Impacts of community HIV transmission knowledge and fear on stigmatizing reactions in China, 2003

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Abstract

This paper assesses the effects of individual-level and community-level HIV transmission knowledge and fear on individual stigmatizing reactions toward people living with HIV/AIDS in China. Data for the present study are derived from a sample survey of 12,270 men and women aged 15-49 of seven provinces/municipalities, conducted by China's Population and Family Planning Commission in 2003. Multilevel regression analyses illustrate the independent explanatory importance of individual and community effects of HIV knowledge and fear on individual stigmatizing reactions. The results show that HIV stigmatizing reactions are associated with community-level HIV knowledge and fear after taking into account individual-level HIV knowledge and fear. The findings suggest that individual stigmatizing reactions are partially shaped through social learning and social influence. Education and intervention programs for improving social responses to the HIV epidemic will need to pay special attention to enhance fully accurate HIV knowledge and reduce any inaccurate HIV beliefs and fear, as well as related social and community influences.

Introduction

In China, the number of annual reported HIV infections has been increasing steadily. The estimated cumulative number of HIV cases is 840,000 people by the end of 2003 while the reported cumulative number of HIV positive cases is 89,067 by the end of 2004 (UNAIDS, 2004). In the past few years, Chinese governments and non-government organizations have made strong efforts to prevent and control the HIV/AIDS epidemic by increasing accurate knowledge about HIV transmission and reducing stigmatizing attitudes toward people with HIV/AIDS (PWA). However, recent increased knowledge about HIV transmission has not resulted in decreased stigmatizing attitudes toward people with HIV/AIDS (PWA) in China (Zhang, 2004).

Studies persistently show that high level of HIV transmission knowledge does not necessarily lead to change in HIV-related behavior and attitudes because accurate knowledge of true HIV transmission co-occurs with high levels of inaccurate beliefs about modes of transmission in the population (Boer & Emons, 2004; London & Robles, 2000). Recent studies conclude that inaccurate knowledge about false HIV transmission weakens people's ability to discriminate properly between potential routes of transmission, shapes a feeling of helplessness, and fosters fear of HIV contagion. As a result, the need for protecting the self from a life-threatening disease leads to stigmatizing reactions toward PWA (Bishop, 2001; Boer & Emons, 2004; Brown et al., 2003; Ingham, 1995; Lew-Ting & Hsu, 2002).

Stigmatizing reactions toward PWA are the negative social responses to the HIV epidemic, which have been increasingly recognized as a major obstacle to effective HIV prevention and care universally. Stigmatization often distances people themselves from the disease and disease-associated people. Stigmatizing also undermines HIV preventive behavior by discouraging people with HIV from coming forward for HIV testing, counseling and treatment; from sharing their seropositive status with their sexual partners, family and friends; and from receiving support for HIV-related behavioral changes and responses. As a result, stigmatizing leads to a lack of inadequate information about the actual level of HIV epidemic, making informed preparation and appropriate responses difficult (UNDP, 2003).

While existing literature of the stigmatizing of PWA focuses on the effect of individual inaccurate HIV knowledge through everyday social contact, new theoretical developments point to the importance of understanding community level aspects of HIV stigmatizing reactions. As it has been argued, in societies with strong bonds and allegiances to family, village, neighborhood and community, social denial and stigmatizing reactions take place not simply at the personal level but also at the social level, with communities taking the actions and attributes of whole groups of people (Parker & Aggleton 2002, 2003). Therefore, there is a strong need to assess whether there is a community effect on HIV-related stigmatizing beyond and above the effects of individual characteristics.

Multilevel approach has become increasingly popular in assessing the effects of community environments on individual social demographic and health outcomes and behaviors (Diez-Roux, 1998, 2000; Pickett & Pearl, 2001). However, few studies empirically examine the community effect on individual stigmatizing attitudes toward people with HIV/AIDS. The dearth of research in this area is probably largely due to a shortage of hierarchical sample data with needed information.

The objective of this study is to assess the effects of individual-level and community-level HIV knowledge and fear on stigmatizing reactions. This study focuses on two major stigmatizing reactions: stigmatizing attitudes toward PWA with a perception of PWA as a social outgroup; and unwillingness to engage with PWA that serves as a function of protecting the self from a threat (Boer & Emons, 2004; Herek et al. 1998; Lew-Ting & Hsu, 2002). Specifically, this study addresses the following two questions: Is individual fear still associated with stigmatizing reactions after controlling for individual accurate and inaccurate HIV knowledge? Do community-level HIV knowledge and fear also play important roles in shaping individual stigmatizing reactions?

