

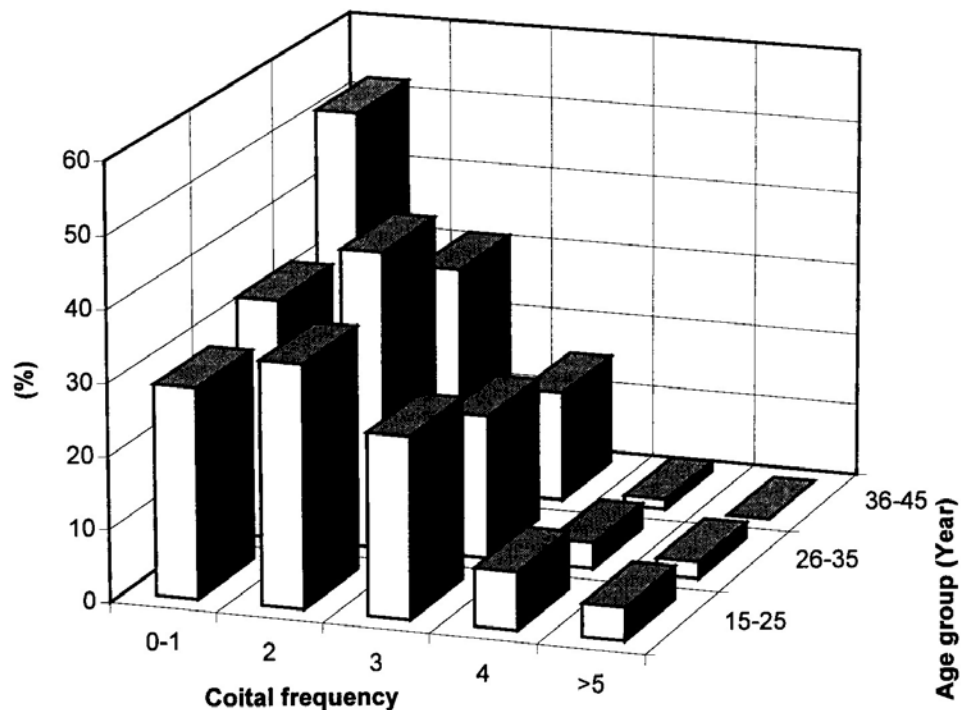
FIG. 2. Proportion of respondents who had premarital sexual intercourse by year of birth.

intercourse (odds ratio [OR] = 2.40), people who desire to have multiple partners (OR = 2.40), people who had >2 coital acts per week (OR = 1.96), men (OR = 1.92), people who saw pornographic items (OR = 1.77), persons with higher income (OR = 1.75), and people of older age at marriage (OR = 1.68).

Results of Reinterview of Sample

One of the clusters was selected randomly for interview. Because the original survey was anonymous, we were not able to reinterview the same people as in the original sample although probably some overlap did oc-

FIG. 3. Average coital frequency per week.



