PREVENTION

Who uses condoms with whom? Evidence from national probability sample surveys

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Objectives: To explore the changing pattern of condom use from 1990 to 2000; to identify sociodemographic and behavioural factors associated with condom use; and reasons for condom use in 2000.

Methods: Large probability sample surveys administered among those resident in Britain aged 16–44 (n = 13 765 in 1990, n = 11 161 in 2000). Face to face interviews with self completion components collected sociodemographic, behavioural, and attitudinal data.

Results: Condom use in the past year among sexually active 16–24 year old men increased from 61.0% in 1990 to 82.1% in 2000 ($p<0.0001$), and from 42.0% to 63.2% ($p<0.0001$) among women of the same age, with smaller increases among older age groups. Among individuals reporting at least two partners in the previous 4 week period, approximately two thirds reported inconsistent or no condom use (63.1% (95% CI 55.9% to 69.8%) of the men and 68.5% (95% CI 57.6% to 77.7%) of the women).

Conclusions: Rates of condom use increased substantially between 1990 and 2000, particularly among young people. However, inconsistent condom use by individuals with high rates of partner acquisition may contribute significantly to the recent resurgence in STIs. This group is an important target for intensive and specific sexual health interventions.

Condom use is a mainstay of sexually transmitted infections (STI) and HIV risk reduction.[1 2] However in order to be effective, condoms need to be used consistently and correctly, particularly in situations where the risk of STI or HIV transmission is high. In the United Kingdom, the prevalence of chlamydia is highest among young women and men, while diagnosis rates for gonorrhoea are highest in 16–24 year old women and 20–29 year old men, with the highest rates in black Caribbean and African minority ethnic groups.[3–5] HIV prevalence is highest among men who have sex with men (MSM) and black Africans.[5]

Here we report trends in condom use over time, and identify sociodemographic and behavioural factors associated with reporting condom use, using data from two probability surveys of the British general population, the 1990 and 2000 National Surveys of Sexual Attitudes and Lifestyles (Natsal). The Natsal 2000 survey was undertaken at a time of a growing STI epidemic in the United Kingdom, while the 1990 survey had taken place as the United Kingdom recorded the lowest rates of bacterial STIs since the second world war.[6] An increase in gonorrhoea diagnoses was observed in all age groups and both sexes from the mid 1990s until 2004. In 2002, a third of newly diagnosed HIV infections were considered to have been acquired in the United Kingdom, with 80% of these 1850 cases occurring in MSM.[7] During the period 1996–8, the proportion of MSM engaging in unprotected anal intercourse increased,[8] as gonorrhoea diagnoses increased in this group. Our analysis therefore focuses on patterns of condom use in the more recent 2000 survey.

METHODS

The Natsal surveys are stratified probability sample surveys of the general population resident in Britain. Details of the methodology and question wording are published elsewhere.[9–11] Briefly, Natsal 1990 interviewed 18 876 people aged 16–59 years, of whom 13 765 were aged 16–44. Natsal 2000 interviewed 11 161 people aged 16–44. Natsal 1990 and Natsal 2000 achieved similar response rates, 63.3% and 65.4% respectively.

Respondents were interviewed in their homes with a questionnaire consisting of a face to face interview carried out by trained interviewers, and a self completion module containing more sensitive questions, using pen and paper interviewing (PAPI) in 1990 and computer assisted self interviewing (CASI) in 2000. To facilitate comparisons between surveys, questions in Natsal 2000 were identical to those in Natsal 1990.[9 11] Furthermore, the question on any use of condoms in the year before interview, which is this paper's focus for measuring change over time, was asked in the face to face interview for both Natsal surveys. In Natsal 2000, there were additional questions on condom use including, of relevance to this paper, a question asking about condom use on the last occasion of intercourse, and a question asking about the main reason for using condoms in the past year.

In both surveys, respondents who indicated in the screening questions no sexual experience of any kind, and 16 year olds and 17 year olds, with some heterosexual experience but no reported heterosexual intercourse or homosexual experience, were not given the self completion module, and are therefore by default excluded from this analysis.

