

Sexual behaviour and self-reported sexually transmitted diseases (STDs): Comparison between White and Chinese American young people

WEN-HUNG KUO^{1,2} & JANET S. ST. LAWRENCE²

¹*Touro University California, USA, and* ²*Centers for Disease Control, GA, USA*

Abstract

This study examined the sexual behaviour and self-reported incidence of STDs of White and Chinese American young people in a nationally representative US sample. 10,419 White and 340 self-identified Chinese American young people in grade 7 through 12 were selected from the National Longitudinal Study of Adolescent Health. Prevalence of sex initiation, ever having casual sex partners, number of lifetime sex partners, age of first sexual intercourse, and history of self-reported STD diagnoses were compared between these two groups. Chinese American young people reported significantly lower rates of sexual intercourse than Whites. Among sexually active young people, Chinese Americans were also less likely to report non-regular sexual partners and to report having a lower number of such sexual partners in the past year. There was no difference in self-reported STDs between the two groups. Ever having been romantically involved, older age, not living in a two-parent household, having more relaxed attitudes about sex, and reported substance use were associated with a higher likelihood of sexual intercourse in both groups. Being native-born was not associated with patterns of sexual behaviour among Chinese Americans.

Résumé

Cette étude a examiné les comportements sexuels et les IST auto-déclarées de jeunes blancs et chinois-américains, dans un échantillon représentatif de la population américaine. Ces jeunes (10.419 blancs et 340 Chinois Américains – s'identifiant comme tels) d'un niveau scolaire allant de la 5^{ème} à la Terminale, ont été sélectionnés parmi les participants à l'étude longitudinale nationale sur la santé des adolescents. La prévalence de l'initiation sexuelle, avoir eu des partenaires sexuels occasionnels, le nombre de partenaires sexuels «sur la vie», l'âge, au premier rapport sexuel et les IST auto-déclarées ont été comparés entre ces deux groupes. Les taux de déclarations de rapports sexuels par les jeunes chinois-américains ont été significativement plus faibles que chez les blancs. Parmi les jeunes sexuellement actifs, les Chinois-Américains ont également été les moins susceptibles de déclarer avoir des partenaires sexuel(le)s non régulier(e)s et ont indiqué avoir eu moins de partenaires sexuel(le)s dans l'année précédant l'étude. Concernant les IST auto-déclarées, il n'y a pas eu de différence entre les deux groupes. Avoir déjà vécu une relation romantique, être plus âgé, ne pas vivre avec ses deux parents, être plus ouvert concernant la sexualité et l'usage de drogues déclaré, sont des facteurs associés à une probabilité plus élevée de rapports sexuels dans chacun des groupes. Etre né aux USA n'a pas été associé à des modèles de comportements sexuels parmi les Chinois Américains.

Resumen

En este estudio se analizó la conducta sexual y las enfermedades de transmisión sexual (ETS) informadas por jóvenes blancos y chinos americanos en una muestra nacional representativa de los Estados Unidos. Fueron seleccionados 10.419 jóvenes blancos y 340 autoidentificados como chinos americanos en el grado 7 a 12 del Estudio Nacional Longitudinal de Salud de Adolescentes. Entre

estos dos grupos se comparó la frecuencia de iniciación sexual, las relaciones sexuales casuales, el número de compañeros sexuales, la edad para la primera relación sexual y el historial de ETS informadas por los participantes. Los jóvenes chinos americanos presentaban una tasa mucho menor de relaciones sexuales que los blancos. Entre los jóvenes sexualmente activos, los chinos americanos también informaron menos compañeros sexuales no regulares y un menor número de tales parejas sexuales durante el año anterior. No se observaron diferencias en las ETS informadas por ambos grupos. En ambos grupos, el alto riesgo de relaciones sexuales se relacionó con haber estado enamorado alguna vez, mayor edad, no cohabitar con ambos padres, tener una actitud más relajada sobre materia sexual y el consumo de drogas. El ser americano nativo no tenía ninguna relación con la conducta sexual entre los chinos americanos.

Keywords: *Chinese-Americans, adolescents, young people, sexual behaviour*

Introduction

Asian and Pacific Islander (API) Americans, including Chinese Americans, are significantly less likely to report being sexually active, to have concurrent sexual partnerships, and to acquire STDs/HIV than are White/European Americans in adolescence and young adulthood (Cochran, Mays and Leung 1991, Schuster, Bell and Kanouse 1996, Hou and Basen-Engquist 1997, Schuster, Bell, Nakajima and Kanouse 1998, Grunbaum, Lowry, Kann and Pateman 2000, Adimora, Schoenbach, Bonas, Martinson, Donaldson and Stancil 2002).

