



ORIGINAL ARTICLE

# HIV/AIDS Knowledge, Stigmatizing Attitudes, and Related Behaviors and Factors that Affect Stigmatizing Attitudes against HIV/AIDS among Korean Adolescents

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**Abstract**

**Objectives:** This study examined the sex differentials for specific aspects of knowledge regarding HIV, stigmatizing attitudes toward people with HIV/AIDS (PWHAs) and sexual behavior. In addition, the factors that affect stigmatizing attitudes toward PWHAs were investigated.

**Methods:** The population of this study comprised of senior high students in Seoul, Korea. Eight high schools were selected randomly and 1566 adolescents participated in the survey. A total sample of 1548 cases (18 cases were excluded) was used for analysis. A self-administered questionnaire measuring their general and transmission and discriminatory attitudes was used.

**Results:** The level of HIV/AIDS knowledge among Korean adolescents was low, as indicated by a correct response rate of 54% (7.0 out of 13). The students answered correctly about HIV transmission by kissing at 50.2%, toilets at 59.4%, cup sharing at 57.4%, and daily school life at 60.5%. The level of discriminatory attitudes towards HIV-infected persons was high. Boys reported a higher proportion of sexual experience (7.0% vs. 2.6%, OR = 2.89,  $p < 0.001$ ). Only 39.0% used a condom during their last sexual encounter and more girls (53.3%) than boys (35.3%) reported using a condom.

**Conclusions:** These findings highlight the need for increasing HIV knowledge, reducing HIV stigma, and providing sex education focusing on safer sex practices.

## 1. Introduction

In 2009, UNAIDS estimated that 33.3 million people and 2.5 million children were infected with HIV/AIDS

[1]. Korea recognized its first HIV/AIDS case in 1985. As of March 2011, 7,835 people were diagnosed HIV-positive [2]. Of those, approximately one-fourth (24.5%) were young people aged between 10 and 29

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years. The majority of those diagnosed with HIV were male (91.8%). The true number of HIV/AIDS infected persons among adolescents is estimated to be larger than the Ministry's reported data because adolescents do not go to hospital without their parents or guardians, are not required to undergo HIV/AIDS testing as minors, and symptom latency does not prompt early detection [3]. Although the prevalence of HIV in the general population remains below 0.1%, it increased significantly after the 1990s. This number is quite low compared to many other countries but the recent sharp increase in infection rates is of considerable concern. From 2003 to 2011, the total number of Koreans diagnosed with HIV has more than tripled from 2,470 to 7,835 [2,4]. The main route of HIV transmission is through sexual contact. Approximately 99.0% of HIV-positive people were infected by heterosexual and homosexual behavior in and out of the country [2].

The incidence of HIV in women is expected to increase due to the rapid increase in newly infected HIV males and their risk-taking behavior (e.g., low use of condoms, sex with multiple partners). In Korea, the HIV data suggests that most HIV-infected females were infected by heterosexual contact with only a small percentage of females being exposed through blood transfusions. None of them on the reported data was exposed through homosexual contact and/or injection drug use up to 2009. Most Korean women are infected with HIV during sex with an HIV-infected man. Of the new HIV infections among Korean women in 2009, the Korea Centers for Disease Control and Prevention attributed all (97.9%) to heterosexual contact [5]. Issues centered on adolescent sexuality in Korea have become the subject of concern to society due to their increased sexual behavior, with an associated rise in unplanned pregnancies, induced abortions and sexual transmitted infections (STIs), including HIV [6,7]. Knowledge is an important prerequisite for prevention in other areas of HIV transmission. Most national programs have made considerable effort to increase knowledge about HIV, the behaviors that spread the disease and the ways it can be avoided, and reduce the stigma against people with HIV/AIDS (PWHAs) [8]. Social stigma has interfered with the effective response to HIV/AIDS and deterred people from being tested for HIV and from disclosing their positive status to sexual partners, family, and friends [8,9]. Stigmatizing attitudes are strongly associated with the misconception of HIV transmission with negative attitudes toward the social group, particularly homosexuals and sex workers [8,10].

