



Ethnic variations in sexual behaviours and sexual health markers: findings from the third British National Survey of Sexual Attitudes and Lifestyles (Natsal-3)

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Summary

Background Sexual health entails the absence of disease and the ability to lead a pleasurable and safe sex life. In Britain, ethnic inequalities in diagnoses of sexually transmitted infections (STI) persist; however, the reasons for these inequalities, and ethnic variations in other markers of sexual health, remain poorly understood. We investigated ethnic differences in hypothesised explanatory factors such as socioeconomic factors, substance use, depression, and sexual behaviours, and whether they explained ethnic variations in sexual health markers (reported STI diagnoses, attendance at sexual health clinics, use of emergency contraception, and sexual function).

Methods We analysed probability survey data from Britain's third National Survey of Sexual Attitudes and Lifestyles (Natsal-3; n=15 162, conducted in 2010–12). Reflecting Britain's current ethnic composition, we included in our analysis participants who identified in 2011 as belonging to one of the following seven largest ethnic groups: white British, black Caribbean, black African, Indian, Pakistani, white other, and mixed ethnicity. We calculated age-standardised estimates and age-adjusted odds ratios for all explanatory factors and sexual health markers for all these ethnic groups with white British as the reference category. We used multivariable regression to examine the extent to which adjusting for explanatory factors explained ethnic variations in sexual health markers.

Findings We included 14 563 (96·0%) of the 15 162 participants surveyed in Natsal-3. Greater proportions of black Caribbean, black African, and Pakistani people lived in deprived areas than those of other ethnic groups (36·9–55·3% vs 16·4–29·4%). Recreational drug use was highest among white other and mixed ethnicity groups (25·6–27·7% in men and 10·3–12·9% in women in the white other and mixed ethnicity groups vs 4·1–15·6% in men and 1·0–11·2% in women of other ethnicities). Compared with white British men, the proportions of black Caribbean and black African men reporting being sexually competent at sexual debut were lower (32·9% for black Caribbean and 21·9% for black African vs 47·4% for white British) and the number of partners in the past 5 years was greater (median 2 [IQR 1–4] for black Caribbean and 2 [1–5] for black African vs 1 [1–2] for white British), and although black Caribbean and black African men reported greater proportions of concurrent partnerships (26·5% for black Caribbean and 38·9% for black African vs 14·8% for white British), these differences were not significant after adjusting for age. Compared with white British women, the proportions of black African and mixed ethnicity women reporting being sexually competent were lower (18·0% for black African and 35·3% for mixed ethnicity vs 47·9% for white British), and mixed ethnicity women reported larger numbers of partners in the past 5 years (median 1 [IQR 1–4] vs 1 [1–2]) and greater concurrency (14·3% vs 8·0%). Reporting STI diagnoses was higher in black Caribbean men (8·7%) and mixed ethnicity women (6·7%) than white British participants (3·6% in men and 3·2% in women). Use of emergency contraception was most commonly reported among black Caribbean women (30·7%). Low sexual function was most common among women of white other ethnicity (30·1%). Adjustment for explanatory factors only partly explained inequalities among some ethnic groups relative to white British ethnicity but did not eliminate ethnic differences in these markers.

Interpretation Ethnic inequalities in sexual health markers exist, and they were not fully explained by differences in their broader determinants. Holistic interventions addressing modifiable risk factors and targeting ethnic groups at risk of poor sexual health are needed.