However, API Americans comprise diverse cultural and ethnic groups, including those with immigrant roots in China/Taiwan, Japan, the Philippines, Korea, Vietnam, and various Southeast Asian and South Asian countries. This diversity within the API population is likely to be associated with a differential in both sexual behaviour and prevalence of STDs/HIV. One study of high school students from Northern California found that Filipino students were more than twice as likely than Chinese Americans to be sexually active (Horan and DiClemente 1993). Even though heterogeneity is acknowledged in studies of API American sexuality, existing studies could not investigate within-API differences due to either the small number of APIs in their samples or the lack of a question clarifying subgroup distinction (Cochran *et al.* 1991, Hou and Basen-Engquist 1997). Accounting for 1% of the total US population, Chinese Americans (including Chinese from China, Taiwan, and Hong Kong) constitute the largest ethnic group of US citizens with Asian ancestry (Barnes and Bennett 2002). However, Chinese Americans are usually combined with other API Americans when cross-racial comparisons of health risk behaviours are undertaken.

Among the factors that might protect API young people from early initiation of sexual experience, sexual conservatism is mentioned most often (Okazaki 2002). Several studies have shown that relatively conservative attitudes and expected norms among API Americans are correlated with a lower prevalence of being sexually active (Cochran *et al.* 1991, Huang and Uba 1992). While attitudes toward sex in a minority group may be modified by acculturation to a mainstream culture, one study found that APIs born in the USA initiated sexual debut at a younger age than their non USA-born counterparts (Cochran *et al.* 1991). Another study found that API American young people from homes where English is the primary spoken language were more likely than other API Americans to report being non-virgins (Schuster *et al.* 1998). 'Traditional' Asian cultures and values, including elements of Chinese culture, may be protective for API young people in delaying early initiation of sexual intercourse.

Studies from general adolescent and young adult populations found that young people from low-income families and young people in single-parent families are more likely to report ever having had sexual intercourse (Young, Jensen, Olsen and Cundick 1991, Ku, Sonenstein and Pleck 1993, Blum, Beuhring, Shew, Bearinger, Sieving and Resnick 2000). Generally, poverty is considered to be a risk factor for being sexually active and family cohesiveness is a protective factor. Other studies have shown that alcohol and other drug use, emotional problems such as depression, and poor academic performance (or poor cognitive abilities) are also risk factors for reported earlier sexual intercourse (Tubman, Windle and Windle 1996, Halpern, Joyner, Udry and Suchindran 2000, Santelli, Kaiser, Hirsch, Radosh, Simkin and Middlestadt 2004). Most of these studies used a general and primarily White sample and did not examine effects of these factors specifically on API or Chinese American youth. In addition to sexual conservatism among Chinese Americans, the aforementioned risk factors (i.e. drug abuse) might be less prevalent and protective factors (better academic performances) more prevalent among Chinese Americans, thus explaining their lower rates of sexual activity.

In the present study, we were interested in the following questions: (a) Is there differential prevalence of ever having sexual intercourse between White and Chinese American young people in a national representative sample? Does the age of onset for first intercourse differ between the two groups? Is the reported number of lifetime sex partners and ever having a casual sex partner also different between the two groups? (b) If Chinese American young people are at lower risk for sexual intercourse than Whites, what are the protective factors? Are known risk factors really less prevalent and protective factors more prevalent in Chinese Americans as hypothesized? If so, should the difference attenuate after adjusting for those potential risk/protective factors? (c) Is there a difference between rates of STDs between the two groups once they become sexually active? (d) What role does acculturation play in the sexual behaviour of Chinese Americans?

Although some of the above issues have been addressed in earlier studies with small sample sizes, most studies were not nationally representative but conducted in regions populated with greater numbers of Asian Americans (Cochran *et al.* 1991, Horan and DiClemente 1993, Schuster *et al.* 1996, 1998). Using a large nationally representative sample of young people with a large subset of Chinese American population, we set out to answer the above questions.

Method

The National Longitudinal Study of Adolescent Health

Data were analysed from the National Longitudinal Study of Adolescent Health (Add Health). Add Health is a comprehensive national study of the life of young people in the USA.¹ Add Health used a school-based representative sample of adolescents enrolled in grades 7 through 12 in the school year 1994–1995 in 132 public, private, and parochial schools from 80 communities in the USA. The analysis presented here is based on home interviews of 20,745 respondents in 1995 (Wave 1). Ethnically Chinese young people were over sampled in Add Health.

In-home interviews were conducted by professional interviewers, using laptop computers. Portions of the interviews, including information on sexual behaviour, sexually transmitted diseases, and other sensitive items were conducted via audio computer-aided self-interview methods, which have been demonstrated to improve the validity of

self-reported sensitive data by young people (Turner, Ku, Rogers, Lindberg, Pleck and Sonenstein 1998, Supple, Aquilina and Wright 1999).

