

## **Prevalence and Risk Factors of Concurrent Sexual Behavior among Chinese Adults**

### **Research background:**

The concurrent sexual behavior has been increasingly shown as one of significant factors accounting for the globally increasing HIV/AIDS epidemic as well as other sexually transmitted infections by the mathematical simulation studies and empirical examinations.

China is facing the challenge of increasing epidemic of sexually transmitted infections (STIs) including HIV/AIDS. The role of increasing significance of heterosexual behavior in the transmission of HIV/AIDS is one of important features of the present epidemic. National HIV/AIDS assessment found that the proportion of HIV/AIDS cases transmitted through heterosexual behavior increased from 5.5% in 1997 to 10.9% by the end of 2002 (China Ministry of Health and UN theme group on HIV/AIDS in China, 2003). The most updated 2005 estimate shows that 37% of HIV cases are attributed to heterosexual transmission (China Ministry of Health, UN, WHO 2006).

In present China, dramatic socioeconomic development along with the influence of Western values is accompanied by a substantial change of social norms and attitudes about sexual behavior toward the direction of greater tolerance and permissiveness. Sexual experience is increasingly perceived as a private matter in Chinese society. Premarital sex has been widely accepted; extramarital sex and commercial sex are not as great a concern as before because the values of chastity and fidelity have been quietly weakened. It has to be admitted that there is an increasing diversity of sexual behavior, especially conspicuous among sexually active young and middle-aged people (Zhang, Li, Li & Beck, 1999).

### **Previous studies:**

Studies of concurrent sexual behavior have become attractive to researchers recently as the globally HIV/AIDS epidemic advances. The initial studies about concurrent sexual behavior began with the mathematical simulations. It was found that concurrent partnerships exponentially increase the number of infected individuals and the growth rate of the epidemic compared to sequential partnerships. The growing empirical evidence is also supporting concurrent sexual behavior is one of most powerful factors on people's likelihood of infections.

While most existed studies are focusing on the description of prevalence and the contribution to the STIs, there is lack of studies investigated the underlying risk factors of this particular behavior. Few of studies explored some individual characteristics associated with concurrent sexual behavior such as age, income, marital status, ethnicity, STI diagnosis history.

### **Significances of this study:**

Firstly, this is the first investigation of concurrent sexual behavior under Chinese setting. Most of previous studies were conducted in American or African societies. We expect to

see great variations in Chinese setting. Secondly, instead of involving high-risk population done by most of previous studies, this study explores the concurrent sexual behavior in the general population. Finally, this study relatively thorough understand the risk factors of concurrent sexual behavior among Chinese adults: particularly partnership characteristics and community context have been considered.

### **Conceptual framework and hypotheses:**

Conceptual framework of this study is based on ecological model. The principle of this perspective is that individual's behavior has been influenced by multilevel factors. These "levels" are nested. Limited by the information, in this study we only consider influences from primary partnership and the community context.

Why we consider primary partnership? We define concurrent sexual behavior if one person has other sexual partners while keeping sexual activity with the current primary sexual partner. According to equity theory, when one feels inequitable with one's partnership, he/she is more likely to have extra-dyadic affairs to restore the equity. Individuals who are in more discordant partnerships are more likely to judge the partnership inequitable. Discordance could be in social characters such as age, income, education, or psychological aspects such as perception of partner's infidelity and domestic violence.

The other level is community context. The interest in potential influence of context on health behavior and outcomes has grown. The community context of particularly interested in this study includes socioeconomic circumstances and prevailing attitudes towards sexual behavior. We expect to see the rapid economic development in China and changing social attitudes are influencing people's involvement in concurrent sexual behavior.

Besides these two aspects of influences, we also expect to see particular individual characteristics are risk factors of the concurrent sexual behavior.

Therefore, we hypothesize that the prevalence of concurrent sexual behavior among Chinese adults is not negligible. Risk factors of concurrent sexual behavior are operating at the individual level, primary partnership level and community level.

### **Data:**

The study used data from Chinese Health and Family Planning Survey, conducted in 1999-2000. This is a nationally representative probability sample of the adult population aged 20-64 in China mainland. The survey applied complex survey design. It used computerized interview and provided very detailed information on respondent's sexual behavior. The survey response rate is 76%. Respondents involved in the analysis are those who currently have a primary partner including 1688 women and 1689 men, about 90% of total sample who complete the interview.

### **Method:**

The concurrent sexual behavior has been measured in a variety of ways in previous studies (attachment shows various definition in different studies). Apparently the rate is dependent on how they are defined and the observation period. In this study, we identify one having concurrent sexual behavior if he/she has other sexual partners while keeping sexual activity with the current primary sexual partner. The primary sexual partner is defined as the current spouse for married people or the most intimate partner with more than 6 months of sexual relationship for unmarried people. In Chinese contextual setting, to capture more observations of sexual concurrency, a period of previous 12 months is chosen instead of shorter period.

