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Intervention to train physicians in rural China on HIV/STI knowledge and risk reduction counseling: preliminary findings

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Abstract

We evaluated an intervention to train physicians in rural China on knowledge of HIV/STI prevention, diagnosis, treatment options, and HIV/STI behavioral risk reduction counseling. This paper reports preliminary findings related to feasibility and acceptability of the program. Using a pre-post design, 69 physicians were recruited from rural county hospitals and participated in a 10-day group training program, followed by two months of clinical fieldwork and two additional weeks of training. Physicians completed baseline and six-month assessments. Patients' cohorts, recruited from clinic waiting areas of participating physicians, completed baseline and six-month HIV/STI risk assessments. Physicians reported increased knowledge of HIV biology and pathology, epidemiology, host immune response, opportunistic infection and syndromic management, antiretroviral therapy, risk reduction counseling, and stigma reduction following the training. Patients reported improved knowledge of HIV, reduced HIV stigma, higher rates of HIV testing, and improved condom use at follow-up. The findings suggest that training physicians on HIV/STI-related knowledge and risk reduction counseling is a promising strategy for reducing HIV/STI epidemics in rural China.

Keywords

HIV/STI prevention; sexual health; China; physician training; evaluation

Introduction

The People's Republic of China has experienced a rapid growth in HIV since the first cases were diagnosed in 1989 (Gill & Okie, 2007). There were 700,000 people living with HIV at the end of 2007 (UNAIDS, 2008), and the number of new infections outpaces the number of deaths annually (Lu et al., 2006).

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Incidence of sexually transmitted infections (STIs) is also rising in China (Abrams, 2001; Chen et al., 2007). STI risk groups include sex workers (Liang, Lin, & Yang, 2003), market vendors (Detels et al., 2003), and mobile populations (Hesketh et al., 2006). Underreporting of STIs in hospitals and clinics remains common, and rates of new STI cases might be five to 10 times higher than the estimate (Parish et al., 2003).

Rural China is vulnerable to HIV and STI epidemics due to social factors including concentrations of injection drug users, rural to urban migration, and a history of unsafe plasma donation (Hong et al., 2006). Rural communities are affected by a decentralized health system and poor medical infrastructure, which compromise provision of HIV/STI prevention. Despite national commitment to free antiretroviral drugs, there is a paucity of trained medical personnel in rural communities to counsel, diagnose, and treat HIV/STI patients (Lehman, Dieleman, & Martineau, 2008).

We developed a program with the objective to train physicians in rural China on HIV/STI prevention, symptom diagnosis, treatment, and behavioral risk reduction counseling. Using a pre-post design, we assessed the feasibility of the program using evaluation findings from a cohort of physicians who participated in the program. Patient data were also collected as an exploratory assessment of changes in physicians' knowledge and skills.

Materials and methods

Study site and population

The study was conducted in Anhui Province, a mostly rural setting ranked seventh highest in identified HIV/AIDS cases among China's 22 provinces. Anhui is characterized by agricultural and mining industries, migrant communities, and proximity to Henan Province, where a major HIV outbreak occurred in the 1990s due to unsafe plasma donation (Qian et al., 2006).

Description of intervention

The intervention, entitled *Ai Shi Zi* (meaning "AIDS plus"), was developed by a team of Chinese and US researchers with expertise in HIV/STI prevention and treatment, Chinese health policy, and research evaluation. Development of the intervention lasted approximately one year, involving group consultative meetings and multiple iterations of feedback and revision of training materials. The intervention's primary objective was to train physicians in four content areas: (a) HIV epidemiology, natural history, pathogenesis; (b) HIV/STI treatment; (c) STI syndromic management and opportunistic infections; (d) behavioral risk reduction counseling and stigma reduction. An overarching objective was to train physicians on patient communication and counseling skills including active listening, empathy, and sensitivity.