All analyses were performed using the survey functions of Stata 7.0 to account for stratification, clustering, and weighting of the samples.[12] The data in each survey were weighted to correct for unequal selection probabilities and to match the corresponding age/gender population profile.[9 13] Natsal 1990 data were weighted for differential selection probabilities and then post-stratified to the 1991 census estimates, thereby differing slightly from the method reported in previous publications.[10]

Abbreviations: CASI, computer assisted self interviewing; MSM, men who have sex with men; Natsal, National Surveys of Sexual Attitudes and Lifestyles; PAPI, pen and paper interviewing; STI, sexually transmitted infections

We used logistic regression to obtain odds ratios (OR) adjusted for age to compare estimates from Natsal 1990 and Natsal 2000 to control for variation between the two surveys in respect of this variable.[9] Statistical significance was considered as $p<0.05$ for all analyses.

RESULTS

There was a significant increase in the proportion of men and women aged 16–44 who reported any condom use in the year before interview between 1990 and 2000, from 43.3% to 51.4% in men ($p<0.0001$), and from 30.6% to 39.1% in women ($p<0.0001$, table 1). This change occurred in both sexes and all age groups, but was most striking in individuals aged 16–24, with rates increasing from 61.0% to 82.1% in males ($p<0.0001$), and 42.0% to 63.2% in females ($p<0.0001$). These data relate to men reporting any female and/or male partner(s) in the past year, and to women reporting male partner(s) in this time frame. However, this trend also applied when focusing on men reporting male partner(s) in the past year, with the proportion reporting any condom use in the past year increasing from 66.7% (95% CI 49.4% to 80.4%) in 1990 to 73.6% (95% CI 60.6% to 83.4%) in 2000, although not statistically significant (age adjusted OR 1.76, 95% CI 0.70 to 4.47, $p = 0.229$).

Exploration of the individual and social factors associated with condom use at last sex, as reported in the most recent survey Natsal 2000, shows a range of factors to be associated (tables 2 and 3). Among sociodemographic characteristics, individuals of younger age, non-white ethnicity, non-Christian religion, or single status had a higher prevalence of reporting condom use at last sex. Reporting higher partner numbers in the past year was associated with more condom use at last sex. Turning to partnership characteristics, formation was associated with higher rates of condom use at last sex, with 54.8% of men reporting condom use on this occasion by contrast with only 19.4% of men in partnerships of at least 5 years' duration, while the corresponding percentages for women are 46.3% and 15.7%. Rates of condom use at last sex appear to fall markedly and quickly reach a plateau from 6 months after relationship formation. Condom use at last sex was also more commonly reported by those describing their most recent partner as 'not regular'. While men and women who reported previous diagnosis with STIs were less likely to have used a condom at last sex, there was no association between condom use at last sex and attendance at a clinic for STIs in the past five years, in either gender.

Among Natsal 2000 respondents reporting partner(s) of the opposite gender in the past year, the primary reason for using condoms in this time frame was the prevention of pregnancy, reported by 69.6% of men and 72.8% of women (table 4). However, among 16–24 year olds, the prevention of STI and HIV was of equal or greater concern for 46.0% of men and 41.5% of women, in contrast with 14.7% of men and 16.4% of women aged 35–44 years at interview. After controlling for partnership duration this significant association with age group was no longer evident for either gender.

Consistency in condom use, across and within partnerships, is also important in protecting against STI and HIV. We therefore explored consistency of condom use in the past 4 weeks in relation to the reported number of partners in this time frame. Consistent condom use in the past 4 weeks was generally associated with a higher number of partners in this period (table 5). However, among individuals reporting at least two partners and sex in the previous 4 week period, approximately two thirds reported inconsistent or no condom use (63.1% (95% CI 55.9% to 69.8%) of the men and 68.5% (95% CI 57.6% to 77.7%) of the women). Importantly, only a minority of those women and men with multiple partners in the past 4 weeks reported condom use on all occasions.