Analytical sample

Out of 20,747 young people who completed an in-home interview at Wave 1, 12,747 self-identified as White; among them, 10,419 were neither Hispanic nor mixed race. These 10,419 were selected as White young people in our analysis. Four hundred and six young people self-identified as Chinese; among them, 66 were mixed race and they were excluded. The remaining 340 Chinese American young people were included in our analysis.

Measures of dependent variables

Sexual behaviour was assessed using the question 'Have you ever had sexual intercourse?' Sexual intercourse is defined here as heterosexual penile-vaginal intercourse. If the respondent answered yes, age of first sexual intercourse was probed. Casual sex partners and the number of lifetime sex partners were also assessed. Diagnoses of sexually transmitted diseases were measured through responses to the question 'Have you ever been told by a doctor or a nurse that you had the following diseases?' Chlamydia, syphilis, gonorrhoea, HIV/AIDS, genital herpes, genital warts, and trichomoniasis were among the STDs probed. For girls, diagnoses of bacterial vaginosis and non-gonococcal vaginitis were also included. Respondents who answered yes to any of the above STDs were classified as having STDs.

Measures of independent variables

Acculturation was measured using two proxy variables: born in the USA and English spoken at home. Because a very large percentage of Chinese Americans were not US-born, many of the following variables are further categorized based on Chinese Americans' birth origins. Family structure and cohesiveness was classified as living with both biological parents versus all other arrangements and the variable 'average days having dinner with parents per week'. Socioeconomic status was measured by highest education completed by either of the respondents' parents. Information on parental income is not included in the Add Health data from the adolescent in-home interview sample. Smoking was measured by a 'yes' response to the question 'Have you ever smoked cigarettes regularly, that is, at least one cigarettes everyday for 30 days?' Unsupervised alcohol-use was measured as answering 'yes' to the question, 'Do you ever drink beer, wine, or liquor when you are not with your parents or other adults in your family?' Depression was measured by 19 questions adapted from the Center for Epidemiologic Studies Depression Scale (CES-D).

Cognitive intelligence was measured with a truncated version of the Peabody Picture Vocabulary Test specifically for Add Health (AHPVT). Romantic involvement was measured by the question 'Have you had a special romantic relationship with any one?' Parental control was measured by seven summed items inquiring if the young people made their own decision on curfew, friends, and diet. Total scores ranged from 0 to 7, with higher scores reflecting greater parental control. Attitude and perception about sex was measured by six questions inquiring if the respondents thought that sex can get friends' respect, dating partners' respect, upset their mothers, make them feel guilty, give physical pleasure, and provide relaxation. We did not pool the six questions into a scale. Each item was rated on 5-point Likert scale, with the higher score indicating stronger agreement with the

statement. Sex perception questions were only asked for respondents 15 years old and older.

Analytic methodology

To address our three sets of questions, the analysis plan proceeded in several phases. In the first phase, population characteristics are tabulated for both White and Chinese Americans. We analysed population characteristics to determine if there are different distributions of those variables between the two groups. For discrete variables, we use χ^2 analyses; for continuous variables, we use two-sample *t*-tests. We also examined the difference in the independent variables between native-born and foreign-born Chinese Americans.

In the second phase of the analysis, we analysed several indicators of sexual behaviour in both populations and calculated their odds ratios to compare the two populations. We also estimate lifetime prevalence of self-reported STDs among those who reported ever having sexual intercourse in both groups. In addition to comparing the difference between White and Chinese Americans, we also compared sexual behaviour and STDs between native-born and foreign-born Chinese Americans.

In the third phase of the analysis, we ran two separate logistic regression models (Hosmer and Lemeshow 1989) for White and Chinese Americans. Using stepwise forward entry selection of independent variables ($p < .15$ for entry and $p > .10$ for removal), we examined which factors are significantly associated with sexual intercourse and if there were differences in risk factors between two groups. Finally, we included all the subjects in one single group for multiple logistic regression and included race/ethnicity in this model to examine if the difference in sexual behaviour is minimized after all other factors are adjusted. We also included the interaction terms of the variables that display differential effects on White and Chinese Americans to test if there were significant modifying effects of race/ethnicity on these variables. Due to the extremely unbalanced sample size between White and Chinese Americans, we use $p < .001$ as significance for White and $p < .05$ for Chinese Americans. We also ran a multiple logistic regression model among sexually active young people to examine risk factors for STDs. Race/ethnicity is included in this model. SPSS 12.0 for Windows was used for the analyses.