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Introduction

Sexual health is a vital component of overall health and wellbeing, entailing the absence of disease and the ability to lead a pleasurable and safe sex life, free of coercion,

violence, and discrimination.¹ Understanding the social patterning and determinants of sexual health is key to ensure equitable health and inform public health policy and practice. Studies done in the USA have reported

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See [Comment](#) page e441

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Research in context

Evidence before this study

We searched for studies done in Britain and published in English in MEDLINE and Embase up to Oct 12, 2016, using MESH terms and keywords related to "Britain", "ethnicity", "STIs", "sexual health clinics", "emergency contraception (EC)", "sexual function", and "risk factors". We found that in Britain, since the mid-1990s black Caribbean and black African men and women have borne a disproportionately high burden of sexually transmitted infections (STI); however, these ethnic inequalities are not fully explained by ethnic differences in age, area-level deprivation (as measured by the Index of Multiple Deprivation), and individual-level sexual behaviours. Additionally, evidence from a systematic review and a longitudinal study has shown that, irrespective of ethnic origin, low family support, substance use, and depressive symptoms strongly predict sexual risk behaviours. However, no studies have examined the extent to which these factors vary by ethnicity nor the extent to which they may influence ethnic variations in sexual health. Moreover, we found a lack of evidence on ethnic variations in other broader markers of sexual health.

Added value of this study

We addressed this evidence gap by using national probability survey data to examine ethnic variations in the following broad sexual health markers: attendance at a sexual health clinic, STI diagnoses, emergency contraception use, and sexual function among the seven largest ethnic groups in Britain (white British, black Caribbean, black African, Indian, Pakistani, white other, and mixed ethnicity). Furthermore, to the best of our knowledge, this study is the first in Britain to be guided by ecosocial and intersectionality theories to examine ethnic variations in hypothesised explanatory factors (marital status, academic qualification, area-level deprivation, and individual-level social class as indicators of socioeconomic status; as well as substance use, depressive symptoms, and sexual behaviours as indicators of manifestations of lived experiences of social inequality) and to investigate whether these explanatory factors account for ethnic

differences in sexual health markers. Our findings showed that compared with the white British population, black Caribbean men, black African men, and mixed ethnicity women were more likely to have attended a sexual health clinic and, relatedly, to have had STI diagnosed (both in the past 5 years). Compared with white British women, ever use of emergency contraception was higher in black Caribbean women, and low sexual function was more common in women of white other ethnic origin. The proportion of people living in the most deprived areas was higher in the black Caribbean, black African, and Pakistani groups than in other ethnic groups, and the proportion of people unemployed was highest in black Caribbean and black African men. Substance use varied across ethnic groups but our indicator of mental health did not. Similarly, sexual behaviours varied by ethnicity, particularly age and sexual competence at sexual debut, and number and concurrency of sexual partners. Despite these observed ethnic variations in the hypothesised explanatory factors, adjusting for them only partly explained ethnic inequalities in attendance at sexual health clinics, STI diagnoses, and emergency contraception use, and did not explain ethnic inequalities in low sexual function in women. Nevertheless, individual-level measures of socioeconomic status, recreational drug use, sexual competence at sexual debut, and partner numbers were associated with most sexual health markers examined in our study among men as well as women.

Implications of all the available evidence

Our findings highlight that ethnic inequalities in STI as well as broader markers of sexual health exist in Britain. Holistic sexual health interventions addressing modifiable risk factors, in particular recreational drug use, sexual competence at sexual debut, and partner numbers, and targeting ethnic groups at greater risk of poor sexual health, could potentially reduce ethnic inequalities in sexual health, and should be a public health priority. There is also a need for further research to identify the broader drivers of ethnic inequalities in sexual health.

ethnic inequalities in rates of diagnoses of sexually transmitted infections (STI) diagnoses as well as in broader markers of sexual health such as access to sexual health services, contraceptive use, and sexual function; however, the reasons for these differences are not fully understood.²⁻⁴ Our review of studies done in Britain showed that since the mid-1990s the burden of STI diagnoses has remained disproportionately high in black Caribbean and black African men and women,⁵⁻⁷ which is not explained by ethnic variations in age, area-level deprivation,⁶ marital status, and individual-level sexual behaviours.⁵ Additionally, evidence from a systematic review,⁸ and a longitudinal study⁹ among young adults showed that, irrespective of ethnic origin, perceived low family support (ie, emotional and decision-making support), substance use, and depressive symptoms predict sexual risk behaviours. However, there is a lack of

evidence of the extent to which these factors vary by ethnicity, and might account for ethnic variation in poor sexual health. Similarly, data on ethnic variations in other broader sexual health markers are needed.