Our study attempts to fill this data gap by using a cross-sectional population-based dataset with a hierarchical structure to assess the impact of individual-level and community-level HIV knowledge and fear on HIV stigmatizing reactions while controlling for the effects of other individual- and community-level characteristics. Factors selected as potential explanatory variables include sex, age, marital status, ethnic minority status, educational achievement and media exposure, correct and incorrect HIV knowledge, and community-level HIV knowledge and fear, as well as participation of IEC activities for HIV prevention.

Data and Methods

The data used for this study are from the cross-sectional Information, Education and Communication (IEC) Survey for HIV/AIDS Prevention in China, conducted by the State Family Planning Commission in December 2003. The survey provides updated information on HIV transmission knowledge, attitude, and practice for further action plan. The original sample consists of 12,822 men and women who were aged 15-49 and residing in private households.

Respondents were drawn from a stratified multistage random sample of the general adult population with different levels of economic development and HIV prevalence from 13 counties/cities in seven provinces/municipalities (Beijing, Heilongjiang, Shanghai, Henan, Guangdong, Guangxi, and Hainan). The multistage sampling was taken place first by randomly selecting five townships/streets from an administrative frame in each of the 13 selected rural counties or urban areas. Next, two villages/neighborhoods were selected from each of the five-selected townships/streets. Then, about 100 households were selected from each of the selected villages/neighborhoods. At the last stage, within each selected household one adult at the reproductive ages 15-49 was randomly selected for interview. As a result, about 100 individuals were selected from each of the 136 selected villages or city neighborhoods (Zhang, 2004). As the survey collected information on stigmatizing reactions only from respondents who had ever heard of HIV, the present data analysis was restricted to 12,270 respondents who answered the questions on stigmatizing reactions.

Multilevel logistic regression models are used to estimate the effects of individual- and community-level characteristics on individual HIV stigmatizing reactions. Individuals within a community often share common community-level characteristics and thus may be more similar in their HIV/AIDS-related reactions than individuals across different communities. Multilevel logistic models are used to correct estimated standard errors of coefficients for this kind of clustering. Multilevel models also enable estimation of what is known as the *random effect*, representing community-level variation in the outcome variable that is not explained by the predictor variables (Goldstein, 1999; Snijders & Bosker, 1999).

The multilevel logistic model provides a way of assessing the degree of community-level clustering in the outcome variable. The degree of clustering is measured by the intra-community correlation ρ (also called the *intra-class correlation coefficient*), calculated as $\sigma_{\mu}^2/[\sigma_{\mu}^2 + \sigma_e^2]$, where σ_{μ}^2 denotes community-level variance and σ_e^2 denotes individual-level variance, with this latter variance set to $\pi^2/3$ (equal to 3.29). This correlation can be interpreted in two ways: it measures the extent to which individual outcomes are more similar among individuals from the same community than among individuals from different communities, and it is also the proportion of the total unexplained variance in the outcome that is between communities (Snijders & Bosker, 1999; Merlo et al., 2003).

The model also allows measurement of the proportion of the total community-level variance in the outcome variable that is explained by predictor variables (either at the individual-level, or at both individual-level and community-level together), relative to a model of the same form that has fewer or no predictor variables. It is calculated as: $[\sigma_0^2 - \sigma_1^2]/\sigma_0^2$ x 100, where σ_0^2 is the community-level variance of the initial model (with fewer or no predictors), and σ_1^2 is the community-level variance of the model with all the predictors. This approach allows calculation of the extent to which the clustering in the outcome variable at the community level is explained by each set of predictor variables at the individual or community level (Merlo et al., 2003).

The analysis uses a sequential approach to model building. It starts with a null model, which includes on the right-hand side of the equation only the random intercept term μ_{0j} without any predictors. The variance σ_0^2 from the null model measures the total between-community variance of the outcome variable, without controlling for any predictors. The next model includes only the individual-level variables as predictors. The next model after that includes both the individual-level and the community-level variables. Thus, this sequential approach allows the measurement of the relative contributions of each set of variables to the total community-level variance.

We estimate our models using the MLwin version 2.1d software. The second order penalized quasi-likelihood (PQL) procedure of the MLwin was used to estimate the parameters of the multilevel logistic model. The PQL procedure generates the least biased estimates with binary response data (Rasbash et al., 2000).

