



The Fear of Being Associated with Sexual Minority Close Others: Socio-Cultural Predictors of Sexual Minority Affiliate Stigma

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Abstract

LGB affiliate stigma, the prejudicial and discriminatory attitudes toward individuals who have close associations with LGB people, is a particularly harmful form of stigma against close others (e.g., family members, friends) of LGB individuals. Compared to individualistic cultures, affiliate stigma could be more prevalent in collectivistic cultures due to the heavy emphasis on interpersonal relationship and social harmony; however, only a limited number of cross-cultural and quantitative research is available on this topic. The current research effort looked to explore potential social-cultural predictors of gay and lesbian affiliate stigma using a sample recruited from two urban Chinese communities. Univariate regression analysis showed that female gender, more prior contact with gay/lesbian, higher levels of perceived biogenetic causes of sexual orientation, higher endorsement of Western culture, lower levels of perceived public stigma, and lower homophobia predicted lower levels of gay and lesbian affiliate stigma. However, only endorsement of Western culture, public stigma, and homophobia were significant in multiple regression analysis. The current findings shed light on the potential effects of culture and social influences on Chinese individual's perceptions of gay and lesbian affiliate stigma and highlight the importance of increasing exposure of sexual minority issues and education among the general public.

Keywords Sexual minority · Affiliate stigma · Social influence · Culture · China

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Introduction

Stigmatization is often conceptualized as negative biases, prejudicial attitudes, and discriminatory behaviors associated with discredited social groups (e.g., Corrigan 2000; Crocker et al. 1998; Major and O'Brien 2005). Various types of stigma have been identified by scholars. Institutional stigma, or structural stigma, refers to the imbalances and injustices in an organization's policies and culture of negative attitudes toward stigmatized groups (Schulze and Angermeyer 2003). Public stigma, the attitudes and beliefs of the general public toward certain social groups, may drive stigmatized individuals to perceive and conform to the stereotypes (Corrigan 2004). Self-stigma refers to the internalization of the public stigma which may lead to negative emotional reactions and self-discrimination (Corrigan and Rao 2012).

However, prejudice, discrimination, and public stigma may also adversely affect those who have close relationships with the person (e.g., caregivers, health-care providers, etc.) with the stigmatized mark (Corrigan et al. 2006). This particular type of stigma, also known as courtesy stigma, may be internalized and transformed into affiliate stigma, the experience of shame and unhappiness about having affiliations with people who have stigmatized identities (see Corrigan and Miller 2004; Goffman 1963; Mak and Cheung 2008; LaSala 2010). Research has identified a number of negative consequences of affiliate stigma, such as a sense of burden, hopelessness, and increased desire for social distance from the person with a stigmatized mark (e.g., Mak and Cheung 2008; Yao et al. 2020a, b, c; Zisman-Ilani et al. 2013). Most studies examining the mechanisms of affiliate stigma are related to mental health (e.g., Angermeyer et al. 2003; Corrigan et al. 2006; Muhlbauer, 2002; Yao et al. 2020a, b, c), intellectual disability (e.g., Cooney et al. 2006; Dagnan and Waring 2004; Jahoda and Markova 2004), and HIV (e.g., Bogart et al. 2008), using qualitative methods (e.g., Chang and Horrocks 2006; Mwinituo and Mill 2006).

Stigmatization could be particularly prevalent in collectivistic cultures, such as China (Yang et al. 2020). One possible reason is that having a socially stigmatized identity entails deviations from the mainstream society (Kim et al. 1999). Individuals being labeled as different may be seen as deviant to the mainstream Chinese society and the entire family could be held responsible (Lam et al. 2006; Yang 2007). For instance, Chinese participants were found to have more negative attitudes toward individuals with mental illnesses compared to Western participants (Knifton et al. 2009; Yang 2007). In addition to collectivists' needs to maintain social harmony, the concern of bringing shame to the family due to having a socially stigmatized identity inevitably impacts those with stigmatized marks and their close others (Liamputtong 2013). For instance, research shows that Chinese parents with strong interdependent self-construal, an important characteristic of collectivism, are more likely to hold negative attitudes toward helping their children with mental health related issues (Yao et al. 2020a). Cultural concerns of losing 'face', the concern of losing respect and status in society, could prevent individuals with stigmatized marks and their close others to seek help (Lee et al. 2005).

