clinicians, not all the patients can be seen by a physician; those who are lucky enough to receive a consultation are rushed by time constraints. On average, the doctors only have three to five minutes to spare with each patient. "The person who sees the doctor first is the person who is physically able to barge and push through the large crowds to get to the front. This has been an ongoing problem since I can remember. It was like this before the war, too." Patient, male, aged 55.

(3) Lack of one-on-one patient-doctor consultations

Of the 20 patients, 19 stated that there is no access to one-on-one consultations with doctors, as there are always other patients present at the consultations.

As stated above, there is a noticeable shortage of physicians and no appointment booking system at the hospital. To combat the long waiting times, doctors allow more than one patient to wait in the consultation room at any given time, believing that it will reduce the clinic queues and hopefully decrease the number of patient complaints.

"Nothing has changed! In the consultation it isn't just me and the doctor—it's me, the doctor and three or more other patients. The doctors are letting patients in the room three at a time to combat the long queues outside. I find this very uncomfortable as there are certain things I want to tell the doctor without anyone else overhearing." Patient, female, aged 45.

There is a serious ethical concern here: patients are being seen by doctors in the presence of other patients. Having to share personal information so publicly can be a very uncomfortable experience, especially in small towns such as Koysinjak where most people know each other. Many of the patients that were interviewed complained that they have held back vital information to the doctor to mitigate their embarrassment.

"Sometimes I don't tell the doctor all of my symptoms. I hold back most of the personal stuff due to there being other people in the room." Patient, female, aged 33.

In addition to obvious negative implications for diagnosis, this phenomenon also compromises an individual's right to privacy.

(4) Lack of female Doctors

Of the 20 patients, ten patients (nine of whom were female) stated that there are not enough female doctors at the hospital. At the Shahid Doctor Xalid Hospital, there is currently only one female pediatrician. Some women with obstetric or gynecological problems felt embarrassed about consulting with a male doctor, stating that they would forego hospital visits and endure their symptoms for a longer period of time.

"I just feel embarrassed when I have to talk to male doctors about problems down there (referring to gynecological problems). If I know that a male doctor is heading the clinic then I just don't attend. There were more female doctors during Saddam's regime." Patient, female, aged 40.

Addressing this problem would require a significant shift in staffing, which would not be without difficulty in such a male-dominated environment. Yet the consequences of withholding such a choice appear dire for female patients with serious conditions.

5) Doctors referring patients to their own private clinics

Of the 20 patients interviewed, all of them stated that doctors are not providing patients with the adequate quality of medical care at the hospital. Instead, patients are being referred to the doctors' private clinics, which charge significantly higher fees.

Patients who visit the Shahid Doctor Xalid Hospital are expected to go to a reception area where they purchase a ticket for a set price. Without this ticket, the doctors are not allowed to see the patients in their clinic. The ticket contains the patient's name, date of birth and investigations sheet, which is necessary for the physician to order any relevant tests. If any investigations are required, the patient takes the ticket to the Investigations Department.

Each investigational test also has its own set cost. The Kurdistan regional government has set these prices in all of the hospitals, which are under its constitutional jurisdiction, under the belief that they are affordable and fair. However, the majority of doctors at the Shahid Doctor Xalid Hospital run their own private clinics in the afternoon, where they charge for the consultations and investigations at higher rates.

"In Saddam's time, doctors used to work for free. They used to care for the population. Oh, how things have changed. The hospital charges for consultations and investigations at a reasonable and cheap price. Some of the doctors are refusing to see us and they refer us to their private clinics with the promise that we will get a better service. This is not true at all—if anything, the service is worse. The only difference is that they charge us ten times mores [sic] than the hospital does." Patient, male, aged 41.

According to patients, there have been cases of doctors refusing to see the patients at the hospital and referring them to their private clinics in order to increase private revenue. There are, again, obvious ethical and clinical issues inherent in this, and currently no governance system exists to protect patients from manipulation or financial risk. "I have had to pay 30,000 Iraqi dinars [30 USD] for a consultations and relevant investigations at one of these so called private clinics. This is too expensive, as the hospital only charges less than 1,000 Iraqi dinars [1 USD]." Patient, male, aged 70.

(6) Lack of vital tests and investigations available

Of the patients interviewed, all 20 claimed that the investigations facilities at the hospital are poor. There are certain investigations and tests that are not available.

"The only tests that the hospital seems to have are those for blood pressure and glucose testing. For the main hospital in Koysinjak, which is a relatively large town, this is unacceptable. The town has gone backwards since Saddam's time. How is this possible?" Patient female, aged 59.

