



## ORIGINAL ARTICLE

# Peer and community influences on the acceptance of premarital sex among Vietnamese adolescents

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**Aim:** Adolescents in Vietnam have a low level of sexual activity, but this may increase with urbanisation and economic development. The aim of this analysis is to understand trends in correlates of permissive attitudes towards premarital sex among Vietnamese adolescents using an ecological framework.

**Methods:** Data from the Survey Assessment of Vietnamese Youth from 2003 ( $n = 7584$ ) and 2009 ( $n = 10\,044$ ) were analysed using multivariable logistic regressions to examine associations between permissive attitudes towards premarital sex and demographic and contextual factors among adolescents aged 14 to 25.

**Results:** Correlates of having permissive attitudes towards premarital sex in both 2003 and 2009 included being male, older age, living in an urban area, living in the North, having ever used the Internet and perceiving that people in the community were having premarital sex. Variables that were significant in 2009 but not in 2003 included socio-economic status and belonging to an ethnic minority. Statistically significant changes in associations between 2003 and 2009 were observed for age, socio-economic status and belonging to an ethnic minority.

**Conclusions:** The association of permissive attitudes with community norms and certain socio-demographic variables in conjunction with overarching economic development and urbanisation suggests that premarital sex will likely become increasingly common among Vietnamese adolescents. These trends should be further assessed as adolescent sexual activity becomes more common and adolescent friendly health services should be developed to provide appropriate and acceptable sexual and reproductive health care to young people.

**Key words:** adolescent; sexual behaviour; Vietnam.

## What is already known on this topic

- 1 Premarital sexual activity is uncommon but increasingly prevalent among adolescents in Vietnam.
- 2 Adolescent premarital sex and permissive attitudes towards premarital sex have been associated with peer influences, exposure to Western media and cultural norms.
- 3 Attitudes towards premarital sex are associated with sexual behaviour and can be studied in contexts where premarital sexual activity is infrequent.

## What this paper adds

- 1 Examination of trends over time in permissive attitudes towards premarital sex among Vietnamese adolescents through analysis of two national cross-sectional surveys.
- 2 Consideration of the changes in influence of peer, community and media variables over time.
- 3 Discussion of the influence of socio-economic status and urban residence on permissive attitudes towards premarital sex in light of recent economic development and urbanisation in Vietnam.

Rates of premarital sex are low in Vietnam,<sup>1,2</sup> but slowly premarital sex is becoming more common and acceptable.<sup>3</sup> Shifts in attitudes and impending changes in behaviours may be related to economic development and increasing youth exposure to media. Understanding the dynamics of these changing attitudes

and behaviours as well as identifying the most at risk demographics can inform the development of appropriate programmes and services for adolescents.

While rates of premarital sex in Vietnam are low, permissive attitudes about premarital sex are more prevalent and are a reasonable predictor of future behaviours. According to the *Theory of Planned Behavior*, attitudes towards a behaviour influence intentions to perform the behaviour, which in turn influence the behaviour itself.<sup>4</sup> For example, permissive attitudes towards premarital sex have been associated with premarital sex among adolescents in Taiwan<sup>5</sup> and a similar relationship is likely in Vietnam. Furthermore, attitudes about premarital sex reflect changing cultural norms and are important in their own right.

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A variety of factors may influence the uptake of permissive attitudes including contact with peers who have had premarital sex as well as changing ideas and values related to economic development. As is true elsewhere, studies of adolescents in Southeast Asia have shown that adolescents who believe that their peers are having premarital sex are more likely to have permissive attitudes towards premarital sex and more likely to become sexually active themselves.<sup>5,6</sup> Adolescents in Hanoi with more traditional Confucian values were found to be less likely to have ever had sex,<sup>1</sup> while those who had more access to Western media were more likely to have permissive attitudes about premarital sex.<sup>7</sup> Traditional Confucian values stress the importance of virginity, while Western media may depict more permissive sexual attitudes and behaviours.