Affiliate Stigma and Chinese Sexual Minority Identities

People with sexual minority identities (e.g., lesbian and gay) often encounter stressors related to their stigmatized sexual orientations (Meyer 2003). People with sexual minority identities often report worse mental health due to minority-identity-related stressors, compared to their straight counterparties (King et al. 2008; Lick, Durso and Johnson 2013; Meyer 2003). Prejudice and discrimination against sexual minorities are deeply rooted in cultures, and Chinese sexual minorities experience various forms of culture-specific stigma in society, such as the responsibility to raise offspring and continue one's family line (Wang, et al. 2019). On the other hand, sexual minority individuals' family members and people who are close to them may also experience prejudice and discrimination because of their affiliation with the individual (Mak and Cheung 2008).

Understanding sexual minority individuals' close others' (e.g., family members, close friends) experiences could be important, as it is well-documented that close others' support is critical for sexual minorities to cope with negative experiences (e.g., Bregman et al 2013; Newcomb et al. 2012; Ryan et al. 2010). For instance, previous research demonstrated that parents who have LGB children may undergo negative experiences due to their children's sexual minority identities (e.g., Holtzen and Agresti 1990; Robinson et al. 1989; Saltzburg 2004). However, the number of quantitative research in LGB affiliate stigma is limited. To our knowledge, only one validated LGB affiliate stigma scale has been developed using a Western sample (Robinson and Brewster 2016) and no empirical replication has been published using this measure.

In addition to the dearth of quantitative studies in affiliate stigma available in the field, limited research has examined this phenomenon cross-culturally. In the sexual minority context, family members may act similarly if they internalize the stigmatization that prevails in society toward sexual minority individuals. In China, research shows that gay and lesbian individuals face more pressures from the family and society compared to bisexual individuals because Chinese tradition places great emphasis on lineage, marriage, and filial responsibilities which may be more challenging for gay and lesbian individuals to fulfill (e.g., Neilands et al. 2008; Wan, et al. 2019). Consequently, close others of gay and lesbian may experience more negativity from society and public stigma. As such, there is a dire need for research to scrutinize the processes of gay and lesbian affiliate stigma from a cross-culture lens.

The identification of potential contributors and socio-cultural predictors of gay and lesbian affiliate stigma could be an important first step. However, to our knowledge, there is no established theory about affiliate stigma. As such, we conducted a literature review and identified a number of socio-cultural factors that may contribute to gay and lesbian affiliate stigma. First, research shows that men are more likely to internalize and be influenced by public stigma (Brown et al. 2018). Consequently, men may be more likely to experience affiliate stigma due to high levels of public stigma in society; however, prior contact with gay and lesbian people could reduce stigmatized beliefs (Detenber et al. 2013). Moreover, Yeo and Chu (2017) demonstrate that endorsement of Western culture, characterized by its openness to diversity, and low levels of homophobia can predict lower levels of perceived HIV-related stigma (e.g., fear, avoidance)

among the general public. Additionally, believing that sexual orientation is caused by biogenetic factors is associated with less stigmatized attitudes toward gay men (Haslam and Levy 2006), likely due to reduced perceptions of controllability of having a sexual minority identity (Yao et al. 2020). Also, perceived public stigma is predictive of internalized self-stigma and perceived affiliate stigma among caregivers of patients with psychiatric disorders (Chen et al. 2016).

As discussed, research shows that gay and lesbian individuals face more culture-specific stigma compared to bisexual individuals in China (Wang et al. 2019). Therefore, the current research focused on gay and lesbian close others' experiences and systematically assessed the aforementioned socio-cultural predictors of gay and lesbian affiliate stigma in China. The goal was to provide empirical guidance for future theoretical integration and potential development of interventions to ameliorate the negative impacts of affiliate stigma.