Table 1 Changes in the prevalence of reported condom use in the past year*, 1990–2000, by gender and age group

	Natsal 1990	Natsal 2000	Crude odds ratio (95% CI) for change 1990–2000	Age adjusted odds ratio (95% CI) for change 1990–2000
	% (95% CI)	% (95% CI)		
Men†				
			p<0.0001	p<0.0001
% of all men 16–44 (95% CI)	43.3 (41.8 to 44.9)	51.4 (49.7 to 53.2)	1.38 (1.26 to 1.52)	1.53 (1.39 to 1.68)
Denominator‡	5013, 5803	4016, 4915	–	–
Men, by age group:				
			p<0.0001	–
% of men aged 16–24 (95% CI)	61.0 (57.9 to 64.1)	82.1 (79.2 to 84.7)	2.93 (2.33 to 3.68)	–
Denominator	1094, 1537	930,1144	–	–
% of men aged 25–34 (95% CI)	44.6 (42.2 to 47.0)	51.2 (48.5 to 53.9)	1.30 (1.13 to 1.51)	–
Denominator	2080, 2274	1586, 1930	–	–
			p=0.007	–
% of men aged 35–44 (95% CI)	28.2 (26.1 to 30.5)	32.6 (30.0 to 35.2)	1.23 (1.05 to 1.44)	–
Denominator	1839, 1991	1500, 1841	–	–
Women§				
			p<0.0001	p<0.0001
% of all women 16–44 (95% CI)	30.6 (29.3 to 31.9)	39.1 (37.6 to 40.6)	1.46 (1.33 to 1.60)	1.56 (1.43 to 1.71)
Denominator	6574, 5766	5499, 4792	–	–
Women, by age group:				
			p<0.0001	–
% of women aged 16–24 (95% CI)	42.0 (39.0 to 45.1)	63.2 (60.0 to 66.3)	2.37 (1.97 to 2.86)	–
Denominator	1473, 1556	1122, 1117	–	–
% of women aged 25–34 (95% CI)	31.4 (29.5 to 33.5)	36.8 (34.6 to 39.1)	1.27 (1.11 to 1.45)	–
Denominator	2879, 2242	2300,1907	–	–
% of women aged 35–44 (95% CI)	20.6 (18.8 to 22.5)	26.3 (24.3 to 28.4)	1.38 (1.18 to 1.61)	–
Denominator	2222, 1968	2077, 1768	–	–

*At least once in the past year.
†Men reporting partner(s) of the opposite and/or same gender in the past year.
‡Unweighted, weighted denominators.
§Women reporting partner(s) of the opposite gender in the past year.

Table 2 Factors associated with reporting condom use at last sex* in Natsal 2000: men†