We addressed this evidence gap by using national probability survey data to examine ethnic variations in the following sexual health markers: STI diagnoses, use of emergency contraception, attendance at a sexual health clinic, and sexual function. Additionally, guided by ecosocial¹⁰ and intersectionality^{11,12} theories and our review findings, we investigated (separately for men and women) whether ethnic variations in hypothesised explanatory factors, such as socioeconomic status, substance use, depression, and sexual behaviours, exist and whether they account for ethnic variations in these sexual health markers. According to ecosocial theory, social inequalities in health are biological embodiments

of exposures arising from societal and ecological contexts mediated by physiology, behaviour, and gene expression. Intersectionality theory focuses on understanding how individuals' lived experiences are shaped by multiple dimensions, including gender, ethnicity or race, socioeconomic status, and sexuality, which affect health inequalities.

Methods

Participants and procedures

We used data from the third National Survey of Sexual Attitudes and Lifestyles (Natsal-3), a multistage, clustered, and stratified probability sample survey of 15 162 men and women aged 16–74 years, resident in Britain, undertaken between Sept 6, 2010, and Aug 31, 2012.¹³ Within each sampling unit (postcode sectors throughout Britain), trained interviewers visited all randomly selected addresses, identified individuals in the eligible age range (16–74 years), and invited one randomly selected individual to participate. Participants completed face-to-face interviews using a combination of a computer-assisted personal interview (CAPI) and, for the sensitive questions, a computer-assisted self-interview (CASI). Full details are described elsewhere.^{13,14} The overall response rate was 57.7%. The Oxfordshire Research Ethics Committee A approved this study (reference 10/H0604/27). Participants provided oral informed consent for the interview.

Reflecting Britain's 2011 ethnic composition,¹⁵ we included in our analysis participants who identified as belonging to one of the following seven largest ethnic groups: white British, black Caribbean, black African, Indian, Pakistani, white other, and mixed ethnicity. Participants identifying as "Asian other", "black other", "Bangladeshi", "Chinese", and "other ethnic groups" were excluded because of the small numbers of participants. Unlike previous studies,^{5,7,16} our analyses differentiated between white British and white other; we used white British as the reference category instead of "white" because of a notable increase in the non-British white population due to immigration to the UK since May, 2004, following the accession of ten central and eastern European countries to the European Union (EU), and these people are most likely to self-identify as white other.¹⁷ Moreover, previous research has reported differences in sexual behaviour between the white other and white British populations.¹⁸ We also included mixed ethnicity individuals in the analysis because of the higher incidence of STI diagnoses in this ethnic group than in other ethnic groups.^{6,8}

We examined the extent of variation between these seven ethnic groups in terms of the following sexual health markers: attendance at a sexual health clinic and STI diagnoses (both in past 5 years); use of emergency contraception (ever); and sexual function (in the past year, measured with a validated measure, the Natsal-SF).¹⁹ The appendix describes how all the variables were measured and defined.

Informed by ecosocial and intersectionality theories (figure), we examined ethnic variations in indicators of the socioeconomic distribution of resources: marital status, academic qualification, the Index of Multiple Deprivation (IMD; an area-level measure of deprivation),²⁰ and the National Statistics Socio-Economic Classification (NSSEC; an individual-level measure of socioeconomic status).²¹ We also examined ethnic variations in other indicators of potential manifestations of lived experiences of social inequality, such as current alcohol consumption (specifically "binge drinking"²²), being a current smoker, reporting recreational drug use (in the past year), and depressive symptoms in the past 2 weeks (measured using the Patient Health Questionnaire [PHQ]-2).²³ We examined ethnic variation in the following sexual behaviours: age and sexual competence at sexual debut,²⁴ ever same-sex experience (measured as: any experience not necessarily involving genital contact [ever] and any same-sex experience involving genital contact [ever]), number of sexual partners (of either gender [ever and in the past 5 years]), concurrency of sexual partners (ie, having two or more sexual partnerships that overlap in time) in the past 5 years, new partners while outside of the UK (in the past 5 years), having paid for sex (in the past 5 years), and having had condomless sex with two or more partners (in the past year). We also examined ethnic variations in the following attitudes: non-exclusivity in marriage as "always wrong"; one-night stands as "not wrong at all"; and participants' perceived concurrency of their most recent partner.

