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Coercion and HIV Self-Testing in Men Who Have Sex with Men: Implementation Data from a Cross-Sectional Survey in China

Jason J. Ong PhD¹-³*, Haochu Li PhD⁴*, Wu Dan PhD², Hongyun Fu PhD²,¹⁰, Ewen Liu⁵, Wei Ma PhD⁴, Dianmin Kang MD⁶, Meizhen Liao PhD⁶, Gifty Marley MMed⁴, Chongyi Wei DrPH⁷, Weiming Tang PhD²,⁵,⁸, Stephen Pan PhD²,⁵, Chuncheng Liu BA², Nicola Desmond PhD⁹, Bin Yang MD²,⁸, Ligang Yang MD⁸, Shujie Huang MS²,⁸, Joseph D. Tucker PhD²,⁵§

* Equal first authors

¹ Department of Global Health and Development, London School of Hygiene and Tropical Medicine, London, United Kingdom
² Social Entrepreneurship for Sexual Health (SESH) Global, Guangdong, China
³ Central Clinical School, Monash University, Victoria, Australia.
⁴ School of Public Health, Shandong University, Jinan, China
⁵ University of North Carolina at Chapel Hill, North Carolina, USA
⁶ Shandon Centre for Disease Control and Prevention, Jinan, China
⁷ School of Medicine, University of California, San Francisco, USA
⁸ Guangdong provincial centre for skin diseases and STI control, Guangdong, China
⁹ Department of International Public Health, Liverpool School of Tropical Medicine, Liverpool, United Kingdom
¹⁰ Eastern Virginia Medical School, Norfolk, USA

§ Corresponding author: Joseph D. Tucker

University of North Carolina Chapel Hill Project-China
Number 2 Lujing Road, Guangzhou, China, 510095
Email: jdtucker@med.unc.edu
Tel: +86 13560294997

Running head: HIV test coercion in Chinese MSM

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INTRODUCTION

HIV self-testing (HIVST) scale up may help achieve the first 90 within the UNAIDS 90-90-90 targets.\(^1\) HIVST is defined as a process in which a person collects his/her own specimen (oral fluid or blood) and then performs a test and interprets the result, often in a private setting, either alone or with someone he or she trusts.\(^2\) New World Health Organization (WHO) guidelines supporting HIVST have provided momentum for self-testing.\(^2\)

Although HIVST increases agency about when, where, and with whom to test,\(^3,4\) one unintended consequence may be an increase in coercive HIV testing. We define coercion as being *forced* to test. This may be through physical means (with actual violence or threat of violence) or could involve threats to take away something if the person does not do the test (e.g. losing their job, breaking up a relationship, not having sex). The WHO and others state that HIV testing must be voluntary.\(^2,5\) However, cases of coerced testing have been observed among women forced by their employers (both in sex work and non-sex work settings),\(^3,6\) detained individuals (prisoners, drug users, sex workers) forced by institutions,\(^7,8\) and young people forced by their sex partners.\(^3\) In China, there is an emphasis on public health responses focused on expanding key population HIV testing and a history of compulsory HIV testing among several subpopulations.\(^9\) For example, in 1995, a Chinese law required premarital HIV testing,\(^10\) and sex workers and drug users often receive compulsory testing in detention settings.\(^7,9,11\)

In recent years, China has rapidly scaled up HIVST, partly driven by a thriving online self-test kit market\(^12\). Surveys of men who have sex with men (MSM) report that approximately a third have already used HIV self-testing\(^13\). In a setting where HIV testing has become more decentralized, it is unknown if coercion may be occurring. We aimed to examine the prevalence and correlates of coerced HIV testing amongst MSM in China.

METHODS

From July to August 2016, an online, cross-sectional study among Chinese MSM was conducted. At the time of recruitment, these men were living in one of eight cities in Guangdong Province (Guangzhou, Jiangmen, Zhuhai, Shenzhen) or Shandong Province (Yantai, Jinan, Qingdao, Jining). Advertisements were distributed through Blued (Blue Brother, Beijing, China), a social networking mobile phone application for MSM, used by...
approximately 40 million users. Inclusion criteria were men born biologically male, aged ≥ 16 years, who had ever had sex with another man, and had ever tested for HIV.

Demographic variables included their age, education level, marital status, annual income and household residency status. Sexual history included their sexual orientation, disclosure of sexuality or sexual history with men other than regular partner, disclosure of sexuality or sexual history with men other than regular partner, consistency of condom use for anal sex in the preceding three months, any casual male partner(s) in the preceding three months. The level of community engagement in sexual health was defined through six questions.