The Survey Assessment of Vietnamese Youth (SAVY) provides national cross-sectional data on youth aged 14–25 surveyed in 2003 and 2009 on a variety of health topics including sexual and reproductive health. While both community norms and peer influences are predicted to be associated with adolescents' attitudes towards premarital sex, the more distal influence of community norms are predicted to be more important in 2003 when permissive attitudes are less widespread while the more proximal peer influences may be more important for later adopters of permissive attitudes in 2009. The aim of this study was to assess changes in the relationship of permissive attitudes towards premarital sexual activity with community and peer-level influences as well as socio-economic variables among Vietnamese adolescents in 2003 and 2009.

## Methods

SAVY 1 was conducted in 2003 with a sample size of 7584 adolescents aged 14–25. The survey involved stratified multistage cluster sampling of households in 42 provinces using a national sampling frame. SAVY 2 was conducted in 2009 using the same sampling strategy with a sample size of 10 044 adolescents from 63 provinces. The increase in provinces was partially due to changes in administrative boundaries between the two surveys. The two survey instruments were comparable and included an interview and a self-administered survey for sensitive subjects. Questions included a range of topics including demographics, dating and relationships, and reproductive health.

Attitudes towards premarital sex were assessed with a dichotomous variable constructed from five questions about the acceptability of premarital sex in different situations. Agreement with any one of the five situations resulted in classification as *permissive*; all others were *non-permissive*. Exploratory analyses were conducted with a six-category ordinal variable ranging from 'agree with none' to 'agree with all'; however, more than 40% of respondents from each survey fell into the first category (agree with none), with the remainder distributed among the other five categories. The influence of community-level norms was measured by asking how many young unmarried males (for male respondents) or females (for female respondents) in the respondent's neighbourhood have premarital sex. Peer-level influences were measured by asking whether peers discouraged premarital sex. Additional covariates included sex, age, education, ethnicity, socio-economic status (SES), Internet use, urban/rural setting and residence in a northern (Northwest,

Northeast, Red River Delta and North Central Coast) or southern (South Central Coast, Central Highlands, Southeast and Mekong River Delta) region.

Analyses were conducted using Stata/IC 12.<sup>8</sup> Weighted frequencies were compared for 2003 and 2009 with the adjusted Wald *F*-test. Bivariable and multivariable logistic regressions for 2003 and 2009 were adjusted for weighting and cluster sampling of each survey.<sup>9</sup> Each covariate was tested for interaction with survey year in a multivariable logistic model that included all covariates plus the interaction terms for survey year and the covariate of interest to assess changes over time in the relationship of each covariate with the outcome. Multicollinearity was assessed and determined to be acceptable using the variance inflation factor for each model.

Ethical approval was obtained from the Institutional Research Board of the Hanoi School of Public Health. Written informed consent was obtained from all participants. To preserve anonymity of participants, no identifying information was associated with the survey data.

## Results

The demographics of the 2003 and 2009 samples were similar (Table 1). Both samples were evenly balanced by sex and by North/South residence. Approximately three quarters resided in rural areas and about 14% belonged to an ethnic minority in both samples. The samples differed by age ( $P = 0.0005$ ) with a greater proportion of respondents falling into the 14–17-year age group in 2009 (47.9%;  $n = 4683$ ) than in 2003 (44.6%;  $n = 3228$ ). Education level also shifted ( $P < 0.0001$ ) with the proportion of adolescents with primary or lower education decreasing from 20.0% ( $n = 1405$ ) in 2003 to 8.2% ( $n = 949$ ) in 2009. The SES distribution changed as well ( $P < 0.0001$ ), and the proportion having ever used the Internet increased from 17.3% ( $n = 1808$ ) in 2003 to 60.0% ( $n = 5811$ ) in 2009 ( $P < 0.0001$ ). In 2003, 53.4% ( $n = 4120$ ) expressed permissive attitudes towards premarital sex while in 2009, this increased to 57.4% ( $n = 5797$ ) ( $P = 0.0003$ ).