Statistical analyses

We did all statistical analyses using the complex survey functions of Stata version 14 to account for weighting, clustering, and stratification of the Natsal-3 data. Descriptive statistics (percentages with 95% CIs, medians with IQRs), are presented for each of the seven ethnic groups, stratified by sex.

Data was weighted to adjust for the unequal probability of selection in terms of age and number of adults in the eligible age range at an address. Subsequently, we addressed differential non-response by age, sex, and government office region by weighting the Natsal-3 sample as per the 2011 Census data for Britain.^{13,15}

To account for differences in the age profile by ethnicity, we calculated age-standardised estimates of the prevalence of the hypothesised explanatory factors and sexual health markers. We used the survey equivalent of the χ^2 test to examine ethnic variations in socioeconomic factors. We calculated age-adjusted odds ratios (aAORs) to examine the association between ethnicity and the hypothesised explanatory factors using logistic regression.

We used a series of multivariable models to examine ethnic inequalities in sexual health markers accounting for the proposed hierarchical relations between the explanatory factors (figure).²⁵ According to this conceptual framework, socioeconomic factors can directly or

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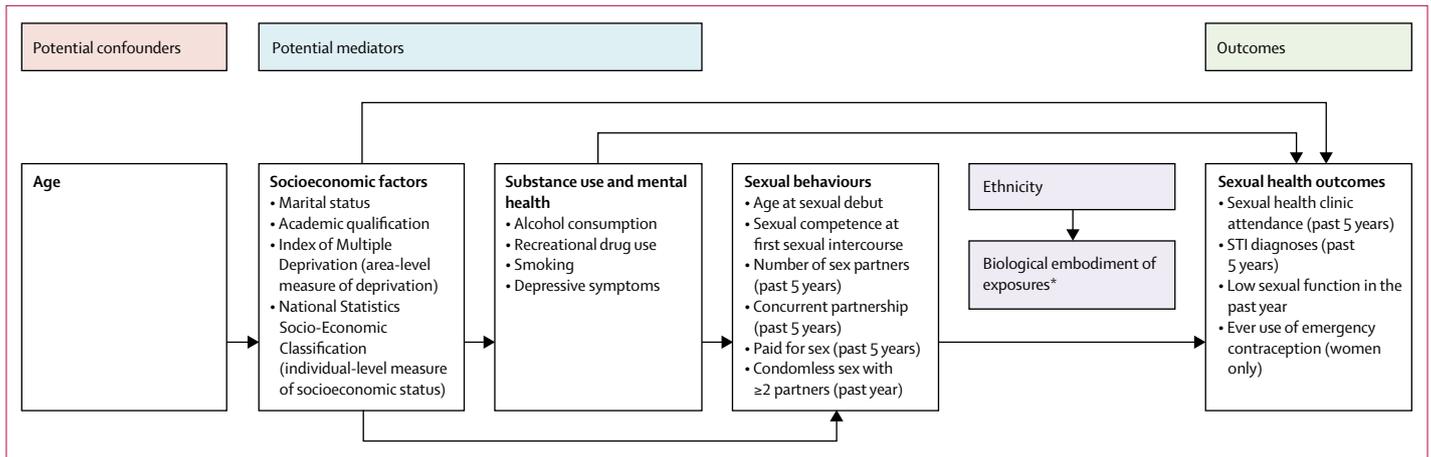


Figure: Proposed conceptual framework of relations between factors associated with ethnic inequalities in sexual health outcomes