Results

Characteristics of the study sample

Characteristics of the young people are shown in table 1 (discrete variables) and table 2 (continuous variables). Chinese American young people were more likely than Whites to be born outside the US (RR=28.6, $p < .001$), not speak English at home (RR=63.6, $p < .001$), currently attend school (RR=1.02, $p < .05$), live in a two-parent household (RR=1.17, $p < .001$), feel guilty about sex ($p < .001$), and believe that having sex would upset their mothers ($p < .001$). Compared to Chinese Americans, White young people were more likely to report ever being romantically involved (RR=1.84, $p < .001$), smoking cigarettes regularly (RR=3.14, $p < .001$), and drinking alcohol without parental supervision (RR=1.85, $p < .001$). White young people were also more likely to perceive sex as physical pleasure ($p < .01$), relaxing ($p < .05$), and as a way to gain friends' respect ($p < .001$). Patterns of parental education were more complex among Chinese American young people, with higher proportion at both extremes (not finishing high school represented 17.7% and

Table 1. Characteristics of the study sample: Comparison of European and Chinese Americans ($N=10,766$).

Variables	N (%) Overall population		<i>p</i>	N (%) Chinese Americans		<i>p</i>
	Chinese Americans	White		Native born	Non-native	
Sex	340 (3.2)	10,419 (96.8)		204 (60)	136 (40)	
Male	186 (54.7)	5167 (49.6)	.06	121 (59)	65 (48.2)	.045*
Female	154 (45.3)	5252 (50.4)		83 (41)	71 (51.8)	
Age						
13 years and under	39 (11.5)	1550 (14.8)	.43	27 (13.2)	12 (9)	<.001*
14	49 (14.4)	1491 (14.3)		34 (16.7)	15 (11)	
15	70 (20.6)	1905 (18.3)		51 (25.0)	19 (14)	
16	71 (20.9)	1962 (18.8)		41 (20)	30 (22)	
17	61 (17.9)	1917 (18.4)		29 (14)	32 (23.5)	
18 years and older	50 (14.8)	1592 (15.2)		22 (11)	28 (20.6)	
Born in the USA						
Yes	204 (60.0)	10274 (98.6)	<.001*	-	-	-
No	136 (40.0)	145 (1.4)		-	-	
Language spoken at home						
English	167 (49.1)	10338 (99.2)	<.001*	136 (66.7)	31 (22.8)	<.001*
Not English	173 (50.9)	81 (0.8)		68 (33.3)	105 (77.2)	
Currently in school						
Yes	339 (99.7)	10228 (98.2)	.04*	204 (100)	135 (99.3)	.40
Family structure						
Both parents in the home	287 (84.4)	7528 (72.3)	<.001*	171 (83.8)	116 (85.3)	.76
Both parents not in the home	53 (15.6)	2891 (27.7)		33 (16.2)	20 (14.7)	
Highest residential parental education						
Less than high school	57 (17.7)	880 (8.7)	<.001*	18 (9.2)	39 (30.7)	<.001*
High school or equivalent	70 (21.7)	3146 (31.1)		43 (22.1)	27 (21.3)	
Some schooling after high school but not college graduate	31 (9.6)	2252 (22.2)		23 (11.8)	8 (6.3)	
College graduate	82 (25.5)	2469 (24.4)		53 (27.2)	29 (22.8)	
Professional training beyond college	82 (25.5)	1383 (13.7)		58 (29.7)	24 (18.9)	
Ever romantically involved						
Yes	108 (31.8)	6054 (58.4)	<.001*	63 (31)	45 (33)	.71
No	232 (68.2)	4318 (41.6)		141 (69)	91 (67)	
Regular cigarette smokers	29 (8.6)	2813 (27.0)	<.001*	21 (10.3)	8 (6)	.17
Unsupervised alcohol use	85 (25)	4824 (46.3)	<.001*	49 (24)	36 (26.5)	.74

* Statistically significant: $p < .05$.

professional training beyond college represented 25.5% of their parental education), while patterns of parental education were more clustered in the middle categories among White young people (table 1).

There was no difference in cognitive intelligence, measured by ADPVT, between White and Chinese American young people ($p = .36$). However, because many Chinese Americans might not be native English speakers, lack of fluency in English may have biased their

Table 2. Behavioural risk: Comparison between Chinese American and White young people; native and non-native born Chinese Americans.