Method

Participants and Procedure

The Chinese Center for Disease Prevention and Control (CDPC) in Qingdao, China, recruited participants from two local communities ($n=267$). Researchers gained permission to enter the community and set up several data collection booths in each community. Community residents were invited to participate in an "opinions about sexuality" survey and those who agreed were instructed to fill out consent forms on iPads. Confidentiality was ensured and participants were encouraged to provide honest opinions when answering the questions. Participants were instructed to first identify a close other (e.g., a family member, a close friend) and provide their names. The name was then piped into the prompt (i.e., please imagine *this person* came out as gay/lesbian) in the following questions. This procedure is similar to previous research in mental health stigmatization (e.g., Yao and Siegel 2020; Yao et al. 2020b, c). Small gifts (worth under ¥10, approximately \$1.50) were provided by the CDPC upon survey completion. All procedures were approved by the CDPC's institutional review board. After the removal of incomplete cases ($n=11$) and outliers ($n=3$), the final sample consisted of 253 participants.

The majority of participants were female ($n=147$, 58.1%), and ranged in age from 18 to 61, with an average age of 31.16 ($SD=7.14$). Only about a quarter of participants ($n=59$, 25.8%) never knew any gay/lesbian individual and another quarter of participants had a close other who is gay/lesbian. Most participants in this study had a bachelor's degree or above ($n=197$, 86.0%) and earned more than 3000 RMB per month ($n=238$, 94.1%). Table 1 shows detailed descriptive analyses of demographic variables.

Table 1 Descriptive statistics of variables

Variable	<i>n</i>	%	<i>M(SD)</i>
<i>Gender</i>			
Male	106	41.9	
Female	147	58.1	
<i>Age</i>			
			31.16(7.14)
<i>Income</i>			
Below 3 k	15	5.9	
3–6 k	92	36.4	
6–10 k	97	38.3	
Above 10 k	49	19.4	
<i>Education</i>			
Below high school	2	.8	
High school	31	12.3	
Bachelor's degree	193	76.3	
Above bachelor's degree	27	10.7	
<i>Prior contacts with gay/lesbian</i>			
Never	64	25.3	
Heard of	120	47.4	
Know someone	69	27.3	
<i>Cause of sexual orientation</i>			
Innate			4.47(.90)
Environmental			4.15(1.05)
<i>Endorsement of culture</i>			
Chinese			5.35(.72)
Western			5.00(.92)
Public stigma			5.08(.83)
Homophobia			4.15(1.23)
Affiliate stigma			4.40(1.14)

Measures

All measures included in this study were translated by the first author and bilingual research associates and back-translated by bilingual researchers at the CDPC. Then, the translated scales were given to ten CDPC staff members who were unexposed to the original scales to check for comprehensibility. Staff members confirmed comprehensibility after individual reading of the questionnaire and no major change was applied. Except the prior contact with gay/lesbian individuals question and demographic questions, all measures used in the current study were on a seven-point Likert scale, ranging from 1 (*strongly disagree*) to 7 (*strongly agree*).

Prior Contact with Gay/Lesbian Individuals

Participants were asked about their experiences with gay/lesbian individuals by selecting from “never”, “I have heard of someone who is gay/lesbian”, and “I have a close other who is gay/lesbian”. This question was added to control for the effects of participants’ prior contact with gay/lesbian individuals.

Chinese and Western Cultural Orientations

Nine items from a cultural orientation scale developed by Wang et al. (2016) were used to measure participants’ endorsements of Chinese and Western cultures. Endorsement of traditional Chinese culture ($\alpha=0.73$) was measured by five items representing salient aspects of traditional Chinese cultural beliefs, such as *respect for elders* (“I would listen until elders finish talking even though I disagree”), *filial piety* (“I would do whatever my parent wants me to do”), and *collectivism* (“I give priority to group interests rather than individual ones”). Endorsement of Western culture ($\alpha=0.77$) was measured by four items, including *interest in Western culture* (“I appreciate the context of Western culture that emphasizes freedom and taking it easy in life”) and *consumerism* (“I would rather buy something that makes me happy rather than deposit money in the bank”). This scale was used by Yeo and Chu (2017) in a study that investigated Chinese participant experiences with HIV-related stigma and yielded adequate reliability. Yeo and Chu found that endorsement of Western culture was significantly negatively associated with stigmatized beliefs and the utilization of this scale could further the understanding of the impacts of different cultural endorsements on stigmatization experiences.