This means that the doctors have a more difficult time diagnosing patients, and that patients are referred to hospitals in neighboring towns and cities. The closest hospitals that offer a wider range of investigations are a distance away in Irbil and Sulaimany.

"I have problems with my liver. The hospital does not have the equipment and the facilities to check whether or not my liver is functioning well. They send me to neighboring cities like Erbil and Sulaimany for these tests. This is really inconvenient, as it means taking a day off work to travel an hour for a basic test, which should be readily available in Koysinjak." Patient, male, aged 65.

Patients have to drive long distances for simple tests, such as those for thyroid and liver function. Based on these findings, access to healthcare may be burdensome and may be a barrier to receiving any help for some.

(7) Patient notes are not documented and stored

Of the 20 patients interviewed, eight were concerned that there was no system in which the doctor can review notes prior to a consultation and update them afterwards. The hospital currently has no effective system of documenting patient medical records. This lack of records affects patients with chronic illnesses who must attend consultations more often than those who have acute diseases. Because there is a lack of patient notes, doctors have to take down the same history every time the chronic patient attends.

"I have suffered from diabetes for ten years now. Every time I attend the consultation, the doctor doesn't know who I am, what complications I have developed and how my diabetes has progressed because no notes have been documented. Every consultation becomes a clerking appointment, where the doctor takes a full history. I am not a doctor, but surely for something which is long-running like diabetes, would it not be better to take notes to monitor the disease more effectively?" Patient, male, aged 69.

As explained above, this record keeping is something the doctors simply do not have the time to do, due to long waiting times from the lack of physicians and clinics. As a result, patients with chronic conditions are not being provided with the essential follow-up needed to manage their disease effectively. The establishment of a basic patient record system would decrease waiting times and simultane-

ously increase consultation quality. [8]

"The doctor will prescribe you medication at one consultation, and would tell you to return a week later to check if it is doing its job. When you return for the consultation, the doctor has forgotten who you are, what symptoms you presented with and what drugs he prescribed you. Unfortunately, this has always been the case in Iraq." Patient, male, aged 35.

(8) Lack of Anesthesiologists

All 20 patients stated that all scheduled surgeries have been cancelled at the Shahid Doctor Xalid Hospital, due to the shortage of anesthesiologists in the Kurdistan region and the Republic of Iraq as a whole.[8]

As reported, this lack of anesthesiologists at the Shahid Doctor Xalid Hospital means that surgical theatre lists are regularly suspended. Transfer to hospitals in neighboring cities poses additional challenges to the seriously ill.

"All surgery has been cancelled at the hospital because there is shortage of anesthetic doctors. I needed emergency surgery for my stomach, so I was sent to Hawler (Irbil). Koysinjak is a large town; I think it is embarrassing that the government does not send us any anesthetic doctors. Surely, it's just making the hospitals in the larger cities more busy [sic]." Patient, female, aged 35.

(9) Lack of hygiene and cleanliness in and around the hospital

Twenty patients complained about the general standard of hygiene in and around the hospital. From patient responses, it appeared that the hospital was not maintaining an adequate standard of hygiene to provide effective care. "It is absolutely disgusting here, I have seen toilets in restaurants cleaner than this." Patient, female, aged 38.

At the time of the study, the hospital did not employ cleaners; the nursing staff was responsible for the task of cleaning. With staffing issues and constraints, this extra work for the nurses compromises the quality of care provided to patients as well as the basic hygiene levels. "There is blood everywhere. The staff just walk past oblivious to it. It seems to be cleaned only once a week." Patient, male, aged 65.

Discussion

Most issues at the Shahid Doctor Xalid Hospital can be attributed to a breakdown of communication between the different healthcare professionals within the hospital and the Ministry of Health since the war. Corruption has been speculated to prevail within the Kurdistan regional government.[9] Evidence suggests that the yearly budget the region receives from the central government is not divided fairly among the various ministries. Some politicians have been accused of stealing, leaving only a small amount to sustain a failing medical system. Corruption also existed during Saddam Hussein's reign, but due to his dominance on media outlets and restriction on freedom of speech, this corruption was not as publicized as it is today.[10,11]

Regionally, there is a belief that a political divide still exists since the formation of a unified Kurdistan regional government.[9,10] Koysinjak is renowned for its support of the PUK, and there is an argument that funding and deliverance of resources and new doctors to the area has decreased due to the ongoing rivalry between political parties. This theory has been denied by many politicians within the Ministry of Health.[7]

Since 1991, when the Kurdish political parties regained control of the Kurdistan region, lack of funding from the central government of Iraq increased neglect of health care in the Kurdistan region. The issues described above all stemmed from that era and conditions have continued to decline as a result of poor management by subsequent governments.[7]

The Kurdish Regional Government's Ministry of Health has given many hospital directors the autonomy to oversee their own affairs. This independence was also the case during Saddam's reign. This system can only be effective if the regional government is performing regular appraisals of the hospital and its ability to deliver the best quality of care to patients. Unfortunately, the appraisals for the Shahid Doctor Xalid Hospital are inadequate to allow this system to operate efficiently and effectively.