	Mean [SD] Overall population		<i>p</i>	Mean [SD] Chinese American		<i>p</i>
	Chinese Americans	White Americans		Native born Chinese Americans	Non-native born Chinese Americans	
Raw AHPVT score	67.2 [13.4]	67.9 [9.2]	.36	71.2 [11.0]	60.6 [14.2]	<.001*
Speaking English at home	70.0 [11.6]	67.9 [9.1]	.03*	71.3 [10.9]	64.6 [13.1]	<.01*
Depression levels (measured by CES-D)	11.2 [6.7]	10.8 [7.4]	.08	10.8 [7.0]	11.8 [6.1]	.16
Parental control[#]	5.2 [1.6]	5.3 [1.5]	.16	5.1 [1.6]	5.2 [1.6]	.65
Average days having dinner with parents per week	5.2 [1.6]	5.3 [1.5]	.19	5.1 [2.5]	5.1 [2.5]	.91
Perceptions about sex[§]						
Having sex would gain friends' respect	2.07 [1.0]	2.33 [1.0]	<.001*	2.1 [1.0]	2.0 [1.0]	.47
Will lose partner's respect if having sex	2.62 [1.1]	2.54 [1.0]	.27	2.6 [1.1]	2.6 [1.1]	.96
Would feel guilty if having sex	3.48 [1.3]	3.05 [1.2]	<.001*	3.4 [1.3]	3.6 [1.2]	.37
Having sex would upset mother	4.40 [1.3]	3.97 [1.2]	<.001*	4.4 [0.9]	4.4 [0.8]	.95
Having sex would give physical pleasure	3.25 [1.0]	3.42 [1.0]	<.01*	3.4 [1.0]	3.0 [1.0]	<.01*
Having sex would be relaxing	2.94 [0.9]	3.10 [0.9]	<.05*	3.1 [0.9]	2.7 [0.9]	<.01*

* Statistically significant: $p < .05$. # The higher the score, the higher parental control: score ranges from 0 to 7.

§ Only inquired for respondents who were 15 and older; higher score means stronger agreement with the statement.

cognitive performance. We reexamined ADPVT scores only among native English speakers and found that Chinese American young people scored slightly higher than Whites when language was controlled between the two groups ($p < .05$, table 2).

Comparisons were also made between native-born and foreign-born Chinese Americans. We found that US born Chinese were more likely to be younger ($p < .001$), male (RR=1.22, $p < .05$), and speak English at home (RR=2.93, $p < .001$). US born Chinese young people also appeared to have higher AHPVT scores (71.2 vs. 60.6, $t=7.37$, $p < .001$) but it is likely to be associated with non-fluency in English among non-native born Chinese Americans rather than a reflection of their intelligence. Parental education tended to be lower among foreign-born Chinese Americans ($p < .001$).

Sexual behaviour

Compared to White young people, Chinese Americans were less likely to report having had sexual intercourse. Only 13.3% of Chinese Americans had had sexual intercourse,

compared to 36.1% of White young people (OR=0.27, 95% CI=0.20–0.37). The racial differences were significant among both boys (OR=0.24, 95% CI=0.15–0.37) and girls (OR=0.32, 95% CI=0.21–0.49, see table 3). Chinese American boys had the lowest reported rate of sexual intercourse in all four groups (11.4%).

Although Chinese girls seemed more like to be sexually active than Chinese boys (OR=1.43), the difference did not reach statistical significance, possibly due to the lower number ($p=.27$, data not shown). There was no significant difference between White girls and boys in sexual intercourse experience. Among sexually active young people, Chinese Americans were also less likely to report casual or non-regular sex partners than Whites (OR=0.49, $p=.014$). However, this racial difference appeared only for boys but not for girls. White young people had significantly higher numbers of lifetime sex partners than Chinese Americans (average 5.41 for whites vs. 3.84 for Chinese Americans; $t=3.4$, $p<.01$).

Comparing only sexually experienced young people, there was no difference in the age of first sexual intercourse between the two groups: the average age of first sex was 15.1 years for White and 15.3 for Chinese American ($t=-0.197$, $p=.85$). Comparing sexual behaviours between native born and non-native born Chinese Americans (table 4) revealed no significant difference between two groups in reported experience of sexual intercourse (13.3% vs. 13.3%, $p=.99$) or having any casual sex partners (42.9% vs. 38.9%, $p=.79$). Although sexually active native-born Chinese Americans reported more lifetime sex

Table 3. Behavioural risk: Comparison between Chinese American and White young people.