	Prevalence	Crude odds ratio	Age adjusted odds ratio	
	% (95% CI)	(95% CI)	(95% CI)	Denominator‡
All men	29.4 (27.9 to 30.9)	–	–	4089, 4986
Sociodemographic				
Age group (years)		p<0.0001	–	
16–24	51.6 (47.8 to 55.3)	1.00		941, 1159
25–34	27.1 (24.8 to 29.5)	0.35 (0.29 to 0.42)		1621, 1965
35–44	18.0 (16.1 to 20.1)	0.21 (0.17 to 0.25)		1527, 1863
Marital status		p<0.0001	p<0.0001	
Married	18.1 (16.2 to 20.2)	1.00	1.00	1518, 2201
Cohabiting	22.5 (19.1 to 26.2)	1.31 (1.03 to 1.68)	1.08 (0.84 to 1.38)	646, 913
Previously married§	25.5 (20.2 to 31.8)	1.55 (1.11 to 2.17)	1.62 (1.16 to 2.26)	275, 211
Single, never married	48.7 (45.8 to 51.6)	4.29 (3.59 to 5.13)	2.65 (2.14 to 3.27)	1645, 1654
Self reported ethnicity		p=0.0012	p=0.0024	
White	28.4 (26.9 to 30.0)	1.00	1.00	3675, 4586
Black Caribbean	43.3 (32.1 to 55.3)	1.93 (1.18 to 3.14)	1.61 (0.98 to 2.66)	106, 89
Black African	46.3 (30.1 to 56.2)	1.87 (1.08 to 3.25)	2.08 (1.09 to 3.97)	85, 66
Indian	45.4 (32.8 to 58.5)	2.09 (1.22 to 3.58)	2.35 (1.34 to 4.12)	69, 74
Pakistani	31.8 (15.2 to 54.7)	1.17 (0.45 to 3.05)	1.15 (0.45 to 2.91)	25, 34
Religion		p=0.0005	p=0.0158	
None	29.5 (27.6 to 31.5)	1.00	1.00	2455, 3027
Anglican	23.2 (20.0 to 26.8)	0.72 (0.59 to 0.90)	0.90 (0.72 to 1.12)	656, 845
Roman Catholic	30.7 (25.6 to 36.4)	1.06 (0.81 to 1.39)	1.15 (0.86 to 1.53)	374, 419
Christian, other	35.3 (30.3 to 40.6)	1.30 (1.02 to 1.67)	1.33 (1.03 to 1.72)	428, 507
Non-Christian	36.8 (28.8 to 45.6)	1.39 (0.95 to 2.03)	1.56 (1.07 to 2.26)	168, 178
Social class		p=0.496	p=0.099	
I/II/III	27.9 (26.2 to 29.7)	1.00	1.00	3105, 3785
IV/V/unemployed	29.3 (25.7 to 33.2)	1.07 (0.88 to 1.31)	0.84 (0.68 to 1.03)	733, 901
Sexual behaviour				
Number of partner(s) of the opposite and/or same gender, past year		p<0.0001	p=0.0347	
1	25.7 (24.0 to 27.6)	1.00	1.00	2762, 3575
2	38.4 (33.5 to 43.5)	1.80 (1.42 to 2.28)	1.28 (1.00 to 1.65)	501, 557
3–4	37.8 (32.5 to 43.3)	1.75 (1.36 to 2.25)	1.19 (0.91 to 1.56)	411, 432
5+	43.5 (37.1 to 50.2)	2.22 (1.67 to 2.96)	1.46 (1.06 to 2.00)	312, 303
Partnership characteristics				
Partner's gender		p=0.183	p=0.076	
Opposite gender	29.3 (27.7 to 30.8)	1.00	1.00	3974, 4882
Same gender	35.8 (26.6 to 46.2)	1.35 (0.87 to 2.09)	1.53 (0.96 to 2.44)	115, 104
Partnership type		p<0.0001	p<0.0001	
Married	18.2 (16.2 to 20.3)	1.00	1.00	1443, 2073
Living together	21.7 (18.6 to 25.1)	1.25 (0.99 to 1.58)	0.97 (0.76 to 1.24)	764, 978
Regular partners	39.1 (35.7 to 42.7)	2.89 (2.37 to 3.54)	1.71 (1.36 to 2.14)	1058,1096
Not regular partners	53.6 (49.6 to 57.6)	5.21 (4.21 to 6.45)	3.30 (2.64 to 4.13)	820, 834
Duration of partnership		p<0.0001	p<0.0001	
Most recent occasion was also first occasion	54.8 (50.5 to 59.0)	1.00	1.00	678, 750
<6 months	40.6 (34.8 to 46.7)	0.56 (0.42 to 0.76)	0.51 (0.37 to 0.69)	345, 338
At least 6 months but <1 year	35.6 (28.6 to 43.2)	0.46 (0.32 to 0.65)	0.40 (0.28 to 0.59)	255, 285
At least 1 year but <3 years	25.3 (21.4 to 29.7)	0.28 (0.21 to 0.37)	0.28 (0.22 to 0.38)	572, 639
At least 3 years but <5 years	23.4 (18.8 to 28.8)	0.25 (0.18 to 0.35)	0.29 (0.21 to 0.41)	346, 453
At least 5 years	19.4 (17.1 to 22.0)	0.20 (0.16 to 0.25)	0.33 (0.25 to 0.42)	1113, 1526
First sex with most recent partner		p<0.0001	p=0.001	
At least 1 week after meeting	27.5 (25.8 to 29.2)	1.00	1.00	3196, 3999
Within 1 week of meeting	37.0 (33.5 to 40.5)	1.55 (1.30 to 1.84)	1.34 (1.12 to 1.60)	865, 958
Sexual health outcomes				
STD clinic attendance, past 5 years		p=0.304	p=0.842	
No	29.2 (27.6 to 30.8)	1.00	1.00	3702, 4595
Yes	32.2 (26.9 to 38.0)	1.15 (0.88 to 1.50)	1.03 (0.78 to 1.36)	381, 387
STD diagnosis(es) past 5 years		p=0.056	p=0.027	
No	30.0 (28.4 to 31.6)	1.00	1.00	3789, 4653
Yes	21.3 (14.5 to 30.1)	0.63 (0.39 to 1.01)	0.58 (0.35 to 0.94)	142, 148