There are few reports on HIV/AIDS among adolescents in Korea, and comprehensive, up-to-date studies on the knowledge, attitude and related behaviors are quite limited. This study examined the sex differentials in specific aspects of knowledge about HIV, stigmatizing attitudes towards PWHAs and sexual behaviors. In addition, this study examined the factors that affect

the stigmatizing attitudes towards PWHAs. The results provide an empirical basis for developing culture and gender-specific interventions for the prevention of HIV infections among young people in Korea.

## 2. Materials and Methods

### 2.1. Research design

A cross-sectional sample of high school students were surveyed in Seoul, South Korea. The surveys were self-administered. The ethical considerations of this study were approved by the Sahmyook University Institutional Review Board (IRB), and an IRB number was issued to conduct the study.

### 2.2. Sample and data collection

A list of schools according to region was obtained from the Seoul Office of Education (SOE). The high school data were collected from eight high schools: two special-purpose high schools (vocational high schools) and six general high schools. A total of 1,630 questionnaires were distributed and a response rate of 96% led to the collection of 1,566 questionnaires. The survey was conducted for one month from March 1 to March 31, 2011. All subjects participated voluntarily and completed the questionnaire anonymously during or after regular school hours. The questionnaire took the subjects an estimated 10 minutes to complete.

Of the 1,566 questionnaires collected, 1,548 data sets were analyzed after excluding 18 due to unreliable or missing data. The mean age of the respondents was 16.98 years ( $SD = 0.82$ ). Of the participants, 625 (40.4%) were girls and 923 (59.64%) were boys. The results are listed in Table 1. The students were asked about their academic performance; 57.4%, 25.0%, and 17.5% saw themselves as average, below average and above average or high performance students, respectively. The participants were also asked about their family background; most students (86.6%) reported that their parents lived together.

### 2.3. Instruments

The survey questionnaires were developed from previous studies [3,11]. Structural questionnaires were developed after consulting with two professionals and performing content validation. The demographic variables (sex and academic performance), knowledge of HIV/AIDS and stigmatizing attitudes, and HIV-related behaviors were considered.

#### 2.3.1. Knowledge

A total of 13-item questions were used to measure the knowledge of HIV/AIDS with answers "True," "False," and "Don't know" with the correct and incorrect response scored as 1 and 0, respectively. The correct responses were combined to yield a single knowledge

**Table 1.** Sociodemographic characteristics of the participants

|                                      |                             | Boys ( <i>n</i> = 923) | Girls ( <i>n</i> = 625) | Total ( <i>N</i> = 1,548) |
|--------------------------------------|-----------------------------|------------------------|-------------------------|---------------------------|
| Age (y)                              | 16                          | 349 (37.8)             | 186 (29.8)              | 535 (34.6)                |
|                                      | 17                          | 279 (30.2)             | 232 (37.1)              | 511 (33.0)                |
|                                      | 18                          | 295 (32.0)             | 207 (33.1)              | 502 (32.4)                |
| Academic performance (self-reported) | Mean (SD)                   | 16.94 (0.83)           | 17.03 (0.79)            | 16.98 (0.82)              |
|                                      | High                        | 195 (21.2)             | 75 (12.1)               | 270 (17.5)                |
|                                      | Average                     | 527 (57.2)             | 357 (57.8)              | 884 (57.4)                |
|                                      | Low                         | 199 (21.6)             | 186 (30.1)              | 385 (25.0)                |
| Parental marital status              | Living together             | 793 (86.2)             | 545 (87.2)              | 1,338 (86.6)              |
|                                      | Divorced                    | 68 (7.4)               | 51 (8.2)                | 119 (7.7)                 |
|                                      | Separated                   | 22 (2.4)               | 10 (1.6)                | 32 (2.1)                  |
|                                      | Widowed                     | 12 (1.3)               | 10 (1.6)                | 22 (1.4)                  |
|                                      | Remarried                   | 13 (1.4)               | 8 (1.3)                 | 21 (1.4)                  |
|                                      | Orphans (lost both parents) | 4 (0.4)                | 0 (0.0)                 | 4 (0.3)                   |
|                                      | Others                      | 8 (0.9)                | 1 (0.2)                 | 9 (0.6)                   |

Values are the numbers (percentages). The numbers may not add up to 1,548 due to missing data.

score ranging from 0 to 13. According to Kuder & Richardson's KR20 method, 1 and 0 points were given for every correct and incorrect (including the "Don't know" answer) answer, respectively. The data showed a relatively acceptable level of internal reliability (KR = 0.67).