HIV testing behaviours included whether past testing was through facility and/or HIVST kits, whether the HIVST kit was provided by someone else, and whether other people were present during their last HIVST. Men who experienced HIV test coercion were identified from the questions: “Did someone else (partner, boss, friend, or others) force you to take an HIV test (facility based test?)” and “Did someone else (partner, boss, friend, or other) force you to take an HIV self-test?”.

Descriptive analysis was conducted to summarize the demographic, behavioural, and HIV testing experience. \( \chi^2 \) tests were used to test for statistically significant differences (p<0.05) in reporting of HIV test coercion between men who reported using HIVST and those who have not used HIVST. Bivariable and multivariable logistic regression were conducted to explore factors associated with reported HIV test coercion. Each multivariable model was built using results from a literature search and expert consensus from collaborators to select potential confounders. Model adjustment controlled for confounding by variables identified through directed acyclic graphs. Each variable was examined independently in separate regression models, adjusted for age, education, annual income and household registration status. All analyses were conducted using STATA software (StataCorp, College Station, TX, USA).

Ethical approval was obtained from the ethics review committees at the Guangdong Provincial Centre for Skin Diseases and STI Control, the University of North Carolina at Chapel Hill, and the University of California, San Francisco.
RESULTS
One thousand three hundred and twelve MSM reported having ever tested for HIV.
Respondents were young (mean age 26.9 ± 6.3), and about two-thirds (69%) had an above high school level education. The majority (76%) self-identified as gay and a third (31%) reported condomless anal sex in the last 3 months.

The majority had ever tested in a facility (86%, n=1,125). About half had ever self-tested (52%, n=685), and about a third had used both facility-based testing and HIVST (38%, n=498). A third of those who used HIVST, reported receiving HIVST kits from other people (35%, 243/685). During the last HIVST conducted, 66% (455/685) were alone, 24% (162/685) had a partner present, 9% (65/685) had a friend present and 1% (4/685) had a family member present.

Overall, 64 men (5%) reported ever experiencing HIV test coercion: 8% (52/685) in men who had used HIVST compared to 2% (12/627) for men who had not used HIVST (p<0.001).

Bivariant and multivariable logistic regression results are presented in Table 1. In summary, men who reported HIV test coercion were more likely to have used HIVST (adjusted odds ratio(AOR) 4.25 (95% confidence interval (CI):2.23-8.09), received a HIVST kit from another person (AOR 3.47, 95% CI:1.90-6.32), primarily met sexual partners through parks/public restrooms/public lawns (AOR 3.45, 95% CI:1.09-10.95), and reported condomless sex in the last three months (AOR 2.38, 95% CI:1.43-3.98).

DISCUSSION
Our study suggests that HIVST may be associated with coercion among Chinese MSM. This is consistent with qualitative studies on self-testing\textsuperscript{16}, but to our knowledge has not been described in quantitative research. The relationship between coercion and HIV self-testing may be influenced by China’s relatively permissive regulatory environment\textsuperscript{4,17}, few formalized resources for self-testing, and underlying social contexts such as power imbalances. Our findings underscore the importance for policies to be in place to monitor for potential harms of HIV self-testing. Especially in settings where power imbalances may exist among those seeking HIV testing, there is a risk of overriding the human rights of vulnerable populations who may not report that they are being coerced\textsuperscript{7}. 
We also found that MSM with more condomless sex were more likely to experience coerced HIV testing. This is the first report of this finding within the current literature on HIV test coercion in MSM. One hypothesis to explain our findings may be that men force high-risk sex partners to receive HIV testing, sometimes called “point-of-sex” testing. This trend has been reported predominantly amongst MSM in the US.\textsuperscript{18-20} MSM may use point-of-sex testing as a risk reduction technique to screen sexual partners before sex, despite its limitation related to the window period. MSM using point-of-sex testing reported a high yield of HIV positive results (~10%) and high percentage of partners who were not aware that they were HIV positive (~60%).\textsuperscript{19} Although there is enthusiasm for utilizing mutual partner testing to increase awareness of risk and decrease condomless sex between discordant partners,\textsuperscript{21} future studies on examining point-of-sex testing should also include measurements of the potential harms of test coercion.

The study should be interpreted in light of some limitations. This was a quantitative study of men reporting coercion, and further qualitative studies are needed to expand on the contexts of coercion. Power relationships are not dichotomous and there may be a spectrum of agency for choosing to test or not to test. Understanding power differentials is important as it may impact on the recognition of what constitutes coercion. MSM living in China are a hidden population, and we tried to maximize representativeness by sampling from multiple locations and utilizing an anonymous online survey. However, these findings from an online sample of MSM are unlikely to be representative of all MSM in China as men we sampled are younger and better educated. Nevertheless, it indicates that a substantial number of young MSM in China have used HIV self-test kits and highlights the possibility of HIV test coercion amongst this subgroup of MSM who use gay social networking apps.