*In the past year.
†Reporting partner(s) of opposite and/or same gender in past year.
‡ Unweighted, weighted denominators.
§Includes widowed, divorced and separated.

DISCUSSION

For the first time in the era of the British HIV epidemic, we have been able to examine trends in condom use among British adults, using data from two national probability samples a decade apart. Our data show a large increase in the reported use of condoms between 1990 and 2000, as reported elsewhere.[9] This was particularly marked for the age group 16–24, in whom reported STI diagnoses are highest.[5] We also found that younger people are more likely to report using condoms partly or primarily for the prevention of STIs and HIV. We have reported elsewhere an increase in recent and lifetime partners, and in rates of concurrency, between 1990 and 2000,[9 14] while others have shown an increase in unsafe sex among MSM.[8] These findings together suggest that it is possible that increased condom use at the population level is being offset by high rates of inconsistent and non-use by individuals with high rates of partner acquisition. Condoms can only reduce the increased potential for STI transmission associated with higher rates of partnership formation if rates of consistent and correct condom use are consistently high relative to the levels of STI/HIV

Table 3 Factors associated with reporting condom use at last sex* in Natsal 2000: women†

	Prevalence	Crude odds ratio	Age adjusted odds ratio	
	% (95% CI)	(95% CI)	(95% CI)	Denominator‡
All	22.8 (21.6 to 24.1)	–	–	5518, 4816
Sociodemographic				
Age group (years)		p<0.0001	–	
16–24	36.5 (33.4 to 39.7)	1.00		1127, 1130
25–34	19.5 (17.8 to 21.4)	0.43 (0.35 to 0.51)		2306, 1912
35–44	17.6 (15.9 to 19.5)	0.37 (0.31 to 0.45)		2085, 1775
Marital status		p<0.0001	p<0.0001	
Married	17.0 (15.5 to 18.7)	1.00	1.00	2420, 2351
Cohabiting	18.6 (16.1 to 21.3)	1.11 (0.90 to 1.36)	0.98 (0.79 to 1.22)	972, 964
Previously married§	19.1 (15.8 to 22.9)	1.15 (0.89 to 1.49)	1.16 (0.90 to 1.50)	541, 315
Single, never married	38.7 (35.8 to 41.6)	3.07 (2.59 to 3.64)	2.31 (1.90 to 2.80)	1580, 1183
Self reported ethnicity		p=0.0002	p=0.0001	
White	22.0 (20.7 to 23.3)	1.00	1.00	4973, 4460
Black Caribbean	31.3 (24.1 to 39.6)	1.62 (1.11 to 2.35)	1.74 (1.20 to 2.53)	169, 89
Black African	36.1 (25.6 to 48.1)	2.01 (1.21 to 3.32)	2.11 (1.27 to 3.52)	97, 43
Indian	32.8 (22.1 to 45.7)	1.73 (1.00 to 3.01)	1.68 (0.94 to 2.98)	93, 83
Pakistani	46.4 (27.5 to 66.4)	3.07 (1.34 to 7.04)	3.05 (1.34 to 6.94)	30, 26
Religion		p<0.0001	p<0.0001	
None	22.3 (20.6 to 24.0)	1.00	1.00	2762, 2439
Anglican	17.6 (15.4 to 20.1)	0.75 (0.62 to 0.90)	0.90 (0.74 to 1.09)	1245, 1096