Analyses of the 2003 and 2009 data reveal similarities in the unadjusted odds of permissive attitudes towards premarital sex by several demographic covariates (Table 2). In both years, the odds of expressing permissive attitudes were greater among males compared with females and increased with age. Adolescents who lived in urban areas were more likely to have permissive attitudes than rural peers in both years. Compared with adolescents with a primary education or less, those with a secondary education had similar attitudes, but those with more than secondary education had marginally more permissive attitudes in both years. Adolescents who used the Internet were more likely to have permissive attitudes. In 2009, additional characteristics associated with permissive attitudes included having high SES, living in the North and belonging to an ethnic minority.

In unadjusted analyses, perceptions of whether members of the community engage in premarital sex were associated with adolescents' attitudes towards premarital sex in both 2003 and 2009 in the expected direction. While in 2003 adolescents who reported that friends discouraged premarital sex had similar attitudes as those who did not, in 2009 this was associated with lower odds of permissive attitudes.

**Table 1** Sample characteristics of SAVY 1 and SAVY 2

	SAVY 1		SAVY 2		P-value
	%	Sample <i>n</i>	%	Sample <i>n</i>	
Sex					
Male	50.0 [48.8–51.3]	3753	50.9 [49.9–51.9]	5063	0.28
Female	50.0 [48.7–51.2]	3831	49.1 [48.1–50.1]	4981	
Age					
14–17	44.6 [42.9–46.4]	3228	47.9 [46.3–49.5]	4863	0.0005
18–21	33.3 [32.0–34.5]	2544	29.3 [28.2–30.4]	2919	
22–25	22.1 [20.8–23.5]	1812	22.9 [21.6–24.1]	2262	
SES					
Low	35.8 [32.7–38.8]	2391	32.4 [30.4–34.4]	3518	<0.0001
Moderate	40.6 [38.0–43.1]	2713	28.1 [26.7–29.5]	2795	
High	23.6 [21.5–25.8]	2480	39.6 [37.8–41.4]	3722	
Setting					
Urban	24.1 [21.9–26.3]	2662	24.6 [22.7–26.4]	2236	0.76
Rural	75.9 [73.7–78.1]	4922	75.4 [73.6–77.3]	7807	
Region					
South	47.9 [42.3–53.5]	3742	49.9 [46.0–53.9]	4857	0.56
North	52.1 [46.5–57.7]	3842	50.1 [46.1–54.0]	5187	
Ethnicity					
Kinh/Chinese	85.7 [81.9–89.5]	6395	85.3 [82.6–88.0]	8111	0.88
Others	14.3 [10.5–18.1]	1189	14.7 [12.0–17.4]	1932	
Education					
Primary or less	20.0 [17.4–22.5]	1405	8.2 [7.1–9.3]	949	<0.0001
Secondary	71.3 [69.0–73.6]	5226	76.9 [75.7–78.2]	7666	
More than secondary	8.7 [7.7–9.8]	948	14.9 [13.7–15.9]	1414	
Ever used the Internet					
Yes	17.3 [15.6–19.0]	1808	60.6 [58.5–62.8]	5811	<0.0001
No	82.7 [81.0–84.4]	5776	39.4 [37.2–41.5]	4233	
Thinks people in the neighbourhood are having premarital sex					
No one	26.8 [25.1–28.4]	1875	14.2 [13.3–15.2]	1430	<0.0001
Very few	27.0 [25.6–28.4]	1904	20.2 [19.1–21.3]	2095	
Some	17.0 [15.8–18.1]	1338	16.7 [15.8–17.6]	1719	
Many or almost all	7.3 [6.3–8.3]	624	11.4 [10.5–12.1]	1124	
Don't know/no response	21.9 [20.3–23.5]	1843	37.5 [36.0–39.2]	3676	
Friends discourage premarital sex					
No	32.0 [29.7–34.3]	2517	20.2 [18.8–21.7]	1929	<0.0001
Yes	68.0 [65.7–70.3]	5067	79.8 [78.3–81.2]	8106	
Permissive attitudes towards premarital sex					
Yes	53.4 [51.8–55.1]	4120	57.4 [56.0–58.7]	5797	0.0003
No	46.6 [44.9–48.2]	3462	42.6 [41.3–44.0]	4234	

Note: Percentages are weighted while sample size (*n*) reflects the actual number of respondents in the sample with the given characteristic. SAVY, Survey Assessment of Vietnamese Youth; SES, socio-economic status.