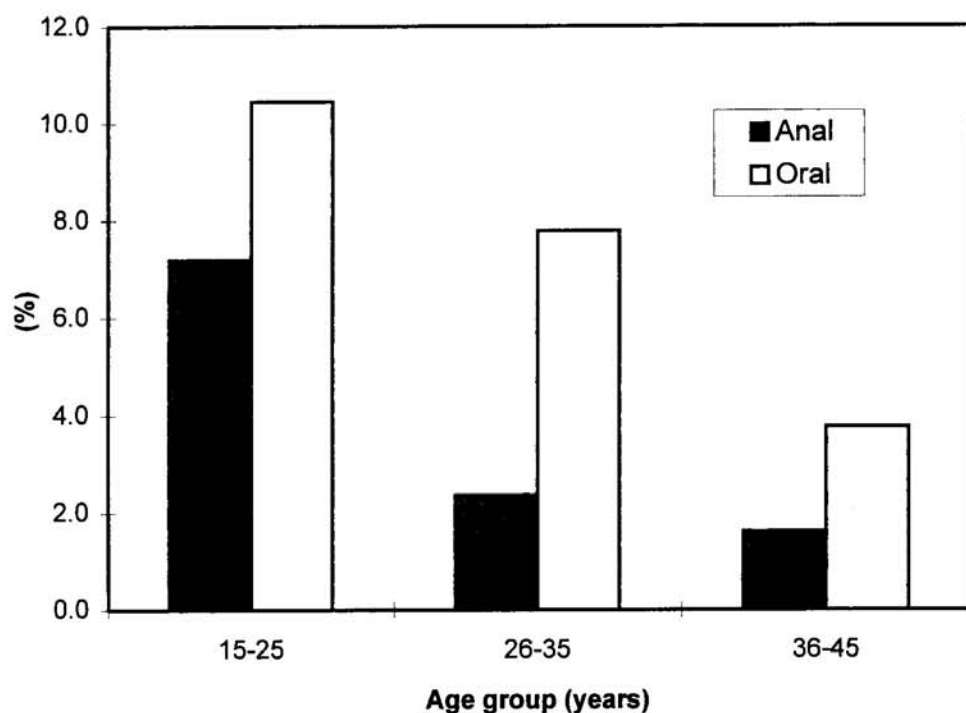


FIG. 4. Proportion of respondents who reported having had oral or anal intercourse.

cur between the two samples. No significant differences were found in the distribution of responses on the variables, including those on sexual activities.

DISCUSSION

This study documents that a significant proportion of rural residents engage in activities that carry an elevated risk of HIV infection in an area where HIV is increasing. More alarming, this study provides evidence that age at first intercourse is declining among both men and women, a trend noted in other countries as well (19–21). The trend may reflect improved nutrition, an increased economic level, declining parental and governmental influence, earlier sexual maturity, or a combination of these factors. Age at marriage has remained quite stable, but the age at first intercourse has declined. Thus, the interval between first sexual intercourse and marriage is increasing, providing greater opportunities for premarital sex. High-risk sexual behavior was, in fact, most strongly associated with earlier age at sex and later age at marriage in the logistic regression analyses.

Popular belief holds that premarital intercourse among young people is a fairly recent development in China. Many hospitals and private clinics now report that unmarried women account for most of their abortion patients (22). He reported that 14.3% of university students in his study had premarital sex and 48% of male and 25% of female students approve of sexual activities

before marriage (23). In our study, 60.3% (41 of 68) of people who engaged in sex with multiple partners reported having had premarital sex. Younger respondents were more likely to report premarital sex than older respondents.

Coital frequency per week was also positively associated with high-risk behavior; people who had a high frequency of sexual intercourse also reported multiple partners. These individuals put themselves and their partners at higher risk of HIV/STD infection. The proportion of people reporting anal sexual intercourse (4.7%) was higher than expected but the practice has not been accepted by society in China. Anal intercourse was reported more frequently among youth in this study, however, suggesting an increasing prevalence of this high-risk behavior in China.

Having multiple sexual partners is associated with an increased risk of HIV infection. However, 95.8% of women reported only a single lifetime sexual partner in this study. Monogamy in this rural population, however, does not guarantee no risk; 12% of monogamous wives and 4% of monogamous husbands had spouses with multiple sex partners. Other studies have reported a similar tendency to report more partners among men than women (24). A possible explanation for this difference is that more men than women reported temporary migration to urban areas. We also interviewed 210 subjects from five randomly selected clusters and investigated the migration to cities among farmers during slack seasons.

TABLE 3. Percentage reporting multiple partners

| Age (years) | Men (N, %) | Women (N, %) |
|-------------|------------|--------------|
| 15-25 | 13 (17.3) | 2 (1.9) |
| 26-35 | 26 (11.5) | 11 (4.3) |
| 36-45 | 10 (8.8) | 6 (6.1) |
| Total | 49 (11.8) | 19 (4.2) |

Among those, 25.7% (34.2% for men and 15.5% for women) had migrated to big cities such as Shanghai, Beijing, or Guangdong for temporary jobs. Most wives (79.7%) did not migrate to cities with their husbands. However, 28.3% of women who did migrate to cities did so without their husbands.