Roman Catholic	27.6 (23.6 to 32.0)	1.33 (1.06 to 1.68)	1.44 (1.14 to 1.81)	578, 480
Christian, other	26.9 (23.3 to 30.7)	1.28 (1.04 to 1.59)	1.35 (1.08 to 1.67)	695, 608
Non-Christian	34.3 (27.0 to 42.3)	1.82 (1.27 to 2.61)	1.88 (1.30 to 2.71)	228, 185
Social class		p=0.157	p=0.043	
I/II/III	22.0 (20.6 to 23.5)	1.00	1.00	3812, 3291
IV/V/unemployed	19.8 (17.3 to 22.6)	0.87 (0.73 to 1.05)	0.82 (0.68 to 0.99)	1114, 989
Sexual behaviour				
Number of partner(s) of the opposite gender, past year		p<0.0001	p=0.0001	
1	20.7 (19.5 to 22.1)	1.00	1.00	4534, 4043
2	27.5 (23.2 to 32.2)	1.45 (1.14 to 1.84)	1.20 (0.94 to 1.53)	551, 413
3–4	38.8 (31.6 to 46.6)	2.42 (1.74 to 3.37)	1.82 (1.31 to 2.51)	239, 192
5+	41.4 (31.7 to 51.7)	2.70 (1.77 to 4.12)	1.92 (1.24 to 2.99)	126, 103
Partnership characteristics				
Partner's gender	Not applicable	Not applicable	Not applicable	Not applicable
Opposite gender				
Same gender				
Partnership type		p<0.0001	p<0.0001	
Married	17.1 (15.5 to 18.9)	1.00	1.00	2325, 2221
Living together	18.7 (16.4 to 21.2)	1.11 (0.91 to 1.36)	0.91 (0.73 to 1.11)	1191, 1066
Regular partners	28.9 (26.2 to 31.7)	1.96 (1.64 to 2.34)	1.42 (1.18 to 1.71)	1459, 1117
Not regular partners	48.1 (43.1 to 53.1)	4.48 (3.54 to 5.68)	3.32 (2.62 to 4.22)	536, 407
Duration of partnership				
Most recent occasion was also first occasion	46.3 (41.4 to 51.3)	p<0.0001 1.00	p<0.0001 1.00	518, 439
<6 months	35.2 (29.7 to 41.2)	0.63 (0.46 to 0.87)	0.57 (0.42 to 0.78)	381, 298
At least 6 months but <1 year	21.0 (16.1 to 26.9)	0.31 (0.21 to 0.45)	0.27 (0.19 to 0.40)	300, 243
At least 1 year but <3 years	21.6 (18.5 to 25.0)	0.32 (0.24 to 0.42)	0.30 (0.22 to 0.39)	774, 662
At least 3 years but <5 years	21.5 (17.8 to 25.8)	0.32 (0.23 to 0.43)	0.32 (0.23 to 0.43)	520, 441
At least 5 years	15.7 (14.1 to 17.4)	0.22 (0.17 to 0.27)	0.29 (0.23 to 0.36)	2095, 1897
First sex with most recent partner		p=0.788	p=0.242	
At least 1 week after meeting	22.8 (21.5 to 24.1)	1.00	1.00	4798, 4217
Within 1 week of meeting	22.3 (18.9 to 26.0)	0.97 (0.78 to 1.21)	0.88 (0.70 to 1.09)	678, 563
Sexual health outcomes				
STD clinic attendance, past 5 years		p=0.271	p=0.887	
No	22.6 (21.3 to 23.9)	1.00	1.00	5071, 4490
Yes	25.3 (20.8 to 30.4)	1.16 (0.89 to 1.52)	1.02 (0.77 to 1.35)	444, 324
STD diagnosis(es) past 5 years		p=0.046	p=0.003	
No	23.2 (22.0 to 24.6)	1.00	1.00	5036, 4438
Yes	17.3 (12.7 to 23.0)	0.69 (0.48 to 0.99)	0.57 (0.39 to 0.83)	249, 196

*In the past year.
†Those who reported partner(s) of the opposite gender in the past year.
‡Unweighted, weighted denominators.
§Previously married includes widowed, divorced and separated.