Variables	N (%)		<i>p</i>	OR (95% CI)
	Chinese Americans	White		
Ever had sexual experience?				
Overall	45 (13.3)	3729 (36.1)	<.001*	0.27 (0.20, 0.37)
Boys	21 (11.4)	1815 (35.4)	<.001*	0.24 (0.15, 0.37)
Girls	24 (15.6)	1914 (36.8)	<.001*	0.32 (0.21, 0.49)
Ever had casual sex partners (among sexually active young people)				
Overall	19 (41.3)	2427 (59.1)	<.01*	0.49 (0.27, 0.88)
Boys	7 (31.8)	1291 (62.0)	<.004*	0.29 (0.12, 0.70)
Girls	12 (50.0)	1136 (56.2)	<.546	0.78 (0.35, 1.75)
Number of sex partners: N [SD]				
Overall	3.84 [2.06]	5.41 [9.43]	<.01*	-
Boys	3.71 [2.56]	5.93 [11.83]	.065	-
Girls	3.92 [1.83]	4.82 [5.48]	.13	-
Ever had sexually transmitted diseases?				
All STD	2 (4.5)	197 (5.3)	.82	n.s.
Chlamydia	1 (2.1)	94 (2.5)	.90	n.s.
Syphilis	0 (0)	10 (0.3)	.73	n.s.
Gonorrhoea	0 (0)	16 (0.4)	.66	n.s.
HIV/AIDS	1 (2.3)	10 (0.3)	.019*	8.11 (1.02, 64.7)
Genital herpes	2 (4.4)	19 (0.5)	.001*	9.1 (2.05, 40.1)
Genital warts	0 (0)	36 (1.0)	.51	n.s.
Trichomoniasis	0 (0)	8 (0.2)	.76	n.s.
Bacterial vaginosis (women only)	0 (0)	47 (2.5)	.44	n.s.
Non-gonococcal vaginitis (women only)	0 (0)	4 (0.2)	.83	n.s.

* Statistically significant: $p<.05$.

Table 4. Behavioural risk: Comparison between native-born and foreign-born Chinese American young people.

Variables	Native born	Non-native born	<i>p</i>	OR (95% CI)
Ever had sexual experience?				
Overall	27 (13.3)	18 (13.3)	.99	n.s.
Boys	11 (9.2)	10 (15.6)	.19	n.s.
Girls	16 (19.3)	8 (11.3)	.17	n.s.
Ever had casual sexual partners?				
Overall	12 (42.9)	7 (38.9)	.79	n.s.
Boys	5 (41.7)	2 (20.0)	.28	n.s.
Girls	7 (43.8)	5 (62.5)	.39	n.s.
Number of sexual partners: <i>N</i> [SD]				
Overall	4.33 [2.06]	3.00 [1.91]	.18	-
Boys	4.40 [2.70]	2.00 [1.41]	.20	-
Girls	4.29 [1.70]	3.40 [2.07]	.46	-
Ever had sexually transmitted diseases?				
All STD	2 (7.4)	0 (0)	.25	n.s.

* Statistically significant: $p < .05$.

partners (4.3 vs. 3.0), possibly due to small sample size, there was no significant difference ($p = .18$).

Sexually transmitted diseases

Generally, self-reported STD diagnoses were uncommon in both White and Chinese Americans. Among 3,774 young people (3,729 white and 45 Chinese Americans) who were sexually active, 199 (5.3%) reported that they had been diagnosed with any STD (table 3). Girls had significantly higher rate of reported STDs than boys (OR=3.8, 95% CI=2.7–5.3, data not shown). There was no difference between sexually active Chinese Americans and White young people in lifetime prevalence of STDs ($p = .82$).

Correlates of sexual behaviour

In multiple logistic regression models, older age, ever romantically involved, cigarette smoking, unsupervised drinking, and some attitudes about sex were associated with high likelihood of sexual intercourse, and living with both parents at home was associated with lower likelihood in both groups (table 5). Some factors, such as higher depression, speak English at home instead of another language, currently in school, AHPVT score, perceived parental control, and days spent with parents for dinner were associated with lower rates of sexual intercourse among White young people, but not in Chinese Americans. The association between parental education and sexual behaviour was different between two racial groups: for white young people, the more educated their parents were, the less likely they had had sexual intercourse. However, for Chinese Americans, those whose parents obtained least education were less likely to report sexual intercourse compared to those whose parents had middle levels of education. Furthermore, the association between parental education and young people's sexual behaviour in Chinese Americans was not linear. Chinese Americans whose parents were most educated were as likely to report sexual

Table 5. Risk and protective factors for sexual intercourse. Comparison between White and Chinese Americans (results from multiple logistic regression models).