Interestingly, our study shows that the proportion of women who have had multiple partners is much lower among those who were between 15 and 25 years old than among those who were 36 to 45 years old. This may, however, reflect the greater opportunities to accumulate multiple partners with increasing age. Thus, older people would be expected to have more partners unless the patterns of acquiring sexual partners is changing. The reverse pattern observed among men in this study suggests that the rate of acquiring multiple partners, although probably stable among women, is increasing among younger men and is a cause for concern. Only 13.2% (9 of 68) of people reporting multiple partners ever used condoms, and only 1.5% used them for every act of intercourse. Hence, men with multiple partners and their spouses are at high risk of HIV/STD infection. It is now generally accepted that the majority of women living with HIV infection in the world have acquired HIV heterosexually from their partners (25). For this reason, when we talk about women's risk of HIV infection, we must take men's sexual behavior into consideration.

China has had a strong family planning policy for many years. As a result, contraceptive practice is common. Use of oral contraceptives and intrauterine devices (IUDs) may increase the risk of HIV/STD (26), whereas barrier contraceptives, such as condoms and spermicides can reduce the risk of HIV infection (27,28). In this rural area, the use of condoms and spermicides is very low. Most sexually active people have had a sterilization operation or use an IUD. Among the farmers who used condoms, most of them used them only occasionally or only during ovulation. Thus, current contraceptive practices in this rural area will not slow the transmission of HIV and STDs.

The number of STD patients has been increasing rapidly among workers, farmers, people in private commerce, and the unemployed in China (29). The most common diseases are syphilis, gonorrhea, and condyloma acuminatum. In our study, the prevalence of STDs

TABLE 4. Univariate analyses of factors associated with high-risk sexual behavior

| | Subjects with high-risk sexual behavior (N, %) | OR | 95% CI |
|--|--|------|-----------|
| Gender | | | |
| Female | 120 26.1 | 1.00 | — |
| Male | 161 38.4 | 1.76 | 1.35-2.35 |
| Age (years) | | | |
| 15-25 | 75 41.9 | 1.00 | — |
| 26-35 | 154 31.8 | 0.64 | 0.45-0.92 |
| 36-45 | 52 24.3 | 0.45 | 0.29-0.68 |
| Education (years) | | | |
| 0-3 | 90 7.4 | 1.00 | — |
| 4-8 | 167 35.2 | 1.50 | 1.11-2.04 |
| 9-13 | 21 35.6 | 1.53 | 0.85-2.74 |
| Occupation | | | |
| Other | 24 34.8 | 1.00 | — |
| Farmer | 257 31.9 | 0.88 | 0.52-1.45 |
| Yearly income per person in a household (Yuan) | | | |
| 100-500 | 68 25.5 | 1.00 | — |
| 501-1000 | 134 35.2 | 1.59 | 1.12-2.24 |
| 1001-7000 | 65 38.0 | 1.80 | 1.19-2.71 |
| Alcohol consumption | | | |
| Never | 116 28.5 | 1.00 | — |
| Sometimes | 112 35.0 | 1.35 | 0.99-1.85 |
| Often | 50 34.7 | 1.33 | 0.89-2.00 |
| Use of contraceptives | | | |
| No | 100 35.3 | 1.00 | — |
| Yes | 181 30.4 | 0.80 | 0.59-1.08 |
| HIV/AIDS knowledge (score) | | | |
| 0 | 109 29.8 | 1.00 | — |
| 1-3 | 23 27.1 | 0.88 | 0.52-1.48 |
| 4-6 | 71 39.4 | 1.54 | 1.06-2.23 |
| 7-9 | 52 35.1 | 1.28 | 0.85-1.92 |
| 10-13 | 8 21.4 | 0.65 | 0.29-1.46 |
| Perception of AIDS risk | | | |
| Unlikely | 109 34.7 | 1.00 | — |
| Likely | 8 34.8 | 1.00 | 0.42-2.44 |
| Age at first sex (years) | | | |
| >22 | 104 25.7 | 1.00 | — |
| ≤22 | 177 37.3 | 1.72 | 1.29-2.30 |
| Age at marriage (years) | | | |
| >22 | 141 31.9 | 1.00 | — |
| ≤22 | 139 31.9 | 0.99 | 0.75-1.32 |
| Currently living with spouse | | | |
| Yes | 255 30.9 | 1.00 | — |
| No | 19 47.5 | 2.02 | 1.08-3.79 |
| Coital frequency per week | | | |
| ≤2 | 176 27.3 | 1.00 | — |
| >2 | 102 45.5 | 2.22 | 1.63-3.04 |
| Sexually satisfied with spouse | | | |
| Yes | 228 32.1 | 1.00 | — |
| No | 22 40.0 | 1.41 | 0.81-2.47 |
| Desire to have more than one sex partner, if permitted | | | |
| No | 181 29.5 | 1.00 | — |
| Yes | 77 55.0 | 2.92 | 2.03-4.22 |
| Saw pornographic items | | | |
| No | 180 28.2 | 1.00 | — |
| Yes | 77 50.7 | 2.61 | 1.83-3.73 |