After adjusting for demographic, neighbourhood and peer factors, the demographic variables that were significant in 2003 included sex, age, urban/rural setting, North/South residence and Internet use (Table 3). The odds of having permissive attitudes were 2.3-fold greater among males than among females (odds ratio (OR) = 2.31; 95% confidence interval (CI): 2.05–2.61). Adolescents aged 14–17 were least likely to have permissive attitudes, followed by those aged 18–21 (OR = 1.24; 95% CI: 1.09–1.42) and aged 22–25 (OR = 1.54; 95% CI: 1.31–1.79).

Urban adolescents were more likely to have permissive attitudes than their rural peers (OR = 1.23; 95% CI: 1.05–1.44). The odds of having permissive attitudes were 19% greater among those who lived in the North compared with those who lived in the South (OR = 1.19; 95% CI: 1.03–1.37). Adolescents who had used the Internet were more likely to have permissive attitudes (OR = 1.28; 95% CI: 1.09–1.51).

After adjusting for demographic variables, perceptions of premarital sexual behaviours of community members remained

**Table 2** Unadjusted odds ratios for permissive attitudes towards premarital sex

	SAVY 1		SAVY 2	
	OR [95% CI]	P-value	OR [95% CI]	P-value
Sex				
Female	<b>ref</b>	<b>&lt;0.001</b>	<b>ref</b>	<b>&lt;0.001</b>
Male	<b>2.52 [2.24–2.85]</b>		<b>2.61 [2.37–2.86]</b>	
Age				
14–17	<b>ref</b>	<b>&lt;0.0001</b>	<b>ref</b>	<b>&lt;0.0001</b>
18–21	<b>1.30 [1.15–1.46]</b>		<b>1.66 [1.50–1.84]</b>	
22–25	<b>1.57 [1.36–1.81]</b>		<b>2.09 [1.83–2.39]</b>	
SES				
Low	ref	0.25	<b>ref</b>	<b>&lt;0.0001</b>
Moderate	1.05 [0.91–1.20]		<b>0.95 [0.85–1.07]</b>	
High	1.14 [0.97–1.33]		<b>1.25 [1.12–1.40]</b>	
Setting				
Rural	<b>ref</b>	<b>0.001</b>	<b>ref</b>	<b>&lt;0.001</b>
Urban	<b>1.24 [1.10–1.41]</b>		<b>1.40 [1.23–1.60]</b>	
Region				
South	ref	0.14		<b>0.02</b>
North	1.11 [0.97–1.26]		<b>1.15 [1.03–1.28]</b>	
Ethnicity				
Kinh/Chinese	ref	0.61	<b>ref</b>	<b>&lt;0.001</b>
Others	1.06 [0.85–1.33]		<b>1.38 [1.19–1.60]</b>	
Education				
Primary or less	<b>ref</b>	<b>0.009</b>	<b>ref</b>	<b>&lt;0.0001</b>
Secondary	<b>0.94 [0.79–1.11]</b>		<b>0.89 [0.75–1.06]</b>	
More than secondary	<b>1.22 [0.98–1.53]</b>		<b>1.34 [1.09–1.64]</b>	
Ever used the Internet				
No	<b>ref</b>	<b>&lt;0.001</b>	<b>ref</b>	<b>0.001</b>
Yes	<b>1.38 [1.22–1.56]</b>		<b>1.20 [1.08–1.34]</b>	
Thinks people in the neighbourhood are having premarital sex				
No one	<b>ref</b>	<b>&lt;0.0001</b>	<b>ref</b>	<b>&lt;0.0001</b>
Very few	<b>1.51 [1.30–1.74]</b>		<b>1.68 [1.45–1.94]</b>	
Some	<b>2.27 [1.92–2.69]</b>		<b>2.41 [2.05–2.83]</b>	
Many or almost all	<b>3.71 [2.92–4.72]</b>		<b>3.96 [3.21–4.88]</b>	
Don't know/no response	<b>0.99 [0.85–1.16]</b>		<b>0.99 [0.86–1.14]</b>	
Friends discourage premarital sex				
No	ref	0.40	<b>ref</b>	<b>&lt;0.001</b>
Yes	0.95 [0.84–1.07]		<b>0.78 [0.69–0.89]</b>	