Perceived Causes of Sexual Orientation

Seven items were adapted from Gulevich and colleagues’ research (2017) and used to measure participants’ beliefs in biological/genetic ($\alpha=0.77$) or social/environmental causes ($\alpha=0.65$) of sexual orientation. Three items represented the extent to which participants believe in innate causes of sexual orientation (e.g., “sexual orientation can be repressed, but cannot be changed”) and four items measured environmental causes (e.g., “sexual orientation is a result of the influence of the environment one grows up in”). As discussed earlier, Haslam and Levy (2006) found that beliefs in social/environmental causes of sexual orientations were related to higher levels of stigma. Gulevich and colleagues established and validated this scale using large samples from Russia and provided supporting evidence for Haslam and Levy.

Homophobia

Homophobia was measured by three items from Herek’s (1994) scale that measures attitude toward lesbians and gay men scale (e.g., “I think gay/lesbian are disgusting”). This scale is widely used in the field. For instance, higher levels of homophobia are related to greater right-wing authoritarianism (Altemeyer and Hunsberger 1992) and religious fundamentalism (Hopwood and Connors 2002), stronger belief

in traditional gender roles (Polimeni et al. 2000), and proneness to aggression (Bernat et al. 2001). The current scale had adequate internal consistency ($\alpha=0.87$).

Perceived Public Stigma Toward Gay/Lesbian

Seven items were adapted from Kendra and colleagues' (2014) perceived public stigma of having psychological problems scale. Keywords (i.e., psychological problems, mental health) were replaced with 'gay/lesbian' (e.g., "in general, others believe that being gay/lesbian is a sign of personal weakness or inadequacy"). This scale measured the participants' perception of the general public's attitude toward sexual minority and had adequate internal consistency ($\alpha=0.74$).

Gay and Lesbian Affiliate Stigma

Gay and lesbian affiliate stigma was measured by a translated version of a 17-item instrument developed by Robinson and Brewster (2016), the only validated scale that measures LGB close others' perceived affiliate stigma in the field. Robinson and Brewster proposed three dimensions in LGB affiliate stigma: public discrimination/rejection (e.g., I worry about being rejected by work/school colleagues if they find out that my family member or close friend is gay/lesbian), vicarious affiliate stigma (e.g., I worry my family member or close friend may be verbally harassed if others learn they are gay/lesbian), and public shame (e.g., I feel shame for my family member or close friend being gay/lesbian). Although, a factor analysis using the current data demonstrated a unidimensional structure instead of a three-dimensional structure. As such, we utilized a combined scale in the analysis and the scale yielded adequate internal consistency ($\alpha=0.83$).

Demographics

Participants were asked about age, gender, monthly income ("under 3000 RMB", "3000–6000", "6000–10,000", and "above 10,000 RMB"), and education level ("below high school", "high school", "bachelor's degree", "above bachelor's degree").

Results

All analyses were conducted using SPSS (V25). Descriptive variables of the sample, including demographics, contacts with gay/lesbian individuals, gay/lesbian affiliate stigma, and other socio-cultural variables were first assessed (Table 1). Then, a correlation matrix was generated (Table 2). Univariate linear regression analyses were used to examine whether our proposed independent variables (demographic variables and socio-cultural variables) could individually predict gay/lesbian affiliate stigma. Variables that significantly predicted affiliate stigma ($p < 0.05$) were retained and used as predictors of affiliate stigma in the multiple linear regression model

Table 2 Bivariate correlations

Variable	2	3	4	5	6	7
1. Chinese culture	-.18*	-.08*	-.30*	-.16*	.18*	.16*
2. Western culture	-	.16*	-.16*	-.33*	-.42*	-.44*
3. Bio/Genetic causes	-	-	-.02	-.04	-.06	-.22*
4. Environmental causes	-	-	-	.29*	.34*	.36*
5. Public stigma	-	-	-	-	.63*	.68*
6. Affiliate stigma	-	-	-	-	-	.71*
7. Homophobia	-	-	-	-	-	-

* $p < .05$

(Table 3). This procedure is in line with a previous study that investigated socio-cultural factors of HIV-related stigma (Yeo and Chu 2017).