Variable definitions

Two outcome variables related to *stigmatizing reactions* are examined. The first outcome variable refers to *stigmatizing attitudes toward PWA.* It is based on multiple responses to the question "If an acquaintance were infected with HIV, how would you treat him/her?" Respondents who answered "detest", "avoid contact", or "blame" were classified as having stigmatizing attitudes toward PWA. Respondents who did not have any of the above responses but responded with "sympathize with", "be concerned about" or "other" were defined as not having stigmatizing attitudes.

The next outcome variable refers to *unwillingness to engage with PWA.* It is assessed by the following question: If someone who is close to you had been infected with HIV, are you willing to engage the following activities with him/her? These include

(1) Shaking hands, (2) Dining together with one's own meal, (3) Using the same telephone, (4) Using the same toilet, (5) Working together, (6) Chatting together, (7) Playing cards, chess, or mahjong together, (8) Working in the same room, (9) Swimming together. Due to the high percentage of unwillingness to engage in any of daily activities with PWA, the refusal reaction variable is coded with value one if the respondents have five or more refusals to engage with PWA. Otherwise, it is coded as zero.

Explanatory variables at the individual-level include the following individual characteristics: *sex*, *age* (15-29, 30-39, and 40-49), *marital status* (currently married, not married), *education* (primary school or lower, at least some middle school, at least some high school or higher education), and *exposure to media* (often, not often). In addition, we define documented knowledge about HIV transmission modes as *fully correct HIV knowledge* if respondents identified all of the following: "blood transfusion", "sharing needles among drug users", "HIV positive mother to fetus", and "sexual intercourse". We define improbable or impossible knowledge as *inaccurate HIV knowledge* if respondents answered any of the following casual contacts: shaking hands, hugging, kissing, or handling the bed sheet or toilet used by PWA. We also define *HIV fear* based on a question of whether respondents are afraid of HIV (yes or no). Moreover, s*elf-perceived risk* for *HIV infection* is defined based on the question of whether the respondent was worried he/she might get infected with HIV. A dummy variable *participation in IEC activities* is obtained by attending any consultation, training, and other activities for HIV preventions in the past two years prior to the survey in 2003.

Community-level explanatory variables are a set of dummy variables: *urban/town-rural residence* and a set of derived aggregates in the community cluster using an average approach. They include *community level accurate HIV knowledge* (high if a community average is 50% or higher, otherwise is low) and *community level inaccurate HIV knowledge* (high if it is 10% or higher, otherwise is low). Additional community-level explanatory variables are *community level HIV fear* (high if it is over 50%, otherwise is low), *community level self-perceived risk* (high if it is 30% or higher, otherwise is low), and *community level IEC activity* (high if it is 60% or higher, otherwise is low).

Results

Table 1 shows that while over one third (35%) of respondents had *stigmatizing attitudes toward PWA*, about half of the individuals in the sample have *unwillingness to engage with PWA* (48%). Given a moderately high level of full accurate HIV knowledge (43%), and low level of inaccurate HIV knowledge (10%), there are large differences in individual stigmatizing reactions unexplained by individual-level inaccurate HIV knowledge. Notably, one third of respondents had self-perceived risk of HIV infections (35%), while the majority of respondents had fear of HIV (60%).

Fixed effects

Our multilevel analysis results show that *individual-level* fully accurate HIV knowledge is associated with decreased stigmatizing reactions and that individual-level any inaccurate HIV knowledge and self-perceived risk of HIV infection are associated with increased stigmatizing reactions (Table 2). In addition, after controlling for accurate and inaccurate knowledge as well as self-perceived risk of HIV infection, fear of HIV is still associated with increased stigmatizing attitudes toward PWA and an unwillingness to engage with PWA (ORs=1.8, 95% CI 1.6 to 2.0). This indicates that stigmatizing reactions indeed are partially attributed to the instrumental function of protecting the self (Ingham, 1995; Lew-Ting & Hsu, 2002).

The multilevel models also show that *community-level* fully accurate HIV knowledge is associated with reduced odds of stigmatizing reactions, while community-level inaccurate HIV knowledge is associated with increased stigmatizing reactions after controlling for other individual and community characteristics. It is remarkable that the effects of inaccurate knowledge and fear at the community level on stigmatizing reactions are much stronger than that at the individual level. For example, the odds of having unwillingness to engage with PWA for persons who have inaccurate knowledge and fear at the individual level are 1.7-1.8 times as high as those who do not have inaccurate knowledge and fear. However, the odds of having unwillingness to engage with PWA are three times higher for persons who live in a community with above average level of inaccurate knowledge (OR=3.8, 95% CI 2.0 to 7.2) or with above average level of fear (OR=4.1, 95% CI 1.9 to 8.8) than those who live in other communities. It is also noteworthy that urban residence is also independently associated with increased stigmatizing reactions after controlling for all selected individual-level and community-level factors.