There is currently no audit system in place at the Shahid Doctor Xalid Hospital to identify potential high-risk concerns that prevent the optimal delivery of medical care. This information would be valuable to both the hospital and the Ministry of Health to identify common problems and set new guidelines to prevent them. Audits can also identify the need for certain resources, such as more investigative tests, new doctors, better cleaning facilities and more clinics.

Within the hospital, there is currently no tribunal to deal with disciplinary issues involving doctors, nurses and other healthcare professionals. Members of the staff seem to have the freedom to behave unethically without the fear of punishments and investigations. There are ethical issues with this lack of discipline that must be addressed promptly.

Interview Questions

Tell us about the quality of healthcare during Saddam Hussein's time.
Tell us about the quality of healthcare since the war.
How have things changed?
In your opinion, have things gotten better or worse?

Conclusion

This study aimed to explore whether the quality of health care has improved in the Kurdistan Region since the Iraq War. All of the patients interviewed had stated that healthcare provision and deliverance has remained the same or declined. The following issues were derived from their responses: poor punctuality, long waiting times, lack of one on one patient-doctor consultations, lack of female doctors in the hospital, financial incentives by inappropriate private clinic referrals, lack of vital investigations, lack of anesthesiologists and cancellation of surgical operating lists, lack of documentation and poor hygiene.

"We thought things would improve after Saddam's regime had collapsed. Yes, we are without a dictator now and are blessed with freedom of speech. However, our basic needs are not being met. We have poor health, education, water and electricity services." Patient, female 38.

Access to healthcare is a basic human right. The Kurdistan regional government and its local hospital officials must execute changes to ensure that people's needs are being met in a cost-effective way.

The hospital could introduce an appointment system that allows patients to contact the administrative team in advance to set a time suitable for all parties involved in the process. Measures must be taken to develop a disciplinary tribunal consisting of senior staff to prevent and investigate unethical practices by doctors. The hospital is in need of expansion to ensure that there is more than one clinic per specialty, that there are more than two doctors per specialty working every day and sufficient female doctors.

Doctors and nurses should be encouraged to increase efforts to ensure that patient notes are recorded and stored in a secure location. By employing a dedicated cleaning staff, hygiene levels would also improve while simultaneously allowing nursing staff to focus on patient care. Finally, regular audits could be performed by the hospital to identify problems, set new guidelines and account for resource deficits.

Limitations and Future Directions

The study identified patients who had experienced the health system at the hospital both before and after the end of Saddam Hussein's regime so that comparisons could be made to determine the extent of change. When patients were invited to participate in the interview, the purpose of the study was explained to them in full.

As a result, it was impossible to fully eliminate response bias, and the results could have been skewed by patients with ulterior motives or incentives. Response bias was reduced by using a clear language that patients could easily comprehend, offering options throughout the interview for the patient to speak freely and selecting questions in a specific sequence to prevent order and inherent biases.

The study analyzed the responses of 20 patients, and although this number fulfilled our inclusion criteria, the small sample size could have affected the statistical significance of the results by increasing the effects of random biases.

Interviews are an effective way to document a narrative history which can subsequently be explored.[12] This documentation is dependent on the interviewer having integrity and developing a good rapport with the patient, i.e., a face-to-face interview. Face-to-face interviews are not anonymous, and are therefore open to influence. Mismanagement in this sensitive context could have led to misleading or "political" responses.[12,13]

The results of this study are specific to a particular hospital, and so may not reflect the conditions

of other hospitals in the Kurdistan region. The findings, however, could inspire and encourage a larger-scale study involving more patients, more hospitals and even multiple cities in the Kurdistan region. The study could be extended by asking patients to identify which factors they believe would create an efficient health system, as well as the specific changes they want to see implemented. This direction would not only be a more robust method of involving patients, but would also allow them to exercise their democratic rights.

Due to the lack of available literature on the state of affairs prior to the Iraq War, it has been increasingly difficult to compare the management of hospitals during that era to the management since. Instead, patients found it easier to describe the current plight of the hospital and describe whether conditions had remained the same or declined since the war.

This study examined the effectiveness of the hospital from the patients' perspective only, which may have introduced elements of information bias. It would be interesting to expand the study to involve the views and opinions of doctors and other health care professionals.

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