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Short report

Regional differences in HIV prevalence and individual attitudes among service providers in China

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ABSTRACT

We examined the relationships between a region's HIV prevalence and HIV-related knowledge, perceived risk of HIV infection, perceived institutional support for HIV care, and avoidance attitude toward persons living with HIV (PLH) among service providers in China. Data were collected from 40 county-level hospitals in two provinces, including 1760 service providers. Multi-sample standardization and decomposition analysis was performed for HIV knowledge, perceived risk, institutional support, and avoidance attitude toward PLH. After adjusting for potential confounders, service providers from the province with higher HIV prevalence perceived a higher risk of contracting HIV at work, recognized more institutional support for HIV care, and reported a lower level of avoidance attitude toward PLH compared to those from the province with lower HIV prevalence. After confounding factors were standardized across provinces, occupational exposure experience was determined to be the strongest influence on the discrepancy of avoidance attitudes in the two provinces. Regional contextual factors could shape individual providers' attitudes and beliefs and impact the quality of care. Stigma reduction interventions need to be culturally tailored and region-specific.

Introduction

Since HIV was first detected in 1985, China has recorded about 326,000 cases of HIV infection, of which 107,000 developed into AIDS (Ministry of Health China, 2010). All 31 provinces of China have reported HIV infections, yet the geographical distribution of cases is highly disproportional. Recent estimates show that the five highest-prevalence provinces account for 53.4% of the total national cases, whereas the five provinces with the lowest prevalence account for less than 1% of total infections (UNAIDS, 2009). Despite this highly varied distribution, few studies have considered regional context as a linkage to individual attitudes and behaviors associated with the HIV epidemic in China.

HIV-related stigma appears to be universal across regions, but increased recognition is being given to the importance of context (Ogden & Nyblade, 2005; Parker & Aggelton, 2003). Although two regions may have a similar prevalence of HIV, the meaning of the epidemic can vary by region (Diaz & Toro-Alfonso, 2007). Conversely, the degree of HIV-related stigma can be tied to prevalence of infection (e.g., with significant stigmatization occurring in areas where few communities are affected, and minimal stigmatization occurring in areas with high-prevalence) (Busza, 1999; Genberg et al., 2009; MacIntosh, 2007). Furthermore, the social, economic, political, and historical characteristics of a region may all contribute to manifestations of a broadly universal phenomenon like stigma (Castro & Farmer, 2005; Ogden & Nyblade, 2005). Hence, the regional context is paramount in understanding how HIV stigma develops and plays out (Mahajan et al., 2008). Understanding the regional differences in HIV stigma attitudes can shed new light on planning the future course of stigma reduction intervention programs (Pope & Shoultz, 2010).

Our main objective in this study was to investigate the relationships between a region's HIV prevalence and HIV-related stigma among service providers. Specifically, we compared stigma and related factors, including HIV knowledge, perceived infection risk at work, perceived institutional support for self-protection, and avoidance attitude toward persons living with HIV (PLH) between service providers in primary medical care settings in two provinces of China. This study provides an

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opportunity to capitalize on regional considerations when developing conceptual frameworks of stigma and discrimination reduction in medical care across various settings.

Methods

Study sites and sampling

This study was conducted in 2009 in two provinces of China. One province had one of the highest infection rates while the other province reported one of the lowest HIV prevalence rates. The province with the higher HIV prevalence is defined as Province A and the province with the lower HIV prevalence is defined as Province B. By the end of 2007, Province A had recorded 57,325 cases of HIV infection, among which 7630 had progressed to AIDS (Jia et al., 2010). During the early stage of the epidemic, needle sharing was the primary transmission route in Province A. However, the proportion of infection caused by needle sharing decreased drastically from 100% in 1989 to 42.5% in 2007, with sexual transmission accounting for 47.4% of total infections in 2007 (Jia et al., 2010). In contrast, the reported number of HIV/AIDS cases in Province B is low (State Council AIDS Working Committee Office, UN Theme Group on AIDS in China, 2007). By the end of 2007, Province B cumulatively reported 1387 HIV cases, among which 629 had developed into AIDS. HIV/AIDS cases in Province B were spread mainly through unprotected sexual acts, with heterosexual transmission accounting for 67.3% of the reported HIV cases in 2009 (Southeast Express, 2009).