Random effects

Table 3 shows the relative contribution of individual-level variables and community-level variables to the explanation for community-level variance of stigmatizing reaction outcome variables. For example, a comparison of Model 1 and Model 2 with Null Model indicates that individual-level variables explain 20% ([1.80-1.45]/1.80 x 100) of total community-level variance and that the community-level variables explain another 33% of (53% - 20%) stigmatizing attitudes toward PWA.

In addition, Table 3 shows that the intra-community correlations are 35% (1.80/[1.80 + 3.29] x 100) for stigmatizing attitudes toward PWA and 52% (3.58/[3.58 + 3.29] x 100) for unwillingness to engage with PWA. The sizeable intra-community correlations are substantially reduced to 21% for stigmatizing attitudes toward PWA and to 43% in the proportion of unexplained between—community variance of stigmatizing reactions that is accounted for by community-level predictor variables.

The resulted unobserved variance at the community level is largely reduced when community level predictors are included. It appears that community average approach is helpful in explaining the complex relationship between individual and community factors and stigmatizing reactions (Kravdal 2002, 2004). As the remaining community effect is still statistically significant, it appears that we cannot fully explain why individuals within particular communities had higher stigmatizing reactions than others in different communities. There is much more that we need to understand about the relationship between social and community influence and stigmatizing reactions.

Discussion

This study provides new evidence that individual-level fully accurate HIV transmission knowledge is negatively associated with stigmatizing reactions and any inaccurate HIV transmission knowledge is positively associated with stigmatizing reactions after controlling for other social and demographic factors. The finding suggests that increasing fully accurate HIV knowledge and reducing any inaccurate HIV knowledge are important for reducing HIV stigmatizing reactions. Education and intervention programs for improving social responses to the HIV epidemic will need to continue to pay special attention to both enhance fully accurate and reduce any inaccurate HIV beliefs.

This study also finds that after controlling for individual accurate and inaccurate HIV transmission knowledge and self-perceived risk of HIV infection, fear is still strongly associated with increased stigmatizing reactions. Recent studies suggest that inaccurate HIV beliefs foster fear about HIV contagion and need for protecting the self from a threat, which lead to stigmatization of PWA (Bishop, 2001; Boer & Emons 2004; Brown et al., 2003; Ingham, 1995; Lew-Ting & Hsu, 2002). The strong link between the fear and HIV stigma reactions after controlling for observed inaccurate knowledge may partially be attributable to unmeasured inaccurate HIV beliefs of undocumented modes of transmission. This may provide a potential mechanism for understanding why low level of inaccurate knowledge would lead to a higher level of fear and stigma reactions. This is possible because inaccurate HIV beliefs of undocumented modes of transmission can emerge when people know more about HIV as a contagious and life threatening disease in the context of a social cultural framework (Kalichman & Simbayi 2004; London et al. 2000).

On the other hand, the strong fear effect may also reflect something beyond the unmeasured individual inaccurate beliefs about HIV contagion. A strong effect of community-level HIV inaccurate knowledge and fear on individual stigmatizing reaction indicates that people's stigmatizing reactions are shaped by the consensus of inaccurate knowledge and fears of others in the community regardless of individual opinion per se. In addition, the persistent strong urban-rural difference in stigmatizing reactions after controlling for all selected individual- and community-level factors suggests that certain unobserved socio-cultural effects may also shape individual reactions above and beyond the individual-level effects.

The present finding supports the recent notion that HIV-related stigma is less a matter of individual or even social psychology than a social, cultural, political and economic product related to law, policies, norms and prejudices (Parker & Aggleton, 2002, 2003). HIV-related stigma has been viewed as a perception expressed locally against those who step out of line as unpopular and relatively powerless groups disproportionately affected by the fatal epidemic (Herek et al., 1998). Nevertheless, it is believed that even when HIV/AIDS is curable and nonfatal, HIV/AIDS will still be linked with socially "bad behavior" that is associated with shame and embarrassment (Campbell et al., 2005).