### 2.3.2. Stigmatizing attitudes toward PWHAs

The HIV/AIDS stigmatizing attitudes were measured using a five-point Likert scale, ranging from "strongly agree" to "strongly disagree." The section included questions, such as "HIV/AIDS makes me feel disgusted" and "I can share a meal with a person infected with HIV." Nine survey items asked the subjects to indicate their degree of agreement regarding the stigmatizing attitudes towards PWHAs. The scores ranged from 1 (strongly disagree) to 5 (strongly agree). Three questions were reverse-coded. All questions now equated higher scores with higher discrimination. Cronbach's alpha was 0.78, suggesting a satisfactory level.

### 2.3.3. HIV-related behaviors

Sexual intercourse is defined as the insertion or receptive penile penetration of the vagina. Multiple sexual partnerships were measured by the percentage of sexually active single respondents who had had sex with two or more partners. The rate of condom use at last sexual encounter was assessed.

## 2.4. Statistical analyses

The data were analyzed using SPSS 19.0 (SPSS Inc, Chicago, IL, USA). Reliability analyses were used to measure the subject's HIV knowledge and stigmatizing attitudes toward PWHAs. The mean (M) and SDs were used to describe the characteristics of the study sample. The sex differentials were analyzed using a chi-square and t-test. At the multivariate level, logistic regression analysis was performed to determine if these sex

differences for HIV-related behaviors remain significant after controlling for age as a covariate. The odds ratio of male students compared with females was based on logistic regression models with age controlled as a covariate. Finally, multiple regression analysis was used to analyze the factors influencing stigmatizing attitudes toward the PWHAs.

## 3. Results

### 3.1. HIV/AIDS Knowledge

The mean HIV/AIDS knowledge score of the participants was 7.0 (SD = 2.3) out of 13. Approximately 50%~60% of respondents answered correctly that HIV could not be transmitted through kissing (53.4%), sharing a toilet (59.5%), sharing cups (57.5%), and daily school life (60.5%). Only 31.8% answered correctly the question about mosquito bites. More than 80% of respondents knew correctly that HIV could be transmitted by sharing syringes and a healthy looking person could still be infected. Only 58.4% responded yes to whether HIV could be prevented by condom use.

With the exception of three questions (kissing, sharing cups, and healthy looking person could be infected), there were significant sex differences to all questions. On the other hand, there was no sex difference in the total score of HIV/AIDS knowledge (Table 2).

### 3.2. Stigmatizing attitudes toward PWHAs

The mean score of the stigmatizing attitudes toward PWHAs among the total students in the study was 27.12 out of 45 (SD = 6.71), and there was no significant difference between boys (M = 27.21, SD = 6.99) and girls (M = 26.99, SD = 6.27). This is shown in Table 3. The respondents surveyed displayed a high level of discrimination against those with HIV/AIDS in some situations, particularly in making him/her feel disgusted,