1 yuan is equivalent to \$0.125 U.S.

OR, odds rates; CI, confidence interval.

reported among rural residents was 1.7%. This proportion is lower than in other studies among high-risk groups. Sun did an STD survey among rural residents returning home from cities where they worked in construction sites and found a prevalence of 4.3% (30). Han reported that the prevalence of STDs among truck drivers, however, is 6.8% (31). Our study relied on reported

TABLE 5. Logistic regression analysis of variables associated with high-risk behavior

| Variable | | OR | 95% CI |
|----------------------------------|------------------------------|------|-----------|
| Age at first sex | < = 22 vs. >22 years | 2.40 | 1.57-3.67 |
| Age at marriage | >22 vs. < = 22 years | 1.68 | 1.08-2.59 |
| Desire to have multiple partners | Yes vs. no | 2.40 | 1.50-3.84 |
| Coital frequency per week | >2 vs. ≤ 2 | 1.96 | 1.35-2.84 |
| Gender | Male vs. female | 1.92 | 1.21-3.04 |
| Having seen pornographic items | Yes vs. no | 1.77 | 1.13-2.78 |
| Annual per capita income | 501-1000 vs. 100-500 (Yuan) | 1.50 | 1.01-2.21 |
| | 1001-7000 vs. 100-500 (Yuan) | 1.75 | 1.08-2.84 |

1 Yuan = \$0.725 U.S.

CI, confidence interval; OR, odds ratio.

STDs only and, therefore, would not identify asymptomatic STDs, a particular problem among women.

Several limitations in our study need to be mentioned. First, all variables were self-reported. Respondents may have underreported some sexual behaviors and diseases, because of conservative social standards. Further, 9% of those not at home were migrants who, according to our results, were more likely to have multiple partners. Second, some information required respondents to recall events that happened several years before. Thus, some recall bias might have occurred. In addition, we calculated the confidence intervals by treating the data as a simple random sample (SRS). Because this was a cluster survey, the confidence intervals we calculated here might be smaller than they should be.

We did a repeat survey for data reliability in a sample of villages. No significant differences obtained between the initial and second responses. We also analyzed the consistency between reporting of sexual frequency and types of sexual activities of married couples. The results indicated a high degree of reliability of answers regarding premarital sex, oral or anal sex, and coital frequency.

These results provide information that can be used to make preventive programs on HIV/AIDS control in rural areas more effective and also underscores the need for HIV/STD programs in rural areas. First, sexual norms and behaviors in rural China are changing rapidly. Second, it is important to promote delayed onset of sexual activity and to promote safe sexual behavior, such as the use of condoms. Third, extensive education on HIV/AIDS prevention should be implemented among farmers, especially among those who migrate to cities for temporary jobs. Even though AIDS-related information is not effective alone, it is needed to increase personal skill in the protection against HIV infection. Fourth, migrants are a high-risk group and HIV surveillance should be carried out among them to monitor the epidemic trend of HIV. More intervention programs should target them. Finally, preventive programs should strongly emphasize

condom use, especially with commercial sex workers and casual partners.

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