It is notable that community-level of any inaccurate knowledge and fear are associated with stronger unwillingness to engage with PWA than with stigmatizing attitudes towards PWA. In addition, individual-level education, media exposure and participation in IEC activity are associated with reduced unwillingness to engage with PWA but not with stigmatizing attitudes toward PWA. It appears that recent HIV-related health education and IEC activities are more effective in reducing people's unwillingness to engage with PWA than reducing stigma attitude towards PWA. It is suggested that unwillingness to engage with PWA measures the instrumental aspect of stigma reactions that tend to distance self from contagious disease and that stigmatizing attitudes toward PWA measures a socially attached symbolic aspect of stigma reactions (Boer & Emons, 2004; Herek & Capitanio, 1998; Herek et al., 1998). As such, effectively reducing socially related stigmatizing attitudes toward PWA remains a challenge for HIV-related health education programs in China.

One should bear in mind that the data used in this study are from a sample of 13 counties/cities in 7 provinces/municipalities in China. The population-based sample attempts to be representative of the population in different regions of China. However, due to sampling variation with limited geographic coverage of a very large and heterogeneous population, cautions should be exercised for generalization of the results to all of China.

In sum, this study suggests that not only increasing fully accurate knowledge and reducing any inaccurate knowledge about routes of HIV transmission but also improving community-level positive social climate in which stigmatization will no longer be tolerated are important for reducing stigmatizing reactions toward PWA. As reported, while the leadership and management organization development has made a great progress in China, developing policies for reducing stigmatizing attitudes and eliminating the barriers to provide community-wide interventions for harm reduction programs is lagging behind (Wang et al., 2005). Further studies on the social roots of stigmatizing people with HIV are important for understanding the reasons why stigma is so persistent in the community for people who may have high HIV accurate knowledge.

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Table 1. Sample characteristics and distributions

Variable names	**Proportion**	**Sample size**
Outcome variables		12270
Stigmatizing attitude toward PWA		
Yes	0.35	4300
No	0.65	7970
Unwillingness to engage with PWA		
Yes	0.48	5877
No	0.52	6393
Explanatory variables		
Individual-level characteristics		
Age		
15-29	0.21	2576
30-39	0.32	3936
40-49	0.47	5758
Sex		
Male	0.49	6028
Female	0.51	6242
Marrital status		
Currently married	0.78	9581
Not currently married	0.22	2689
Education		
Low	0.19	2273
Middle	0.52	6440
High	0.29	3557
Media exposure		
Often	0.86	10574
Not often	0.14	1696
Joined HIV-related IEC activity		
Yes	0.58	7100
No	0.42	5170
Correct HIV knowledge		
Yes	0.43	5328
No	0.57	6942
Incorrect HIV knowledge		
Yes	0.10	1209
No	0.90	11061
Perceived HIV risk		
Yes	0.35	4284
No	0.65	7986
Fear		
Yes	0.60	7391
No	0.40	4879
Community-level characteristics		
Residence		
Urban	0.22	30
Rural	0.78	106
Perceived HIV risk		
High	0.51	69
Others	0.49	67
Correct HIV knowledge		
High	0.40	54
Others	0.60	82
Incorrect HIV knowledge		
High	0.31	42
Others	0.69	94
Fear		
High	0.79	107
Others	0.21	29

Data source: China's Baseline IEC Survey for HIV Prevention, 2003

Note:Total sample size = 12,270 from 136 communities.

Table 2. Multilevel model estimates of effects (odds ratios) of predictor variables on stigmatizing reactions towads PWA among men and women aged 15-49, China 2003