Specifically, univariate regression analysis demonstrated that female gender, $F(1, 251)=4.56$, $p < 0.05$, $R^2=0.02$, more prior contact with gay/lesbian individuals, $F(1, 251)=22.13$, $p < 0.01$, $R^2=0.08$, higher perceived biogenetic causes of sexual orientation, $F(1, 251)=33.67$, $p < 0.01$, $R^2=0.12$, higher endorsement of western culture, $F(1, 251)=8.60$, $p < 0.01$, $R^2=0.03$, lower perceived public stigma, $F(1, 251)=165.38$, $p < 0.01$, $R^2=0.40$, and lower homophobia, $F(1, 251)=255.29$, $p < 0.01$, $R^2=0.50$, univariately predicted less gay/lesbian affiliate stigma. However, when all significant univariate predictors were entered into a multiple linear regression model, only endorsement of Western culture, public stigma, and homophobia were predictive of gay and lesbian affiliate stigma, $F(7, 245)=45.11$, $p < 0.01$, $R^2=0.55$, in the aforementioned directions (see Table 3).

Table 3 Univariate and multivariate linear regression results

Variable	Univariate linear regression B (SE)	95% CI	Multiple linear regression B (SEI)	95% CI
Female gender	-.31(.14)*	[-.59, -.02]	.03(.10)	[-.18, .23]
Age	.01(.01)	[-.01, .03]	-	
Income	.05(.09)	[-.12, .21]	-	
Education	.17(.13)	[-.08, .43]	-	
Prior contact ¹¹ with gay/lesbian	-.45(.10)*	[-.63, -.26]	.04(.08)	[-.12, .19]
Innate cause of sexual orientation	-.07(.08)	[-.23, .08]	-	
Environmental cause of sexual orientation	.37(.06)*	[.25, .50]	.09(.05)	[-.01, .19]
Endorsement of Chinese culture	.29(.10)*	[.09, .48]	.05(.07)	[-.09, -.19]
Endorsement of Western orientation culture	-.52(.07)*	[-.66, -.38]	-.16(.06)*	[-.28, -.04]
Public stigma	.87(.07)*	[.73, 1.00]	.35(.08)*	[.20, .51]
Homophobia	.66(.04)*	[.58, .74]	.42(.06)*	[.30, .53]
Adjusted R^2			.55	

* $p < .05$

Discussion

The current research serves as a first step to understand potential socio-cultural predictors of gay and lesbian affiliate stigma in China. As discussed, a small number of sexual minority affiliate stigma research is available in the literature and no formalized theory has been developed. However, high perceptions of affiliate stigma could have detrimental effect on the stability of individuals' social network which is the most important resilient factor against sexual minority stressors (Kwon 2013). Therefore, it is imperative to understand the experiences of sexual minority individuals' close others' experiences and provide adequate support for them to combat the fear of being affiliated with sexual minority close others.

In support of previous research, female gender, more prior contact with gay/lesbian, perceived biogenetic causes of sexual orientation, higher endorsement of Western cultures, lower perceived public stigma, and lower homophobia, were univariate predictors of lower gay/lesbian affiliate stigma. However, only endorsement of Western culture, perceived public stigma, and homophobia were retained in the multiple regression analysis. It is plausible that because females are less likely to internalize public stigma and transform public stigma into affiliate stigma (Brown, Moloney, & Brown, 2018), the effect of gender on affiliate stigma could have been negated by the effect of public stigma. Similarly, prior contact or the opportunity to connect with sexual minority individuals could also be influenced by public stigma and homophobia. Additionally, believing in biogenetic causes of sexual orientation could be related to less homophobia, as research shows that biogenetic explanations of sexual orientation reduces stigmatized attitudes toward gay men (Haslam and Levy 2006). As such, future research should place a greater emphasis on endorsement of Western culture, perceived public stigma, and homophobia compared to gender, prior contact, and perceived causes of sexual orientation.

Public stigma and homophobia have harmful effects (e.g., reduced social support, more psychological stress) for both individuals with stigmatized marks and their close others (Chen et al. 2016; Meyer 2013; Perlick et al. 2007; Puckett et al. 2015). As shown by previous research and the current results, the internalization of public stigma and the influence of homophobia could be important antecedents of gay/lesbian affiliate stigma. Endorsement of Western culture, in addition to discriminatory attitudes toward sexual minorities, also appeared to be an important predictor of gay/lesbian affiliate stigma (Wang et al. 2019). Endorsement of Western culture could be interpreted as having higher openness to sexuality and acceptance of deviations in traditional Chinese society (Oyserman et al. 2002).