As countries continue to scale up HIV testing, including increasing access to HIVST, our findings suggest that coercion may be occurring among some MSM. Policies should be in place to monitor and measure for potential harms associated with HIV testing. Targeted messaging in programs promoting HIV testing should emphasize that every HIV test should be voluntary\textsuperscript{22}. Future research should include more representative samples and an assessment of the contexts that characterize coerced HIVST, in order to inform interventions to prevent it.

Competing interests
All authors declare they do not have any competing interests.

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Authors’ contributions
JDT, HL, and CL contributed to the conception and design of the study. CW, BY provided oversight for data collection, and WM, DK, ML, GM, LY, and SH assisted in the data collection. EL assisted with the literature search. JJO analysed the data and drafted the paper. All authors revised the manuscript and approved the final version to be published.

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REFERENCES:


Table 1 – Factors associated with ever experiencing HIV test coercion in men who have sex with men in China, 2016 (N=1,312)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Crude odds ratio</th>
<th>p value</th>
<th>Adjusted odds ratio*</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Demographics</strong></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Never married</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>- Engaged or married</td>
<td>1.99 (1.01-3.93)</td>
<td>0.05</td>
<td>2.03 (0.90-4.58)</td>
<td>0.09</td>
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<tr>
<td>- Divorced or widowed</td>
<td>0.54 (0.13-2.25)</td>
<td>0.39</td>
<td>0.54 (0.12-2.53)</td>
<td>0.44</td>
</tr>
<tr>
<td><strong>Sexual History</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Sexual orientation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- non-gay</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>- gay</td>
<td>0.72 (0.41-1.25)</td>
<td>0.24</td>
<td>0.70 (0.96-1.04)</td>
<td>0.21</td>
</tr>
<tr>
<td>Disclosure of sexuality or sexual history with men (other than regular partner)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- No disclosure</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>- Disclosure</td>
<td>1.25 (0.69-2.26)</td>
<td>0.46</td>
<td>1.26 (0.69-2.30)</td>
<td>0.46</td>
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<tr>
<td>Disclosure of sexuality or sexual history with health providers</td>
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<tr>
<td>- No disclosure</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>- Disclosure</td>
<td>1.07 (0.60-1.92)</td>
<td>0.82</td>
<td>1.09 (0.60-1.96)</td>
<td>0.79</td>
</tr>
<tr>
<td>Sexual partners in last 12 months mainly from</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- social media/website</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>- friends</td>
<td>0.88 (0.37-2.09)</td>
<td>0.77</td>
<td>0.78 (0.32-1.88)</td>
<td>0.58</td>
</tr>
<tr>
<td>- pub, disco, club</td>
<td>2.23 (0.77-6.45)</td>
<td>0.14</td>
<td>1.90 (0.63-5.71)</td>
<td>0.25</td>
</tr>
<tr>
<td>- spa, bath house, sauna</td>
<td>3.13 (1.07-9.15)</td>
<td>0.04</td>
<td>2.94 (0.95-9.06)</td>
<td>0.06</td>
</tr>
<tr>
<td>- park, public restroom, lawn</td>
<td>4.17 (1.40-12.38)</td>
<td>0.01</td>
<td>3.45 (1.09-10.95)</td>
<td>0.04</td>
</tr>
<tr>
<td>- other</td>
<td>0.82 (0.20-3.47)</td>
<td>0.79</td>
<td>0.65 (0.15-2.81)</td>
<td>0.57</td>
</tr>
<tr>
<td>- unknown</td>
<td>0.27 (0.08-0.89)</td>
<td>0.03</td>
<td>0.33 (0.10-1.08)</td>
<td>0.07</td>
</tr>
<tr>
<td>Condomless sex in last 3 months</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- No</td>
<td>2.14 (1.18-3.88)</td>
<td>0.01</td>
<td>2.38 (1.43-3.98)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Casual partner in last 3 months</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- No engagement</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>- Minimal engagement</td>
<td>2.29 (0.57-9.10)</td>
<td>0.24</td>
<td>2.07 (0.51-8.29)</td>
<td>0.31</td>
</tr>
<tr>
<td>- Moderate engagement</td>
<td>1.10 (0.33-3.74)</td>
<td>0.88</td>
<td>1.01 (0.29-3.45)</td>
<td>0.99</td>
</tr>
<tr>
<td>- Substantial engagement</td>
<td>2.65 (0.79-8.86)</td>
<td>0.11</td>
<td>2.38 (0.71-8.04)</td>
<td>0.16</td>
</tr>
<tr>
<td><strong>Community engagement in sexual health</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| HIVST = HIV self-test; *Adjusted for age, income, education, household residency status; † for 685 men who had HIV self-tested.