Socioeconomic factors, substance use, and mental health related factors can directly influence sexual behaviours and sexual health outcomes. Substance use can also mediate the relationship between socioeconomic factors and sexual behaviours. Sexual behaviours are proximate determinants of sexual health outcomes. Thus, ethnic variations in sexual health markers are the biological embodiment of all these exposures. STI=sexually transmitted infection. *According to ecosocial theory, social inequalities in health are the biological embodiment of exposures arising from societal and ecological contexts mediated by physiology, behaviour, and gene expression (Krieger 2012).¹⁰

indirectly affect other risk factors.¹⁴ The next hierarchical level includes indicators of substance use such as recreational drug use, binge drinking, current smoking, and depressive symptoms, which are partly affected by socioeconomic factors,^{26,27} and finally the third level includes sexual behaviours that can be influenced by all the factors in the preceding levels.⁸ To begin, model 1 was based on a model selection process with ethnicity and age included a priori and then backwards selection from among the socioeconomic factors, using a p value threshold of 0.10. Subsequently, model 2 was based on model 1 along with recreational drug use, binge drinking, current smoking, and depressive symptoms retained after backwards selection. Finally, model 3 consisted of model 2 with the addition of sexual behaviour variables retained after backwards selection. Details of the variables retained in model 3 for each sexual health marker are presented in the appendix. Participants with missing data were excluded from analyses since item non-response was low, typically less than 3%.¹⁴

Role of the funding source

The funders of this study had no role in the study design, data collection, data analysis and interpretation, or writing of the report. The corresponding author had full access to all the data in the study and had final responsibility to submit for publication.

Results

We included 14563 (96.0%) of the 15162 participants surveyed in Natsal-3 since they identified as one of the seven ethnic groups considered by this study. The majority of people included in Natsal-3 identified as white British (82.1%), while 5.3% identified as white other, 2.5% as Indian, 2.0% as black African, 1.8% as mixed ethnic groups (consisting of people who identified as mixed

white and black Caribbean [0.8% of all participants], mixed white and black African [0.3%], mixed white and Asian [0.4%], and mixed other [0.5%]), 1.4% as Pakistani, and 1.3% as black Caribbean. 0.3% of all participants were excluded since they did not respond to the question on ethnicity. Further 3.3% of participants were excluded because they identified as being either from an “Asian other”, or “black other”, or “Bangladeshi”, or “Chinese” ethnic groups, or “other ethnic groups”. After weighting, participants’ ethnic distribution was broadly similar to that observed from the 2011 census (appendix) and did not differ by sex.

Sociodemographic characteristics of men and women were largely similar but varied significantly by ethnicity (table 1). Overall, the median age was 29 years (IQR 43–56) for men and 30 years (43–57) for women; however, mixed ethnicity participants were younger (median 22 years for both men and women). Black African men and black African and Indian women had the highest proportions of people with higher education. Around half of black Caribbean, black African, and Pakistani men and half of black Caribbean women lived in the most deprived areas. A greater proportion of black Caribbean and black African men reported being unemployed or never having worked than did men of other ethnicities. A greater proportion of Pakistani women reported being unemployed or never having worked than did women of other ethnicities.

Overall, substance use was higher in men than in women (table 2). Binge drinking was highest in white British people (41.9% in men and 28.7% in women), whereas recreational drug use was highest in white other and mixed ethnicity people. Current smoking was significantly higher in white other men (33.5%) than in white British men (26.5%). White British, black Caribbean, white other, and mixed ethnicity women