Variables	Adjusted odds ratio (95%)	
	Chinese Americans	White
Gender	n.s.	n.s.
Age (per year of increase)	1.82* (1.39, 2.39)	1.66* (1.60, 1.73)
Parental education		
Less than high school (baseline)	-	-
High school or equivalent	4.36* (1.06, 17.9)	n.s.
Some college or vocational school	7.39* (1.70, 32.2)	0.67* (0.54, 0.83)
College graduate	n.s.	0.45* (0.36, 0.56)
Professional degree beyond college	n.s.	0.35* (0.27, 0.45)
Born in the USA	n.s.	n.s.
English spoken at home	n.s.	2.45* (1.25, 4.78)
Currently in school	n.s.	0.49* (0.31, 0.76)
Living with both parents in the home	0.34* (0.14, 0.86)	0.81* (0.71, 0.92)
Average days spent having dinner with parents (per day increase)	n.s.	0.94* (0.92, 0.96)
Parental control scale (per point increase)	n.s.	1.09* (1.05, 1.14)
Ever romantically involved	6.02* (2.58, 14.1)	4.75* (4.19, 5.39)
Regular cigarette smokers	4.69* (1.43, 15.3)	3.12* (2.77, 3.52)
Unsupervised alcohol use	2.21 [^] (0.89, 5.52)	2.25* (2.01, 2.52)
Depression levels (per point increase on CES-D)	n.s.	1.02* (1.01, 1.02)
AHPVT score (per point increase)	n.s.	0.98* (0.97, 0.98)
Attitudes and perceptions about sex (only for adolescents 15 years and older)		
Having sex would gain friends' respect	n.s.	1.17* (1.09, 1.26)
Will lose partner's respect if having sex	n.s.	n.s.
Would feel guilty if having sex	0.57* (0.39, 0.81)	0.66* (0.61, 0.70)
Having sex would upset mother	n.s.	0.90* (0.84, 0.96)
Having sex would give physical pleasure	n.s.	n.s.
Having sex would be relaxing	n.s.	1.35* (1.23, 1.49)

* Statistically significant: $p < .05$ for Chinese American young people; $p < .001$ for White young people. [^] Marginal significance: $.05 < p < .10$.

intercourse as those whose parents were least educated (table 5). Separate logistic regression models were not computed for native-born and foreign-born Chinese Americans due to their small sample size.

We also fitted a single logistic regression model that included both White and Chinese American young people. In that model, even after adjusting all the potential factors for sexual intercourse, being Chinese American was still an independent protective factor (adjusted OR=0.63, 95% CI=0.41–0.97), although its significance has been weakened (from crude OR=0.27). Several of the following variables were statistically significant for their interaction with race/ethnicity on influencing reported sexual intercourse: parental

education, depressive levels, AHPVT score, currently in schools, and speak English at home (all $p < .01$, data not shown). Except for parental education, all of the above factors were associated with sexual intercourse in White young people but not in Chinese Americans.

Risk factors for sexually transmitted diseases

In multivariate models, having higher number of sex partners (OR=1.04 with increase of each sex partner, 95% CI=1.02–1.05), higher depressive levels (OR=1.04 with each point increase on CES-D, 95% CI=1.02–1.06), older age, female sex (OR=5.7, 95% CI=3.4–9.5), and regular use of cigarettes (OR=1.97, 95% CI=1.28–3.04) were significantly associated with STD diagnoses among sexually active young people. Racial difference was not associated with risk of STDs in the multivariate model (data not shown). Due to the extremely low number of Chinese American young people diagnosed with an STD, we did not run separate logistic regression models for both groups to examine risk factors of STDs.

Discussion

Using Wave 1 of the Add Health Study, our study compared factors predictive of reported sexual intercourse for White and Chinese American young people. Similar to earlier studies (Cochran *et al.* 1991, Horan and DiClemente 1993, Schuster *et al.* 1996, Hou and Basen-Engquist 1997, Schuster *et al.* 1998, Grunbaum *et al.* 2000, Adimora *et al.* 2002, Okazaki 2002), we found Chinese Americans were less likely to report having initiated sexual intercourse in adolescence and had a lower reported number of sex partners compared to Whites. Chinese Americans were also less likely to have had casual sex partners. For young people who were already sexually active, there was no difference in the age of first intercourse between White and Chinese Americans, a finding that is consistent with another study that used data from the Youth Risk Behavior Survey (YRBS) (Hou and Basen-Engquist 1997).

Several 'protective' factors for both White and Chinese Americans were more prevalent in Chinese Americans, including living in a household with both parents and more conservative attitude/perception about sex. Some risk factors, such as cigarette smoking, unsupervised use of alcohol, and no history of dating (romantically involved), were significantly less prevalent among Chinese American young people. Together, the differential distributions of these risk and protective factors may partly explain why Chinese American young people were less likely to report early initiation of sexual intercourse than Whites.