The current research also shed light on the importance of developing culturally appropriate measurements of sexual minority affiliate stigma. As mentioned, Robinson and Brewster (2016) developed the only LGB affiliate stigma scale in the field. Although, Robinson and Brewster found three factors using this scale and the current results only demonstrated a unidimensional structure. It is possible that the vast differences in participant cultural background and exposure to sexual minority issues had influences on their perceptions and understanding of

the questions. For instance, Robinson and Brewster note that a limitation of their research is the over-representation of White American college students (i.e., the WEIRD—Western, Educated, Industrialized, Rich, and Democratic sample; Henrich et al. 2010). The current sample, however, consists of middle-aged Chinese participants with low levels of exposure to sexual minority issues. It is possible that the participants experienced difficulties to detect and distinguish theoretically different aspects of affiliate stigma and only grasped a general understanding of affiliate stigma. However, the current sample is relatively small to generate a conclusive explanation, and future investigations and replications are needed.

Another notable finding in the current study is that education level could not predict gay and lesbian affiliate stigma. Prior research demonstrated that higher education is positively associated with lower HIV related stigma in a sample of Hong Kong participants (Yeo and Chu 2017), which could indicate a higher exposure of HIV-related information as participants received more education. The lack of correlation between education levels and gay and lesbian affiliate stigma in the current study could be interpreted as a potential lack of sexual diversity education and possible exclusion of sexual minorities in the education system. As Wu and Kwok (2013) noted, the social exclusion of LGB students from their mainstream peers could be due to the lack of sexual diversity education at school and a heterosexist school curriculum. The current results may entail the possibility of systematic negligence of sexual diversity education among these participants, considering most of them had advanced degrees. As such, increased awareness of sexual diversity in the education system is warranted.

An important theoretical implication of the current research is that it linked socio-culture factors and gay/lesbian affiliate stigma and furthered the understanding of the entwined nature of gay/lesbian affiliate stigma and socio-cultural factors. Such an understanding of the layered nature of gay/lesbian affiliate stigma could facilitate future intervention efforts in targeting and disentangling differentiated forms of stigma among close others. In addition, the results could inform integrated theorizing of antecedents and consequences of gay/lesbian affiliate stigma. However, there are a few notable limitations in the current research. Although the use of vignettes is typical in stigma research (Yao and Siegel 2020), participants might have different reactions toward a gay/lesbian close other when imagining a gay/lesbian close other, compared to those who have real experiences. Another limitation is the relatively small sample size. The number of participants is sufficient for the statistical analyses conducted in the current research; however, these participants do not necessarily represent the diverse background and experiences of Chinese individuals. Additionally, participants who were interested to be surveyed might have pre-existing attitudes toward gay and lesbian individuals and their answers did not necessarily reflect the average public attitudes. Future research could use different methods and include more diverse samples in this cultural context. Additionally, a few scales had relatively low reliability (e.g., social/environmental causes of sexual orientation) which could be due to translation and/or intrinsic factors related to the scales (e.g., length of scales). Future research effort could also aim to validate instruments more suitable to the Chinese context.

Despite these limitations, the findings highlight the necessity to address the experiences of individuals who have relationships with gay and lesbian individuals in China. These findings stress the impacts of culture, public stigma, and homophobia in relation to affiliate stigma. In addition, the lack of association between education levels and gay and lesbian affiliate stigma could imply an absence of sexual diversity education in the education system. This research is a necessary first step in understanding the socio-cultural influences on close others' perceptions of affiliate stigma from a cross-culture perspective.

Conclusion

The current research demonstrates that the perceptions of gay and lesbian affiliate stigma are deeply rooted in one's socio-cultural environment. Among a Chinese sample, endorsement of Western culture, public stigma, and homophobia were identified as multivariate predictors of gay and lesbian affiliate stigma. Interestingly, education levels were not related to participants' differentiated reactions to sexual minority people, indicating a potential paucity of sexual minority education, at least in this urban Chinese sample. Although this research shows the complex and entwined nature of gay and lesbian affiliate stigma in relation to socio-cultural factors, future research efforts are needed to explore and theorize the antecedents and consequences of gay and lesbian affiliate stigma and develop intervention strategies specific to the Chinese culture to support families with sexual minority individuals and combat stigmatization against sexual minorities.

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Compliance with Ethical Standards

Conflict of interest Authors declare no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional research committee at the Chinese Center for Disease Prevention and Control.

Informed Consent Informed consent was obtained from all individual participants included in the study.

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