	Men					Women					All ethnicity	All women			
	White British	Black Carib- bean	Black African	Indian	Pakistani other	White other	Mixed ethnicity	All men	White British	Black Carib- bean			Black African	Indian	Pakistani other
Number of participants															
Unweighted	5235	70	107	129	87	316	119	6063	7332	108	165	193	111	468	8575
Weighted	6151	92	133	194	106	389	120	7185	6291	105	146	178	106	411	7377
Age (years)															
16-24	16.0%	11.2%	20.4%	16.8%	27.5%	16.3%	31.8%	16.5%	15.0%	14.6%	23.2%	18.4%	23.0%	11.5%	34.5%
25-34	15.7%	18.8%	29.2%	26.9%	41.6%	33.4%	35.0%	17.9%	15.9%	15.7%	23.2%	29.4%	37.0%	33.6%	21.7%
35-44	18.3%	22.5%	25.7%	25.4%	9.9%	19.4%	11.2%	18.5%	18.6%	17.1%	23.6%	19.7%	25.1%	21.4%	19.8%
45-54	19.7%	24.1%	19.2%	11.9%	12.2%	13.6%	11.0%	18.9%	19.4%	33.8%	22.2%	15.2%	6.0%	13.6%	14.1%
55-64	17.7%	16.1%	2.6%	14.8%	4.7%	8.5%	6.4%	16.4%	17.4%	11.3%	5.8%	10.8%	6.2%	11.8%	16.2%
65-74	12.8%	7.3%	2.9%	4.2%	4.1%	8.8%	4.6%	11.8%	13.8%	7.5%	1.9%	6.4%	2.6%	8.1%	12.6%
Median (IQR)	30 (45-58)	32 (44-54)	27 (35-44)	27 (37-50)	23 (31-42)	26 (35-49)	22 (29-41)	29 (43-56)	31 (45-58)	26 (36-46)	26 (36-46)	27 (37-49)	25 (32-40)	29 (37-50)	22 (30-44)
Marital status*															
Married or civil partnership	49.9%	47.6%	45.5%	67.1%	73.6%	49.2%	48.1%	50.7%	50.0%	18.6%	32.6%	64.9%	60.6%	50.9%	45.2%
Cohabiting	15.8%	16.6%	5.3%	1.5%	1.6%	16.9%	16.3%	14.9%	15.4%	8.7%	8.2%	1.4%	1.9%	15.6%	9.5%
In a steady partnership but not living together	11.1%	11.9%	11.4%	3.9%	3.1%	10.7%	11.1%	10.7%	11.3%	10.2%	7.7%	3.1%	1.1%	10.2%	10.7%
Not in a steady partnership	23.3%	23.9%	37.8%	27.6%	21.8%	23.1%	24.5%	23.7%	23.3%	62.6%	51.5%	30.6%	36.4%	23.3%	30.1%
Academic qualification*															
No academic qualification	20.9%	25.7%	5.9%	17.2%	20.0%	18.9%	15.7%	20.7%	20.5%	21.9%	21.9%	20.9%	25.9%	17.8%	20.6%
Academic qualification typically gained at 16 years of age†	35.4%	36.7%	11.7%	16.5%	24.2%	12.8%	23.1%	32.9%	36.8%	33.9%	12.3%	15.7%	24.3%	20.3%	34.6%
Studying or attained further academic qualifications	43.8%	37.6%	82.3%	66.3%	55.7%	68.3%	61.3%	46.4%	42.7%	44.2%	65.8%	63.8%	49.7%	61.9%	44.8%
Index of Multiple Deprivation*															
1 (least deprived)	21.9%	7.9%	1.7%	16.2%	0.4%	20.2%	14.2%	20.7%	21.5%	7.9%	2.6%	13.6%	10.3%	19.3%	20.1%
2	22.5%	2.6%	4.0%	10.7%	9.9%	21.1%	21.2%	21.3%	21.9%	5.5%	7.0%	17.1%	5.1%	17.3%	20.7%
3	19.9%	19.5%	19.7%	20.7%	15.3%	16.9%	14.1%	19.5%	20.0%	10.3%	11.9%	25.6%	14.1%	19.7%	19.8%
4	18.9%	14.7%	25.4%	26.1%	21.7%	21.8%	21.1%	19.7%	18.8%	24.9%	39.9%	23.3%	33.6%	27.4%	20.1%
5 (most deprived)	16.7%	55.3%	49.2%	26.3%	52.6%	19.9%	29.4%	18.8%	17.8%	51.3%	38.6%	20.4%	36.9%	16.4%	19.2%
National Statistics Socioeconomic Classification*															
Managerial and professional occupations	35.9%	22.8%	25.1%	44.4%	22.5%	36.5%	39.0%	35.8%	31.0%	25.5%	30.6%	30.6%	6.7%	29.4%	30.6%
Intermediate occupations	16.6%	19.4%	13.1%	10.6%	40.9%	17.6%	13.6%	16.5%	20.1%	21.9%	12.7%	17.3%	11.2%	19.9%	19.8%
Semi-routine and routine occupations	32.8%	33.3%	26.5%	24.5%	18.9%	27.4%	29.3%	32.0%	26.9%	27.2%	19.6%	21.7%	20.3%	24.8%	26.2%
Never worked or unemployed	7.2%	10.9%	16.9%	6.4%	6.7%	6.3%	5.9%	7.2%	14.5%	14.4%	21.3%	18.4%	53.4%	13.9%	15.1%
Full-time student	7.4%	13.7%	18.6%	14.1%	10.9%	12.2%	12.1%	8.5%	7.5%	10.9%	15.9%	12.1%	8.4%	11.9%	8.2%