This study employed a two-stage sampling strategy. The first stage involved random sampling of 40 county-level hospitals in the two provinces. County-level hospitals were chosen due to their status as the most advanced local hospitals within easy access for most residents (Brown & Theoharides, 2009; Davis & Chapman, 2002). In the second sampling stage, service providers were randomly selected from each hospital using a publicly available hospital staff roster. We intentionally selected potential providers who provide direct services to patients, including doctors, nurses, and lab technicians. Forty-four service providers were randomly selected from each county hospital. The recruiter approached a total of 1896 potential participants and 1760 participated in the study (refusal rate $< 5\%$).

Procedures

Research staff approached randomly selected providers with a standardized recruitment script. Project researchers explained the purpose of the study, procedures, potential risks and benefits, and obtained written informed consent from the participants before collecting data. All study documents and procedures were approved by the Institutional Review Board (IRB) of the University of California at Los Angeles and the Chinese Center for Disease Control and Prevention. Each participant was paid 50 yuan (U.S. $7.50) for their participation.

Each participating provider completed a self-administrated questionnaire that took approximately 35 min to complete. A trained interviewer was present to answer questions during the assessment. The questionnaire covered demographics, medical education and training, HIV knowledge, perceived risk of contracting HIV at work, assessment of institutional support for HIV care, and attitudes toward PLH.

Measures

Service providers' avoidance attitude toward PLH was measured using a scale of eight items, which was modified from Herek's study (1999) and our previous work in China (Li et al., 2007). Participants were asked about their willingness to provide service to PLH in eight hypothetical situations. Sample questions in the scale included, "If HIV positive patients visit the hospital, would you be willing to provide all service needed?" and "If your supervisor asked you to do a physical examination of a known HIV-positive patient, would you be willing to do so?" Items were scored from 1 (strongly agree) to 5 (strongly disagree). Some items were reversed so that a higher score indicates a higher level of avoidance attitude regarding providing service to PLH (range: 5–40; $\alpha = 0.84$).

To measure the extent to which the participant personally perceived institutional support from the hospital authority, a 14-item scale was developed based on a similar scale used with service providers in China (Li, Liang, Wu, Lin, & Wu, 2008). Participants were asked about the availability and the support related to infection protection and HIV care in their hospitals, including universal precaution supplies (e.g., gloves, sterile needles, disinfectant, and disposal containers), post-exposure prophylaxis materials and procedures (e.g., antiretroviral therapy drugs, concurrent disinfection, medical insurance, and psychological counseling for occupational exposure); and the accessibility of HIV information and training. This measure was calculated by summing the positive (yes) responses with a higher number, indicating better perceived institutional support in the hospital (range: 0–14; $\alpha = 0.80$).

Perceived infection risk at work was constructed by combining five questions that measured the providers' perceived probability of contracting HIV at different scenarios at work. Sample scenarios included: "If you provide physical examination to PLH, how likely is it that you would become infected with HIV?"; and "If you provide surgery to PLH, how likely is it that you would become infected with HIV?" Responses ranged from 0 (not possible) to 3 (high possibility). In this scale, a higher number was associated with higher perceived risk of HIV infection at work (range: 0–15; $\alpha = 0.73$).

HIV knowledge was measured using 12 questions that covered the topics of HIV transmission route, prevention, and treatment methods. These questions have been used together or separately in many studies to measure HIV knowledge. For each question, the response was coded as 1 (correct answer) or 0 (incorrect answer or don't know). The scale was constructed as a sum of the 12 items (range: 0–12).

We also collected the respondents' demographic information such as gender, age, medical training, and professional category (doctor, nurse, or lab technician), previous contact with PLH at work, and occupational exposure to a patient's secretions.

Statistical analysis

Demographic characteristics were compared across the two provinces using chi-square analysis for categorical measures. We first described the distribution of age, gender, medical education, profession, contact with PLH at work, and experience of occupational exposure in the two provinces. This step of the statistical analysis was performed in SAS version 9.2 (SAS Institute Inc., Cary, NC).

The provincial-specific crude scores of HIV-related scales, including HIV knowledge, perceived HIV risk at work, perceived institutional support, and avoidance attitude at work, were calculated and compared across provinces using two sample *t*-test. The crude means ignore the possibility of confounding factors (such as age, gender, education, profession, contact of HIV/AIDS patient at work, and experience of occupational exposure) that influence the means across provinces.

Standardization and decomposition analysis (Wang, 2003; Wang, Rahman, Siegal, & Fisher, 2000) was performed to standardize