**Table 2.** Correct answer rate of HIV-related knowledge

|   | Boys ( <i>n</i> = 923) | Girls ( <i>n</i> = 625) | Total ( <i>N</i> = 1,548) | $\chi^2_{df=1}$    |
|---|------------------------|-------------------------|---------------------------|--------------------|
| HIV could be transmitted via  |                        |                         |                           |                    |
| Kissing (F)   | 466 (50.5)             | 310 (49.6)              | 776 (50.1)                | 0.12               |
| Sharing toilet (F)  | 598 (64.9)             | 322 (51.5)              | 920 (59.5)                | 27.50 <sup>a</sup> |
| Sharing cups (F)  | 518 (56.2)             | 370 (59.3)              | 888 (57.5)                | 1.42               |
| Sharing syringe (T)   | 760 (82.4)             | 565 (90.4)              | 1,325 (85.6)              | 19.25 <sup>a</sup> |
| Mosquito bites (F)  | 324 (35.2)             | 167 (26.7)              | 491 (31.8)                | 12.40 <sup>a</sup> |
| Daily school life (F)   | 538 (58.4)             | 398 (63.8)              | 936 (60.5)                | 4.59 <sup>b</sup>  |
| Mother to her baby (T)  | 617 (67.0)             | 499 (79.8)              | 1,116 (72.2)              | 30.61 <sup>a</sup> |
| Mother's breast feeding (T)   | 452 (49.1)             | 394 (63.0)              | 846 (54.7)                | 29.30 <sup>a</sup> |
| Prevented by condom use (T)   | 558 (60.6)             | 345 (55.2)              | 903 (58.4)                | 4.45 <sup>b</sup>  |
| Healthy looking person could be infected (T)  | 813 (88.2)             | 564 (90.2)              | 1,377 (89.0)              | 1.62               |
| If a person has HIV-infected, he can be died within a few month (F)                         | 574 (62.3)             | 360 (57.6)              | 934 (60.4)                | 3.47 <sup>b</sup>  |
| If HIV is treated properly, and average HIV-infected person can live more than 20 years (T) | 542 (58.7)             | 313 (50.1)              | 855 (55.2)                | 11.26 <sup>a</sup> |
| HIV infects mainly homosexuals (F)  | 618 (67.0)             | 482 (77.1)              | 1,100 (71.1)              | 18.72 <sup>a</sup> |
| <b>Total knowledge score: Mean (SD)</b>   | <b>7.0 (2.4)</b>       | <b>7.1 (2.1)</b>        | <b>7.0 (2.4)</b>          | <b>t = -0.475</b>  |

<sup>a</sup>*p* < 0.001; <sup>b</sup>*p* < 0.05.

Note: The numbers may not add up to 1,548 due to missing data; possible range = 0–13. Values are numbers (percentages).

avoiding sitting with PWHAs, and blaming those infected with HIV/AIDS. The “agree” and “disagree for reverse coded questions” responses ranged from 18.5%–58.8% (Table 3).

When the items were examined individually, female students showed less willingness to share a meal with PWHAs (29.0% of boys vs. 21.0% of girls, *p* < 0.01), and enjoy the company of HIV/AIDS infected people (31.9% of boys vs. 24.3% of girls, *p* < 0.05). Male students showed higher stigmatizing attitudes in two questions that HIV/AIDS made them feel disgusted (*p* < 0.001) and PWHAs should be isolated and sent to isolation facilities (*p* < 0.01). The other items showed no significant differences between the two groups (Table 4).

### 3.3. Factors that impact the stigmatizing attitudes toward PWHAs

The data were analyzed to assess the effects of demographic variables, such as gender, age, academic performance and parents' marital status as well as HIV-knowledge. Table 5 lists the results. The data were divided into two blocks. Block 1 was composed of sex, age, academic performance, and parental marital status. Sex, age, and academic performance had no significant effect but parental marital status did on stigmatizing attitudes toward PWHAs. Therefore, the demographic factors did not have a significant effect on the stigmatizing attitudes toward PWHAs ( $R^2 = 0.007$ ,  $F = 2.17$ , *p* = 0.055). In Block 2, the parental marital status and HIV knowledge had a significant effect on the stigmatizing attitudes toward PWHAs. The analysis shows that these variables were strong predictors of the

stigmatizing attitudes towards PWHAs ( $R^2 = 0.047$ ,  $F = 12.57$ , *p* = 0.000).