prevalence in the population.[1] Changing rates of STI incidence, and growing public awareness of HIV risk during the early years of AIDS, are of relevance to the interpretation of our data. The Natsal 1990 survey took place at the time of a nadir in the incidence of gonorrhoea and syphilis.[6] The incidence of both diseases, particularly in men, declined dramatically in the early to mid-1980s, reaching unprecedented low levels in the mid-1990s. Since then, there has been a steady increase in the incidence of gonorrhoea and syphilis, but rates remain well below those seen in the 1970s and early 1980s.[15] Given this historical background, it is important to interpret the 1990 Natsal data not as a description of a neutral "baseline measurement" of sexual behaviour, but as a description of sexual behaviour at the time of greatest anxiety about AIDS, and of the lowest STI incidence recorded since the second world war.[5] In this context, it is reassuring that rates of condom use were substantially higher in 2000 than in 1990, following a decade, which in the west, has seen the virtual transformation of HIV infection into a chronic infection, through the availability and use of potent antiretroviral therapy.

Table 4 Reason for condom use in the past year reported in Natsal 2000, by gender and age group

	Men*				Women*			
	Age group:				Age group			
	16–24	25–34	35–44	All 16–44	16–24	25–34	35–44	All 16–44
p Value for variation by age group	p<0.0001				p<0.0001			
Reason for condom use in the past year:	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
To prevent pregnancy	54.0 (49.8 to 58.2)	75.2 (71.7 to 78.4)	85.3 (82.0 to 88.1)	69.6 (67.3 to 71.7)	58.5 (53.8 to 63.0)	79.5 (76.6 to 81.6)	83.7 (80.2 to 86.6)	72.8 (70.5 to 74.9)
To protect against STIs/HIV	15.8 (12.9 to 19.1)	10.8 (8.5 to 13.6)	8.9 (6.7 to 11.8)	12.2 (10.7 to 13.9)	21.1 (17.5 to 25.2)	8.5 (6.5 to 10.3)	9.1 (6.8 to 12.1)	13.2 (11.6 to 15.1)
Both reasons equal	30.2 (26.5 to 34.2)	14.1 (11.7 to 16.8)	5.8 (4.2 to 7.9)	18.2 (16.5 to 20.2)	20.4 (16.8 to 24.5)	12.2 (10.1 to 14.8)	7.3 (5.5 to 9.6)	14.0 (12.4 to 15.9)
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Denominator†	707, 861	782, 891	468, 528	1957, 2280	594, 610	787, 629	532, 410	1913, 1648

*Respondents reporting partner(s) of the opposite gender in the past year.
†Unweighted, weighted denominators.

Table 5 Consistency of condom use in past 4 weeks as reported in Natsal 2000, by gender and partner numbers in past 4 weeks

	Men*				Women†			
	Number of partners, past 4 weeks				Number of partners, past 4 weeks			
	1	2	3+	All	1	2	3+	All
p Value for variation by numbers of partners:	p<0.0001				p<0.0001			
Consistency of condom use:	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Reporting on all occasions	23.1 (21.5 to 24.8)	38.6 (30.4 to 47.4)	32.9 (22.2 to 45.6)	24.0 (22.4 to 25.6)	17.6 (16.4 to 18.8)	26.7 (17.6 to 38.3)	51.8 (27.9 to 74.9)	17.9 (16.7 to 19.2)
Reporting on some occasions	8.7 (7.7 to 9.9)	26.8 (19.8 to 35.2)	44.2 (31.4 to 57.8)	10.2) (9.1 to 11.4)	8.0 (7.2 to 9.0)	24.8 (15.4 to 37.3)	4.7 (1.1 to 18.1)	8.4 (7.5 to 9.3)
Reporting on no occasions	68.2 (66.4 to 69.9)	34.6 (26.7 to 43.5)	23.0 (13.8 to 35.6)	65.8 (64.1 to 67.5)	74.4 (73.0 to 75.8)	48.5 (37.6 to 59.7)	43.5 (21.8 to 68.0)	73.8 (72.3 to 75.1)
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Denominator‡	2971, 3815	170, 184	76, 76	3217, 4074	4485, 4026	105, 81	20, 19	4610, 4126

*Men reporting partner(s) of the opposite and/or same gender in past 4 weeks
†Women reporting partner(s) of the opposite gender in past 4 weeks
Partner(s) of the opposite and/or same gender.
‡Unweighted, weighted denominators.