Ai Shi Zi was delivered using a "workshop-practice" model, in which physicians from rural county hospitals came to the provincial teaching hospital based in the capital city, Hefei, for a 10-day workshop which consisted of didactic seminars, group discussions, and interactive role-plays. Physicians then returned to their rural clinics to work directly with patients for one month. Following that, physicians reconvened in the capital city for a one-week "booster" group training, consisting of case reviews, problem solving, and group discussion. Physicians returned again to their rural clinics for one month, and then reconvened in the capital city for a final week-long group workshop.

Physician recruitment

Physicians were recruited from eight county-level hospitals located in poor, rural regions with high STI prevalence (Yingzhou, Fu'nan, Linquan, Jieshou, Lixin, Xiaoxian, Langsi, Suixi

counties). Bulletins were posted at county hospitals describing the study and seeking volunteer physicians who met eligibility criteria including three years clinical experience and previous work with HIV or STI patients. Sixty-nine physicians volunteered who met these criteria. All completed informed consent and received a timeline of the 10-day training. Cooperative agreements with hospital administrators ensured participating physicians would not be penalized for missing work.

Physician assessment

Physicians completed baseline assessments prior to the training, and six-month follow-up assessments after the training was completed. Measures assessed their knowledge on HIV biology and pathology, host immune response, HIV/STI epidemiology, opportunistic infections and syndromic management, antiretroviral therapy, risk reduction counseling, and HIV stigma. Assessments took 1.5–2 hours to complete. One physician did not complete the six-month assessment.

Patient recruitment

A convenience sample of 2–3 patients seeking outpatient services from each participating physician was approached by research staff interviewers and informed about the study. We recruited independent patient cohorts at baseline ($n = 242$), prior to their physician starting the program, and at six-month follow-up ($n = 287$). Patient eligibility criteria included being 18–45 years old, residing in the local county, and receiving care from a participating physician. Eligible patients expressing interest were escorted to a private room where they verbally provided informed consent and completed a structured questionnaire.

Patient assessment

Patients completed measures of HIV-related attitudes and stigma, HIV testing, sexual risk behavior during the past six months, HIV knowledge, and communication with physicians.

Analysis

Descriptive analyses were used to inspect normality of distribution for measures. Pre- and post-test differences were evaluated using chi-square and *t*-tests. Analyses were conducted using SPSS 11.0.

Results

Physician outcomes

Physicians showed significant improvements in each domain (Table 1). Proportion of correctly answered items about HIV biology and pathology increased from 50 to 93%; host immune response knowledge increased from 33 to 87%; HIV/STI epidemiology knowledge increased from 59 to 93%; opportunistic infections and syndrome management knowledge increased from 28 to 80%; antiretroviral therapy knowledge increased from 31 to 92%; HIV-related stigma and discrimination knowledge increased from 43 to 91%; and principles of risk reduction counseling knowledge increased from 35 to 87%.

Patient outcomes

Patient samples did not show significant differences in gender (baseline, 53% male; follow-up, 48% male), education level (baseline, 25% completed > nine years of schooling; follow-up, 22% completed > nine years of schooling), or marital status (baseline, 84% married; follow-up, 85% married).

Patients' HIV-related knowledge, attitudes, and behaviors are shown in Table 2. Patients at follow-up reported significantly higher levels of HIV knowledge, reduced stigmatizing attitudes, more satisfactory communication with physicians, and more favorable rates of condom use, and increased HIV testing (Table 2). Patients at follow-up, however, did not report increased intention to use condoms or reduce number of sex partners.

Discussion

These findings suggest that *Ai Shi Zi* offers a feasible and acceptable approach for (a) training physicians about HIV/STI biology and pathology, epidemiology, prevention, and treatment; (b) motivating physicians to implement HIV/STI services in routine care; and (c) improving HIV-related outcomes in patient populations. Physicians reported improvements in all targeted domains. Exploratory analysis of patient data showed improvements in HIV/STI knowledge and some behaviors, as well as better communication with physicians at follow-up. Given the growing HIV/STI risks in China, particularly in rural settings, this intervention holds potential for improving capacity for providing HIV/STI prevention and treatment.