	Stigmatizing attitude toward PWA				Unwillingness to engage with PWA			
	Model 1		Model 1		Model 1		Model 1	
Variables	**Odds Ratio**	**95% Confidence Interval**	**Odds Ratio**	**95% Confidence Interval**	**Odds Ratio**	**95% Confidence Interval**	**Odds Ratio**	**95% Confidence Interval**
Fixed effects								
Individual-level								
Age								
15-29	1.000	- -	1.000	- -	1.000	- -	1.000	- -
30-39	1.217 *	(1.032 1.434)	1.210 *	(1.027 1.427)	1.257 *	(1.062 1.488)	1.256 *	(1.059 1.490)
40-49	1.261 *	(1.068 1.490)	1.257 *	(1.064 1.485)	1.493 *	(1.262 1.767)	1.496 *	(1.262 1.775)
Sex								
Male	0.894 *	(0.819 0.976)	0.989	(0.906 1.080)	0.898 *	(0.819 0.984)	0.898 *	(0.819 0.984)
Female	1.000	- -	1.000	- -	1.000	- -	1.000	- -
Marital status								
Currently married	0.964	(0.827 1.123)	0.968	(0.830 1.127)	0.915	(0.782 1.070)	0.916	(0.783 1.071)
Not currently married	1.000	- -	1.000	- -	1.000	- -	1.000	- -
Level of education								
Low	1.000	- -	1.000	- -	1.000	- -	1.000	- -
Middle	0.976	(0.858 1.111)	0.974	(0.856 1.109)	0.680 *	(0.594 0.779)	0.677 *	(0.591 0.775)
High	0.956	(0.814 1.123)	0.935	(0.796 1.098)	0.575 *	(0.486 0.679)	0.558 *	(0.472 0.661)
Media exposure								
Often	0.971	(0.850 1.110)	0.988	(0.865 1.129)	0.758 *	(0.660 0.871)	0.759 *	(0.660 0.872)
Not often	1.000	- -	1.000	- -	1.000	- -	1.000	- -
Engaged in IEC activity								
Yes	1.008	(0.893 1.138)	1.024	(0.907 1.157)	0.640 *	(0.563 0.729)	0.643 *	(0.565 0.732)
No	1.000	- -	1.000	- -	1.000	- -	1.000	- -
Correct HIV knowledge								
Yes	0.782 *	(0.699 0.874)	0.788 *	(0.705 0.881)	0.483 *	(0.428 0.544)	0.480 *	(0.425 0.542)
No	1.000	- -	1.000	- -	1.000	- -	1.000	- -
Incorrect HIV knowledge								
Yes	1.540 *	(1.327 1.788)	1.511 *	(1.302 1.754)	1.706 *	(1.450 2.007)	1.699 *	(1.444 1.999)
No	1.000	- -	1.000	- -	1.000	- -	1.000	- -
Perceived HIV risk								
Yes	1.419 *	(1.274 1.581)	1.379 *	(1.238 1.535)	1.267 *	(1.131 1.420)	1.260 *	(1.124 1.412)
No	1.000	- -	1.000	- -	1.000	- -	1.000	- -
Fear								
Yes	1.790 *	(1.613 1.986)	1.765 *	(1.591 1.958)	1.765 *	(1.591 1.958)	1.761 *	(1.587 1.954)
No	1.000	- -	1.000	- -	1.000	- -	1.000	- -
Community-level								
Residence								
Urban			2.361 *	(1.573 3.542)			2.881 *	(1.482 5.598)
Rural			1.000	- -			1.000	- -
Correct HIV knowledge								
Yes			0.498 *	(0.333 0.744)			0.484 *	(0.254 0.923)
No			1.000	- -			1.000	- -
Incorrect HIV knowledge								
Yes			2.801 *	(1.896 4.137)			3.800 *	(2.010 7.185)
No			1.000	- -			1.000	- -
Perceived HIV risk								
Yes			1.327	(0.902 1.953)			0.800	(0.429 1.492)
No			1.000	- -			1.000	- -
Fear								
Yes			2.123 *	(1.321 3.412)			4.104 *	(1.922 8.763)
No			1.000	- -			1.000	- -
Random effect variance	σ_{μ}^2	*SE*	σ_{μ}^2	*SE*	σ_{μ}^2	*SE*	σ_{μ}^2	*SE*
Community level	1.451 *	0.191	0.853 *	0.116	3.361 *	0.432	2.440 *	0.317

Data source: China's Baseline IEC Survey for HIV Prevention, 2003

*p < 0.05

Table 3. Community-level variance and explained community variance for sequentially nested multilevel models showing staigma reactions

	Null Model[a]	Model 1[b]	Model 2[c]
1. Stigmatizing attitude toward PWA			
Community-level variance	1.80	1.45	0.85
Standard error (SE)	0.24	0.19	0.12
Intra-community correlation (%)	35.41	30.61	20.59
Explained community-level variance (%)*	Reference	19.57	52.72
2. Unwillingness to engage with PWA			
Community-level variance	3.58	3.36	2.44
Standard error (SE)	0.46	0.43	0.32
Intra-community correlation (%)	52.08	50.53	42.58
Explained community-level variance (%)*	Reference	5.99	31.75

Data source: China's Baseline IEC Survey for HIV Prevention, 2003
a: Null Model includes random intercept only without preditor variables.
b: Model 1 includes individual-level variables only.
c: Model 1 + community-level variables.
*: Comparisons of both Model 1 and Model 2 are to the null model.