We used the survey data equivalent χ^2 test to examine ethnic variations in socioeconomic factors. Continuous variables were categorised in the table as displayed in the table. p value was <0.0001 for all tests of ethnic variation among men and also among women. * Age standardised estimates to account for differences in the age profile by ethnicity were calculated using the overall age distribution among men and women to standardise age distribution in ethnic groups. † English general certificate of secondary education or equivalent.

Table 1: Ethnic variations in socioeconomic factors in men and women

	White British	Black Caribbean	Black African	Indian	Pakistani	White other	Mixed ethnicity	p value
Men								
Binge drinking								
Unweighted/weighted base	4864/5730	61/82	101/128	115/175	85/104	297/373	108/110	
Yes*	41.9% (40.3–43.4)	21.5% (12.1–35.2)	4.3% (2.2–8.3)	15.8% (9.8–24.5)	15.1% (3.6–6.1)	30.9% (25.1–37.4)	21.7% (13.4–33.3)	
aAOR†	1	0.34 (0.15–0.80)	0.08 (0.04–0.16)	0.24 (0.14–0.42)	0.03 (0.01–0.17)	0.65 (0.49–0.87)	0.51 (0.31–0.83)	<0.0001
Recreational drug use, past year								
Unweighted/weighted base	5026/5934	64/84	101/129	114/174	73/93	296/365	112/117	
Yes*	15.6% (14.6–16.7)	12.6% (6.5–22.9)	7.7% (3.9–14.4)	11.2% (6.3–19.1)	4.1% (1.9–8.3)	25.6% (20.4–31.6)	27.7% (18.3–39.6)	
aAOR†	1	0.89 (0.37–2.14)	0.41 (0.19–0.86)	0.71 (0.33–1.49)	0.22 (0.09–0.51)	1.86 (1.31–2.63)	1.89 (1.14–3.12)	0.0001
Current smoker								
Unweighted/weighted base	5235/6151	70/92	107/133	129/194	87/106	316/389	119/120	
Yes*	26.5% (25.1–27.9)	19.6% (12.3–29.6)	5.8% (3.4–9.8)	16.9% (11.0–24.9)	34.1% (24.2–45.7)	33.5% (24.1–45.7)	33.5% (27.2–40.3)	
aAOR†	1	0.68 (0.37–1.26)	0.22 (0.12–0.41)	0.62 (0.38–1.04)	1.38 (0.84–2.25)	1.39 (1.03–1.88)	0.99 (0.63–1.55)	<0.0001
Depressive symptoms								
Unweighted/weighted base	5028/5939	64/84	101/129	114/174	72/92	295/360	112/117	
Yes*	9.5% (8.6–10.4)	14.5% (8.8–23.1)	17.9% (11.0–27.7)	13.2% (7.2–22.9)	15.9% (7.5–30.9)	7.1% (4.5–11.2)	11.1% (5.6–20.6)	
aAOR†	1	1.63 (0.58–4.66)	0.96 (0.47–1.96)	1.51 (0.69–3.29)	1.27 (0.61–2.62)	0.71 (0.44–1.15)	1.16 (0.63–2.12)	0.56
Women								
Binge drinking								
Unweighted/weighted base	6508/5615	86/83	139/123	167/153	111/106	430/380	174/122	
Yes*	28.7% (27.5–30.0)	6.4% (3.3–12.2)	2.8% (1.2–6.2)	3.8% (1.6–8.7)	0.0% (0.00%)	12.7% (9.5–16.8)	20.1% (14.3–27.5)	