Physicians in rural China hold strategic positions to bring community-wide changes in HIV/STI prevention and risk reduction (Coates, 1999; Tucker et al., 2004). Physicians have access to high-risk populations for HIV/STI infection and transmission, such as highly sexually active people and mobile populations. Furthermore, physicians have a unique opportunity to counsel patients about sexual health because their occupational status confers esteem and trust.

There are limitations to this work. First, we only observed a single cohort of physicians over time, and did not have a comparison or control group. Second, because of the short follow-up period, long-term effects of the training cannot be determined. Third, selection factors might have led to a biased sample of highly motivated physicians, who might not reflect the general professional population. Fourth, because independent patient cohorts were assessed at baseline and follow-up, the data could not determine patient changes over time and, therefore, we cannot attribute findings to improvements in physicians' skills. Fifth, biological markers were not assessed, and patient findings are limited to self-report. Sixth, statistical tests used only univariate descriptive analyses.

These preliminary and exploratory results from the *Ai Shi Zi* pilot are encouraging, particularly in light of urgent needs for trained rural physicians on HIV/STI prevention and treatment. These results indicate that the intervention content and techniques (e.g., lectures, role-plays, group discussions) are acceptable in a rural Chinese context. The findings also indicate that HIV/STI prevention counseling and treatment can be feasibly integrated into routine health care following a relatively small investment in training time and resources. Further tests using more rigorous research designs are necessary to provide stronger evidence for this program.

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Table 1

Physician HIV/AIDS knowledge, pre- and post-test.

	Pre-test (<i>N</i> = 69)	Post-test (<i>N</i> = 68)	<i>p</i> -Value
HIV biology and pathology (%)	50.0	92.7	**
Host immune response (%)	33.0	86.9	**
HIV/STI epidemiology (%)	58.7	93.2	**
Opportunistic infections and syndromic management (%)	27.5	79.5	**
Antiretroviral therapy (%)	31.3	92.4	**
HIV-related stigma and discrimination (%)	42.6	91.3	**
Risk reduction counseling (%)	35.0	86.8	**

Note: % represents proportion of correctly answered questions. *P*-values associated with chi-square tests.

**
p < 0.01.

Table 2

Patient HIV knowledge, attitudes, behaviors: pre- and post-test.

	Baseline (N = 242)	Follow-up (N = 287)	p-Value
HIV knowledge scale ¹ (M, SD)	15.9, 5.6	17.7, 5.4	**
Would you remain friends with someone infected with HIV?			**
Yes (%)	64.0	80.1	
No (%)	28.1	16.0	
Depends/Don't know (%)	7.8	3.8	
Should a person with HIV be allowed to continue working/studying?			*
Yes (%)	59.9	71.4	
No (%)	33.1	23.7	
Depends/Don't know (%)	7.0	4.9	
Should a person with HIV disclose his/her status to others?			*
Yes (%)	47.9	53.7	
No (%)	40.1	38.7	
Depends/Don't know (%)	12.0	7.6	
Physician talked to patient about			
HIV/AIDS (%)	29.3	78.7	**
STIs (%)	21.9	62.4	**
Sexual behavior (%)	16.5	44.9	**
Family (%)	26.9	61.3	**
Friends (%)	16.9	35.9	**
Using condoms (%)	33.1	47.4	**
Taking medication (%)	89.3	97.8	**
Diet (%)	85.5	92.3	**
Returning for another visit (%)	91.7	89.5	ns
Encouraging his/her partner to see the doctor (%)	31.4	48.1	**
Communication with physician scale ² (M, SD)	6.26, 2.06	7.56, 1.69	**
Been tested for HIV (%)	19.0	37.3	**
Never used condoms in the past six months (%)	65.0	52.4	**
Intend to increase condom use (%)	33.7	36.1	ns
Intend to reduce number of sex partners (%)	4.2	2.6	ns
Plan to get tested for HIV in the future (%)	53.3	62.0	**

Note: P-values associated with *t*-tests or chi-square tests.* *p* < 0.05;** *p* < 0.01; ns, non-significant.¹ HIV knowledge assessed using a continuous measure with scores reflecting number of correctly answered questions, ranging from 0 to 21.² Communication with physician assessed using a continuous measure with scores ranging from 0 to 10.