### 3.4. HIV-related behaviors

Only 5.2% of all participants responded that they had engaged in sexual intercourse. After controlling for age, male students reported a higher proportion of sexual encounters (7.0% vs. 2.6%, OR = 2.89, *p* < 0.001). Only 39.0% used a condom at their last sexual encounter, and more girls (53.3%) than boys (35.3%) reported having used a condom but the difference was not significant at the 0.05 level of significance. After controlling for age, male students reported a higher proportion of sexual encounters with two or more multiple partners than female students (67.7% vs. 46.7%, OR = 2.40), but the difference was not significant at the 0.05 level of significance. In general, more male students than female students reported having sexual intercourse and two or more sexual partners, whereas more female students used a condom than male students.

## 4. Discussion and conclusion

The level of HIV/AIDS knowledge among Korean adolescents was low, as indicated by the correct response rate of 54% (7.0 out of 13). This finding is similar those from other Korean studies for adolescents, and lower for adults [7,10,12]. Approximately 40%~70% of the participants believed that HIV transmission was possible by daily life contact with PWHAs, such as kissing, sharing toilets and cups, and mosquito bites. The use of condoms as an HIV prevention measure was

**Table 3.** HIV-related stigma

|  |          | Boys ( <i>n</i> = 923) | Girls ( <i>n</i> = 625) | Total ( <i>N</i> = 1,548) | $\chi^2_{df=2}$                   |
|--|----------|------------------------|-------------------------|---------------------------|-----------------------------------|
| HIV/AIDS makes me feel disgusted                                       | Agree    | 542 (58.8)             | 271 (43.4)              | 813 (52.6)                | 37.93 <sup>a</sup>                |
|  | Neutral  | 234 (25.4)             | 237 (37.9)              | 471 (30.4)                |                                   |
|  | Disagree | 146 (15.8)             | 117 (18.7)              | 263 (17.0)                |                                   |
| I will avoid sitting with PWHA's                                       | Agree    | 454 (49.2)             | 296 (47.5)              | 750 (48.5)                | 2.87                              |
|  | Neutral  | 239 (25.9)             | 185 (29.7)              | 424 (27.4)                |                                   |
|  | Disagree | 230 (24.9)             | 142 (22.8)              | 372 (24.1)                |                                   |
| PWHA's appear to be sexually promiscuous people                        | Agree    | 378 (41.0)             | 234 (37.5)              | 612 (39.6)                | 3.20                              |
|  | Neutral  | 242 (26.2)             | 159 (25.5)              | 401 (25.9)                |                                   |
|  | Disagree | 302 (32.8)             | 231 (37.0)              | 533 (34.5)                |                                   |
| HIV infection is the fault of the individual                           | Agree    | 408 (44.3)             | 257 (41.3)              | 665 (43.0)                | 5.27                              |
|  | Neutral  | 289 (31.3)             | 230 (36.9)              | 519 (33.6)                |                                   |
|  | Disagree | 225 (24.4)             | 136 (21.8)              | 361 (23.4)                |                                   |
| PWHA's should be dropped from school                                   | Agree    | 171 (18.5)             | 99 (15.9)               | 270 (17.5)                | 1.87                              |
|  | Neutral  | 238 (25.8)             | 168 (26.9)              | 406 (26.3)                |                                   |
|  | Disagree | 513 (55.6)             | 357 (57.2)              | 870 (56.3)                |                                   |
| PWHA's should be isolated and sent to Isolation facilities             | Agree    | 231 (25.1)             | 130 (20.8)              | 361 (23.4)                | 5.69 <sup>b</sup>                 |
|  | Neutral  | 237 (25.7)             | 189 (30.3)              | 426 (27.6)                |                                   |
|  | Disagree | 454 (49.2)             | 305 (48.9)              | 759 (49.1)                |                                   |
| I can share a meal with a PWHA's                                       | Agree    | 267 (29.0)             | 131 (21.0)              | 398 (25.8)                | 12.55 <sup>c</sup>                |
|  | Neutral  | 298 (32.4)             | 230 (36.9)              | 528 (34.2)                |                                   |
|  | Disagree | 355 (38.6)             | 262 (42.1)              | 617 (40.0)                |                                   |
| If one of my family members is infected with HIV, I can live with them | Agree    | 488 (52.9)             | 305 (48.8)              | 793 (51.3)                | 3.49                              |
|  | Neutral  | 263 (28.5)             | 205 (32.8)              | 468 (30.3)                |                                   |
|  | Disagree | 171 (18.5)             | 115 (18.4)              | 286 (18.5)                |                                   |
| I can get along with my neighbor who has HIV/AIDS infected persons     | Agree    | 294 (31.9)             | 152 (24.3)              | 446 (28.8)                | 10.63 <sup>c</sup>                |
|  | Neutral  | 343 (37.2)             | 266 (42.6)              | 609 (39.3)                |                                   |
|  | Disagree | 286 (31.0)             | 207 (33.1)              | 493 (31.8)                |                                   |
| <b>Total stigma score: Mean (SD)</b>                                   |          | 27.21 (6.99)           | 26.99 (6.27)            | 27.12 (6.71)              | <i>t</i> = 0.63 (not significant) |