Variables with  $P < 0.05$  are indicated in bold. CI, confidence interval; OR, odds ratio; ref, reference group; SES, socio-economic status.

significantly associated with permissive attitudes in 2003. Compared with those who thought that no one in their neighbourhood had premarital sex, those who thought that some had premarital sex had an 88% increased odds of having permissive attitudes (OR = 1.88; 95% CI: 1.58–2.24) while those who thought that many had premarital sex had 2.7-fold increased odds of having permissive attitudes (OR = 2.68; 95% CI: 2.08–3.44). Friends' attitudes about premarital sex were not associated with adolescents' own attitudes (OR = 1.00; 95% CI: 0.88–1.13).

After adjustment in the 2009 multivariable model, all of the demographic variables were significant except for education (Table 3). Males were more likely to have permissive attitudes towards premarital sex than females (OR = 2.36; 95% CI: 2.15–

2.60). Compared with the youngest adolescents, those aged 18–21 were 61% more likely to have permissive attitudes (OR = 1.61; 95% CI: 1.43–1.81), while those aged 22–25 were twice as likely to have permissive attitudes (OR = 2.01; 95% CI: 1.74–2.33). Compared with those with the lowest SES, those with moderate SES had similar attitudes (OR = 0.93; 95% CI: 0.82–1.06), while those with high SES were marginally more likely to have permissive attitudes (OR = 1.13; 95% CI: 0.99–1.29). Those in urban areas were more likely to have permissive attitudes (OR = 1.36; 95% CI: 1.18–1.55) as were residents of the North (OR = 1.12; 95% CI: 1.00–1.26) and ethnic minorities (OR = 1.52; 95% CI: 1.29–1.79). Adolescents who had ever used the Internet had greater odds of having permissive attitudes (OR = 1.18; 95% CI: 1.03–1.35).