Some factors were associated with sexual intercourse for Whites but not for Chinese Americans. One possible explanation may be the much lower number of Chinese Americans in the analysis. As a result, some factors may have failed to reach statistical significance due to limited statistical power. Alternatively, it is possible that some independent variables did not measure the same characteristics in Whites and Chinese Americans. In addition, some Chinese Americans did not speak English fluently and AHPVT may not be a not a good measure of their cognitive intelligence. Furthermore, one study found that ethnically Chinese tend to deny their depressive symptoms and express them somatically (Parker, Gladstone and Chee 2001), thus scales like CES-D may not be measure depression in Chinese Americans as well as in Whites. Both AHPVT and CES-D scores were significantly associated with sexual intercourse in White but not in Chinese Americans.

As a proxy for socioeconomic status (SES), our study found that parental education was negatively associated with sexual initiation in Whites. Chinese Americans from families with less parental education may have held more traditional values, felt more conservative sexually, and been less likely to initiate sexual behaviour. Also, immigrant parents with high education in their home countries might have to work in low paying jobs after emigrating to the USA. Thus parental education in Chinese Americans may not really be a good measure of SES. Another possibility is that young Chinese Americans at lower SES may have to help their family members and have less time available for dating and having sex.

We assumed that acculturation to mainstream culture would make it more likely that Chinese Americans would report having initiated sexual intercourse, but found no significant difference in sexual behaviours between native-born and foreign-born Chinese Americans (table 4). This might have resulted from our small sample size of sexually active participants ($n=27$ for native born and $n=18$ for foreign born). We are also concerned that place of birth might not be a good proxy for acculturation, since a second-generation immigrant can be born in the USA and still be firmly attached to his parents' culture. The same can be said about 'speak English at home' as a measure for acculturation. In future studies, we think utilizing an acculturation scale like Asian American Multidimensional Acculturation Scale (AAMAS) (Chung, Kim and Abreu 2004) may better examine association between acculturation and sexual behaviour in Chinese and other API Americans.

One earlier study by Huang and Uba (1992) of Northern Californian college students found that Chinese men were less experienced in sexual behaviours than Chinese women and this pattern was different from both White Americans and Chinese in Asia. Our study too found that, compared to White boys, White girls, and Chinese American girls, Chinese American boys were least likely to report being sexually active. Even among those who had sexual intercourse, Chinese American boys were least likely to have casual sex partners and had fewer lifetime partners than the other three groups (table 3).

Due to our small sample of Chinese Americans with a history of sexually transmitted diseases ($n=2$), we were not able to examine the potential risk factors for STDs in this population. However, in a multiple logistic regression model that includes race/ethnicity as an independent variable, we did not find that there was any difference in reporting STDs between White and Chinese American young people. It suggests that, once sexually active, Chinese Americans were no more at lower risk to acquire STDs than Whites.

Several limitations to our study should be noted. First, our study focused only on penile-vaginal intercourse but not other sexual behaviours, such as oral or anal sex. Second, only heterosexual behaviour was analysed, but not homosexual behaviour because the Add Health questionnaire made it more difficult to identify homosexual behaviours. One multi-site study of young men who have sex with men (MSM) found HIV infection rates were lowest in API Americans (Valleroy *et al.* 2000). Comparison of homosexual behaviours between APIs and other racial groups deserves more study in the future. Third, since only Chinese Americans were included in the comparison with majority Whites, the results might not generalize to other API groups such as Filipino Americans. Because the Add Health Study also includes other Asian Americans, it would be interesting to examine if there are differences in sexual behaviour between groups of Asian Americans. Finally, parental expectations and effects of racial stereotyping were not measured in this study and may be implicated in the outcomes of primary interest.

Despite these limitations, this study to our knowledge is, with more than 300 Chinese American, the largest such sample in the USA. The sampling strategies of Add Health make this a nationally representative sample. While our study confirms findings from earlier studies that Asian American are less likely to be sexually active, less likely to have casual sexual partners, and have fewer lifetime partners, we found no difference in the age of first sexual intercourse.

Conclusions

Examining sexual behaviours within different ethnic groups is needed for normative comparisons and for education programme development. Without examining group differences, views of sexuality in the USA may be oversimplified. However, most studies examining racial/ethnic differences in sexuality are limited to comparisons between White and African Americans (Huang and Uba 1992). In summary, our study examines the differential patterns and predictors of sexual behaviours and STDs among White and Chinese American young people. Some general protective factors for early sexual initiation that are more prevalent in Chinese Americans, such as lower rates of smoking and unsupervised drinking, may perhaps usefully be stressed and promoted in all racial groups. For young people already sexually active or romantically involved, frank discussion and communication about safe sex and protection is important, both for White and Chinese Americans.

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Note

1. Details of the overall study design can be found in the Add Health website: www.cpc.unc.edu/addhealth, and elsewhere (Resnick *et al.* 1997).

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