<sup>a</sup>*p* < 0.001; <sup>b</sup>*p* < 0.01; <sup>c</sup>*p* < 0.05.

Note: The numbers may not add up to 1,548 due to missing data; possible range = 9~45. Values are numbers (percentages).

not well understood by the participants, as indicated by a correct response rate of 54.7%. These findings highlight the need for education on the use of condoms to prevent HIV transmission in Korea.

HIV/AIDS stigma is a major barrier to HIV prevention, testing, and accessing HIV treatment and care because of provider refusals, and the decreased willingness of already stigmatized groups, such as sex workers

or homosexuals to seek care or testing [8,13,14]. These results showed that Korean adolescents had considerable social stigma toward PWHA's. This finding has implications for the development of intervention programs focusing on changes in attitude. HIV knowledge has a significant effect on the stigmatizing attitudes toward PWHA's; more knowledge decreases the stigmatizing attitudes toward PWHA's. This finding is similar to those

**Table 4.** Results of hierarchical multiple regression analyses of the stigmatizing attitudes toward PWHA's

|                         | Block 1                |      |         |          |              | Block2                        |      |         |          |              |
|-------------------------|------------------------|------|---------|----------|--------------|-------------------------------|------|---------|----------|--------------|
|                         | <i>b</i>               | SE   | $\beta$ | <i>t</i> | <i>p</i>     | <i>b</i>                      | SE   | $\beta$ | <i>t</i> | <i>p</i>     |
| Constant                | 30.25                  | 3.59 |         | 8.42     | 0.000        | 32.82                         | 3.53 |         | 9.28     | 0.000        |
| Sex                     | 0.30                   | 0.35 | 0.02    | 0.85     | 0.395        | 0.23                          | 0.35 | 0.02    | 0.66     | 0.511        |
| Age                     | -0.21                  | 0.21 | -0.03   | -1.00    | 0.316        | -0.09                         | 0.21 | -0.01   | -0.45    | 0.652        |
| Academic performance1   | 0.97                   | 0.54 | 0.06    | 1.78     | 0.075        | 0.37                          | 0.54 | 0.02    | 0.68     | 0.495        |
| Academic performance2   | 0.34                   | 0.47 | 0.03    | 0.73     | 0.465        | 0.05                          | 0.46 | 0.00    | 0.12     | 0.907        |
| Parental marital status | -1.38                  | 0.51 | -0.07   | -2.72    | <b>0.007</b> | -1.45                         | 0.50 | -0.07   | -2.90    | <b>0.004</b> |
| HIV knowledge           |                        |      |         |          |              | -0.60                         | 0.07 | -0.20   | -8.01    | <b>0.000</b> |
|                         | $R^2 = 0.007$          |      |         |          |              | $R^2 = 0.047$                 |      |         |          |              |
|                         | $F = 2.17 (p = 0.055)$ |      |         |          |              | $R^2 (\text{change}) = 0.040$ |      |         |          |              |
|                         |                        |      |         |          |              | $F = 12.57 (p < 0.001)$       |      |         |          |              |

Sex code: girl = 0, boy = 1; academic performance1 code: high = 0, average, low = 1; academic performance2 code: high = 0, low, average = 1; living together = 0, others = 1.

from other studies [10,12]. Effective education and knowledge are tools to reduce the stigmatizing attitudes towards PWHA's.