**Table 3** Adjusted odds ratios and interaction terms for permissive attitudes towards premarital sex

	SAVY 1		SAVY 2		Interaction term	P-value
	OR [95% CI]	P-value	OR [95% CI]	P-value	Ratio of odds ratios [95% CI]	
Sex						
Female	<b>ref</b>	<b>&lt;0.001</b>	<b>ref</b>	<b>&lt;0.001</b>	ref	1.00
Male	<b>2.31 [2.05–2.61]</b>		<b>2.36 [2.15–2.60]</b>		1.00 [0.86–1.16]	
Age						
14–17	<b>ref</b>	<b>&lt;0.0001</b>	<b>ref</b>	<b>&lt;0.0001</b>	<b>ref</b>	<b>0.001</b>
18–21	<b>1.24 [1.09–1.42]</b>		<b>1.61 [1.43–1.81]</b>		<b>1.31 [1.11–1.55]</b>	
22–25	<b>1.54 [1.31–1.79]</b>		<b>2.01 [1.74–2.33]</b>		<b>1.34 [1.10–1.64]</b>	
SES						
Low	ref	0.78	<b>ref</b>	<b>0.008</b>	<b>ref</b>	<b>0.03</b>
Moderate	1.02 [0.89–1.18]		<b>0.93 [0.82–1.06]</b>		<b>0.86 [0.72–1.04]</b>	
High	0.96 [0.79–1.17]		<b>1.13 [0.99–1.29]</b>		<b>1.13 [0.92–1.37]</b>	
Setting						
Rural	<b>ref</b>	<b>0.01</b>	<b>ref</b>	<b>&lt;0.001</b>	ref	0.12
Urban	<b>1.23 [1.05–1.44]</b>		<b>1.36 [1.18–1.55]</b>		1.16 [0.96–1.41]	
Region						
South	<b>ref</b>	<b>0.02</b>	<b>ref</b>	<b>0.05</b>	ref	0.48
North	<b>1.19 [1.03–1.37]</b>		<b>1.12 [1.00–1.26]</b>		0.94 [0.79–1.12]	
Ethnicity						
Kinh/Chinese	ref	0.38	<b>ref</b>	<b>&lt;0.001</b>	<b>ref</b>	<b>0.04</b>
Others	1.10 [0.88–1.34]		<b>1.52 [1.29–1.79]</b>		<b>1.32 [1.02–1.71]</b>	
Education						
Primary or less	ref	0.30	ref	0.61	ref	0.12
Secondary	0.94 [0.79–1.12]		1.02 [0.84–1.24]		0.92 [0.72–1.19]	
More than secondary	0.81 [0.62–1.06]		0.94 [0.73–1.21]		1.18 [0.86–1.62]	
Ever used the Internet						
No	<b>ref</b>	<b>0.003</b>	<b>ref</b>	<b>0.02</b>	ref	0.85
Yes	<b>1.28 [1.09–1.51]</b>		<b>1.18 [1.03–1.35]</b>		0.98 [0.83–1.17]	
Thinks people in the neighbourhood are having premarital sex						
No one	<b>ref</b>	<b>&lt;0.0001</b>	<b>ref</b>	<b>&lt;0.0001</b>	ref	0.97
Very few	<b>1.31 [1.12–1.53]</b>		<b>1.31 [1.13–1.53]</b>		1.04 [0.84–1.29]	
Some	<b>1.88 [1.58–2.24]</b>		<b>1.74 [1.48–2.06]</b>		0.98 [0.77–1.25]	
Many or almost all	<b>2.68 [2.08–3.44]</b>		<b>2.48 [1.99–3.08]</b>		1.01 [0.73–1.40]	
Don't know/no response	<b>0.95 [0.81–1.12]</b>		<b>0.88 [0.76–1.03]</b>		0.97 [0.78–1.20]	
Friends discourage premarital sex						
No	ref	0.98	ref	0.08	ref	0.15
Yes	1.00 [0.88–1.13]		0.89 [0.79–1.01]		0.88 [0.73–1.05]	

Variables with  $P < 0.05$  are indicated in bold. CI, confidence interval; OR, odds ratio; ref, reference group; SES, socio-economic status.

Perceptions of peer premarital sexual behaviours remained significant in the 2009 multivariable model. Compared with adolescents who thought that no one in their community was having premarital sex, those who thought that some were had 74% increased odds of having permissive attitudes (OR = 1.74; 95% CI: 1.48–2.06) and the odds increased 2.5 fold for those who thought that almost all peers were sexually active (OR = 2.48; 95% CI: 1.99–3.08). After adjusting for other variables, the association with friends' attitudes towards premarital sex remained in the expected direction, but the effect became smaller and only marginally significant (OR = 0.89; 95% CI: 0.79–1.01).

From 2003 to 2009, the adjusted ORs for sex, urban/rural residence, North/South residence, level of education and Inter-

net use were unchanged (Table 3, interaction terms). Compared with the youngest age groups, the odds of having permissive attitudes towards premarital sex were significantly greater in 2009 than in 2003 for each of the older age groups ( $P = 0.001$ ). The overall effect of SES status changed from no association with permissive attitudes in 2003 to a significant contribution to the model in 2009, with an increase in the magnitude of the OR for those in the wealthiest group. The association of ethnicity with permissive attitudes also changed from no association in 2003 to an association with being an ethnic minority in 2009 ( $P = 0.003$ ).