Independent variables used in the model include individual variables: basic socio-demographic characteristics and social behavior; primary partnership characteristics: type of partnership, duration of partnership, discordance between respondents and the primary partners in age, education, income, and respondent's perception of partner's infidelity, domestic violence perpetration; and community level variables: community education level, income level and community attitude towards premarital sex and extramarital sex. The survey sampling subunit-village or urban neighborhood is considered as the "community" through which the social context is hypothesized to operate to influence individual's behavior.

Multilevel modeling approach was applied in the study in order to deal with clustering effect of communities, allow for simultaneous examination of effects of various levels of variables. Although the framework suggests three levels of predictors, the actual data-structure is only at two levels: individual, partnership level and community level, because individuals reported their own characteristics and partners'.

The model is expressed as:

$$\text{Log}\left(\frac{P_{ij}}{1 - P_{ij}}\right) = \beta_0 + \beta_1 X_{ij} + \beta_2 P_{ij} + \beta_3 C_j + \mu_{0j}$$

$$\mu_{0j} \sim (0, \tau_{00})$$

We consider the intercept is random only, and assume the effect of particular variable is constant cross the communities (constant slopes).

## **Results:**

### **1. Prevalence estimates:**

The prevalence estimates were adjusted by primary sampling unit, strata and probability weight. As the adjusted distribution of respondents in age, urban residence and education are similar with the data from national surveys; it implies that the adjusted prevalence estimate is largely nationally representative. The overall prevalence of concurrent sexual behavior in the last 12 months per 100 people is 9.1 for men and 2.2 for women, strikingly different between men and women.

There is also significant difference between urban and rural sites, particularly among men. 15% of men in urban sites were identified to have concurrent sexual behavior in the last 12 months comparing about 7% of men in rural sites.

The estimated prevalence is significantly various across age groups. Among men, 30-39 age group appears the highest risky followed by 20-29 group. The prevalence among women is low but illustrates a decreasing trend as people gets older.

## **2. Multivariate analysis results**

Because of rare cases of sexual concurrency among women, the multivariate analysis is limited to the men only. We build the model cumulatively to assess the relative contribution of each set of covariates. Therefore, model I only includes individual variables, model II has primary partnership factors added in, model III include all individual, partnership and community variables.

Model I shows being younger, earning higher income, self-employed, being managers/business owners, leaving home due to travel for longer time, and heavy alcohol consumption are significantly associated with concurrent sexual behavior.

Model II, except for the significance of self-employed occupation disappears, other individual variables that are significant in the first model are still significant and coefficients are similar. For primary partnership variables, men who perceived partner unfaithful and who have perpetrated domestic violence to his partner are more likely to engage in the concurrent sexual behavior. Other primary partnership characteristics are not showing significant association.

Model III, all of the significant individual and partnership variable showed in model II are still significant in the final model. As we expect, the relative permissive community attitudes towards extramarital sex behavior is shown strong association with concurrent sexual behavior. Although the individual education attainment does not show the significant association with the concurrent sexual behavior, the education at community level does: people who live in a better-educated community are protected from engaging in the concurrent sexual behavior. The community economic level does not show the significant association, though the individual income level matters.

The clustering effect in the final model drops to 0.296 and is not significant any more, which means by considering all included predictors above, the variations among communities are largely explained.

### **Conclusion:**

The prevalence of concurrent sexual behavior among Chinese adults is relatively low but not negligible. The prevalence among the men aged 20s and 30s in urban area is even comparable to the prevalence found in American society.

### **Research limitations:**

The relatively low prevalence of concurrent sexual behavior found in this study could be reality in Chinese society. But several factors need to be considered that could cause the prevalence be under-estimated.

First reason is the definition used in the study. It is conditional on having primary partner. Some cases would be missed if they don't have primary partner but do have sexual relationships with several partners during certain period. The literature have shown that people who don't have steady partners have higher risk to involve in the sexual concurrency

Second reason is related to the survey design. There was insufficient sampling of migrants: less than 5% of respondents are migrants. Those unregistered and un-locatable migrants could be more likely engaging in the sexual risky behavior according to literature.

Final reason could be that people's tendency to under-report sensitive events.

Other limitations include relying on the report of one partner about the partnership. Because of cross-sectional survey, it is hard to infer causal relationship.

### **Programs and research implications**

The estimate of sexual concurrency prevalence among Chinese adults in this study help to understand the possible contribution of concurrent sexual behavior to the transmission of sexual transmitted infections in China. The study is beneficial for policies to determine more investment should be put on the related research projects and intervention programs.