This study showed that very few Korean adolescents were sexually active. Only 7.0% of boys and 2.6% of girls. Male students were approximately three times more likely to have experienced sexual intercourse than girls. These findings are similar to what is known about recent sexual behavior in Korea [6]. In general, previous studies suggested that boys were more likely to be sexually experienced and have more sexual partners than girls. Compared with other societies, the rate of adolescents engaging in sexual activities is still lower than other countries due to the relatively conservative cultural norm regarding sexual behavior. [6,11,15–20]. This finding is similar to that of other studies [21,22]. In the present study, more girls (53.3%) than boys (35.5%) reported condom use at their last sexual encounter, but there was no statistical difference between genders after controlling for age. These results suggest that although males initiate sex earlier, both sexes are equally likely to have not engaged in condom use. This indicates that sex education focusing on condom use should be included in the school curriculum and should start early, before the students experience sex, to give them a chance to prepare gradually. In addition, educational interventions to rectify the false conceptions and provide correct information on HIV transmission should be implemented. Efforts to reduce the HIV stigma may also require a special strategy for Korean adolescents, and

interventions based on behavioral science may be beneficial. Education should focus not only on educating about HIV transmission but also on developing safe sexual practices. Nevertheless, interventions for females need to be designed with adequate intensity to provide substantial and individualized negotiation skills training, as recommended in a previous study. Abstinence strategies still need to be emphasized as Koreans have their first sexual experience at a much older age. There is also a need to develop a sex education curriculum to cover STIs prevention skills in Korean high schools. Culturally appropriate education and training programs for Korean teachers and parents before student education, as well as strategies involving reliable adults in sex education are needed in Korea.

One study limitation was that the samples were taken from one general area in Seoul, Korea. On the other hand, Seoul is large and represents one-fifth of the country's population [23]. More than any other city in Korea, Seoul is representative of Korean adolescent knowledge attitudes toward HIV/AIDS. In addition, the use of self-reported measures for HIV related behaviors might have included reporting bias of a possible inclination to provide socially acceptable responses. Nevertheless, this is one of the few studies to identify a low level of HIV knowledge, stigma toward PWHA's, and HIV-related behaviors in Korean high school students. The study findings will prove useful in understanding young people coming from a culture where sexuality is not discussed openly and adolescent sexual behavior is

**Table 5.** HIV-related behaviors and health behaviors

|  |             | Boys ( <i>n</i> = 923) | Girls ( <i>n</i> = 625) | Total ( <i>N</i> = 1,548) | Odds Ratio        |
|--|-------------|------------------------|-------------------------|---------------------------|-------------------|
| Having sexual intercourse ( <i>n</i> = 1,548)          |             | 65 (7.0)               | 16 (2.6)                | 81 (5.2)                  | 2.89 <sup>a</sup> |
| Condom use at last sexual intercourse ( <i>n</i> = 77) |             | 22 (35.5)              | 8 (53.3)                | 30 (39.0)                 | 0.48              |
| Multiple sexual partnership ( <i>n</i> = 77)           | One         | 20 (32.3)              | 8 (53.3)                | 28 (36.4)                 | —                 |
|  | Two or more | 42 (67.7)              | 7 (46.7)                | 49 (63.6)                 | 2.40              |

Odds ratio of boys compared with girls based on logistic regression models with age controlled as a covariate. Values are numbers (percentages).

discouraged. Although adolescents may encounter fewer HIV-infected persons in Korea and are at relatively lower risk, this does not excuse the indifference to safer sexual practices and HIV/AIDS prevention. Many Korean students study abroad and enjoy social visits to other countries, so have increased risk of exposure to HIV/AIDS infected persons. This information may help them implement more effective HIV/AIDS interventions that are cultural and gender sensitive.

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