There were no statistically significant changes in the associations between perceptions of community-level premarital sexual activity or friends' attitudes and adolescents' own

attitudes. The association with friends' attitudes went from being statistically insignificant in 2003 to being marginally significant ( $P = 0.08$ ) in 2009, suggesting a possible increasing influence of peers.

## Discussion

SAVY 1 and 2 were intentionally designed by the Ministry of Health to monitor trends in adolescent health during a period of rapid socio-economic change and are the only existing national data sets on the health of Vietnamese adolescents. Vietnam's urbanisation and economic development may have profound consequences on adolescent sexual behaviour. This analysis examined the association of variables related to these changes with adolescents' attitudes towards premarital sex. SES was not associated with permissive attitudes in 2003 but contributed significantly to permissive attitudes in 2009, and the association between urban residence and permissive attitudes remained statistically significant in 2003 and 2009. The relationship between age and permissive attitudes became more pronounced from 2003 to 2009, possibly reflecting increased employment and urban residence among older adolescents. The small association between living in the North and holding permissive attitudes was unexpected though corroborated by Ghuman and colleagues who found that while premarital sex was much less common in the North than in the South in the 1960s, by the 1990s the prevalence was equal in the two regions.<sup>3</sup> These associations coupled with economic development and urbanisation may signal an accelerating liberalisation of attitudes related to sexual behaviour.

Exposure to media can also be a factor in adolescents' attitudes. The percentage of adolescent Internet users more than tripled from 17.3% in 2003 to 60.6% in 2009 and was associated with permissive attitudes in both years, consistent with previous research indicating that many adolescents in several Asian cities learn about sex from the Internet.<sup>10</sup> Specifically, this study reported an association between learning about sex from the Internet and having permissive attitudes towards premarital sex among male adolescents in Hanoi.<sup>10</sup> While the magnitude of this association did not increase over time, as it did for SES, it remained significantly positive such that as more adolescents are exposed to new ideas including information about sex through the Internet, attitudes towards premarital sex are likely to continue liberalising.

As expected, adolescents who thought premarital sex was more common in their neighbourhood were more likely to have permissive attitudes. As was also anticipated, the ORs for permissive attitudes became somewhat closer to unity from 2003 to 2009 among those who thought that premarital sex was more common, but these changes were not significant. It was also predicted that peers' attitudes would become more important as premarital sex became more common. Peers discouraging premarital sex was not significantly associated with permissive attitudes in 2003, but became marginally significant in 2009. While the changes in neighbourhood and peer influences on adolescents' attitudes were not significant, they were in the expected direction in both cases. The lack of significant change is likely due to the short time interval separating the

two surveys that resulted in an only modest increase in the percentage of adolescents who expressed permissive attitudes.

The larger sample size in 2009 creates the possibility that observed changes were due to underlying differences in the samples rather than true national changes. To minimise this risk of error, the sampling strategy was accounted for in the statistical analyses such that statistically significant changes are likely not a function of sample size variation. The present study is also limited by possible measurement bias relating the outcome measure of permissive attitudes, which was constructed from the data available in SAVY. It is likely that the items composing the scale are not equally important in their representation of permissive attitudes and that among adolescents classified as having permissive attitudes, actual attitudes vary widely. In future studies, a more nuanced understanding of these attitudes could be gained from Likert scale measures, which would also permit more meaningful analysis of individual scale items.

The trends evidenced in the comparisons between the 2003 and 2009 surveys suggest the need for health ministry vigilance as to the need for expanded adolescent sexual health services in Vietnam. If it is true in Vietnam as it has been elsewhere that behaviour change follows changes in attitudes, it is reasonable to anticipate that over the next decade, there will be a decline in age of sexual debut. It is premature to conclude that today but the comparative data are suggestive, and these findings can serve as an early warning signal to the Vietnamese health service network to begin to implement evidence-based pregnancy and sexually transmitted infection prevention programmes for adolescents.

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