Using condoms consistently with all partners is particularly important for individuals who have high rates of partner change or concurrent partnerships, and where there is a higher risk of the transmission of HIV and STIs.[1] This has been an important component of public education.[16] It is therefore encouraging that those with the highest risk lifestyles are most likely to have recently used a condom. We found that reporting condom use at last sex is indeed associated with higher risk individual and partnership characteristics such as younger age, single status, higher numbers of recent partners, non-regular partnerships, first sex with the partner, and more recent partnership formation. In general, factors known to be epidemiologically associated with higher diagnosed incidence of STIs[17] were associated with higher levels of condom use.

However, further exploration of our data showed that consistency of condom use was poor among individuals who reported high rates of partner change, with less than half of those reporting multiple partners in the past 4 weeks reporting consistent condom use. These individuals are likely to function as a ''core group,''[18 19] capable of sustaining rising STI/HIV transmission, despite increasing rates of condom use at population level.

All measures of sexual risk behaviour, including condom use, have their limitations and need to be interpreted in conjunction with supporting information.[20 21] Our data do not allow us to distinguish between relationships in which a condom is, and is not, used in the context of multiple partnerships. Population based surveys are not ideally suited to describing small groups with high risk sexual behaviour.[20] Equally, as with all survey data, the Natsal surveys are liable to bias. There is some evidence of an increase in willingness to report higher numbers of sexual partners and homosexual contact between 1990 and 2000, along with an increase in reporting risk behaviours in general.[9] This bias has been evaluated through comparison of the same age cohort in 1990 and 2000 with respect to events occurring before 1990, such as first intercourse before age 16. Such a comparison is not possible in relation to the characteristics of the partnership at last sex, as the question on condom use at last sex was only introduced in Natsal 2000.[14] While this effect is likely to magnify our findings of a significant difference between 1990 and 2000, it does not account for them. We are also unable to report whether condoms were used correctly, or to what extent condom slippage or breakage occurred, as the Natsal surveys did not ask about these issues.

Evidence from the United States suggests that condom use may be a marker of a ''high risk'' partnership, with the paradoxical consequence that those who use condoms may have a risk of STI acquisition at least as high as those who do not.[22 23] These findings are consistent with our data on the association between high risk partnerships and condom use at last sex. It has also been suggested that this association between increased condom use, and more, or more high risk, sexual partners may represent a form of ''risk homeostasis,'' in which knowledge of the protective benefits of a behaviour is compensated by an increase in risk in another respect or domain.[24] This could limit the effectiveness of condoms in controlling STIs.[22 24 25]

Inconsistent condom use in the context of multiple partnerships is likely to be an important factor associated with the recent resurgence in STIs. Recent data have shown that inconsistent condom use does not protect against HIV transmission.[26 27] The evidence provided here suggests that consistency of condom use continues to be an area where there is substantial potential for targeted sexual health and prevention interventions. Importantly, these need to be targeted on those who are already using condoms. The high rates of inconsistent condom use we have shown among those with multiple partners demonstrates a need to focus on the promotion of consistent and correct condom use among those with more partners and within the core transmitting groups. Such an approach must particularly focus on 16–24 year olds. This group experiences the highest rates of STIs, despite having the highest rate of condom use in the past year, and for last sex, in both genders,[7] because of higher rates of new partner acquisition and concurrency than older age groups. It has been suggested that concurrency may be socially acceptable and even normative in certain contexts,[28 29] particularly among younger people. It has been proposed that longer duration of condom use in adolescent relationships could make a significant important contribution to STI control,[30] and this is an approach which could also have wider applicability among other individuals who have high rates of partner change or concurrency.

CONTRIBUTORS

AJ and CM had the original idea for this study; JC and CM developed the detailed analytical strategy, in close consultation with AC and AJ, and wrote a first draft that was redrafted with contributions from all authors; JC and CM are joint guarantors.

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