aAOR†	1	0.16 (0.07–0.32)	0.07 (0.03–0.17)	0.08 (0.04–0.19)	NA (NA)	0.35 (0.25–0.48)	0.61 (0.40–0.91)	<0.0001
Recreational drug use, past year								
Unweighted/weighted base	7129/6133	97/91	148/132	167/151	87/79	447/393	184/128	
Yes*	7.0% (6.4–7.6)	11.2% (6.4–19.1)	3.4% (1.2–8.8)	4.5% (1.9–9.8)	1.0% (0.14–6.41)	10.3% (7.5–13.9)	12.9% (8.4–19.5)	
aAOR†	1	2.16 (0.98–4.75)	0.44 (0.15–1.28)	0.52 (0.23–1.17)	0.14 (0.02–1.07)	1.75 (1.22–2.51)	1.88 (1.18–2.99)	<0.0001
Current smoker								
Unweighted/weighted base	7332/6291	108/105	165/146	193/178	111/106	468/411	198/140	
Yes*	25.5% (24.4–26.6)	21.4% (15.1–29.5)	3.4% (1.5–7.5)	3.5% (1.9–6.5)	1.9% (0.7–5.5)	24.0% (19.6–29.1)	31.9% (22.7–42.7)	
aAOR†	1	0.88 (0.55–1.40)	0.11 (0.05–0.27)	0.12 (0.06–0.23)	0.08 (0.03–0.23)	0.93 (0.73–1.21)	1.28 (0.89–1.82)	<0.0001
Depressive symptoms								
Unweighted/weighted base	7135/6134	96/90	146/130	164/151	87/79	448/394	184/128	
Yes*	10.8% (1.0–11.7)	13.5% (7.2–23.7)	18.1% (10.7–28.9)	11.7% (7.2–18.4)	12.4% (5.1–27.4)	10.9% (7.8–15.0)	10.9% (6.8–17.1)	
aAOR†	1	1.24 (0.62–2.48)	1.76 (1.01–3.08)	1.1 (0.66–1.85)	0.88 (0.44–1.74)	0.92 (0.65–1.31)	1.29 (0.82–2.05)	0.40

Data are unweighted/weighted denominator, % (95% CI), or aAOR (95% CI). p values refer to ethnic variation in explanatory factors examined, adjusting for age. aAOR=age-adjusted odds ratio. NA=not achievable. *Age standardised estimates to account for differences in the age profile by ethnicity were calculated using the overall age distribution among men and women to standardise age distribution in ethnic groups. †Logistic regression using survey function was used to test for ethnic variations and calculate aAORs.

Table 2: Ethnic variations in substance use and mental health in men and women

(range 21.4–31.9%) had higher smoking prevalence than did black African (3.4%), Indian (3.5%), and Pakistani (1.9%) women. The ethnic variation in screening positive for depressive symptoms (range 7.1–18.1%) was not significant for either gender.

Age and sexual competence at sexual debut varied significantly by ethnicity and sex (tables 3 and 4). In men, the median age at sexual debut was lowest in black Caribbean men (15 years) compared with men in other ethnic groups (range from 16 to 22 years; table 3).

	White British	Black Caribbean	Black African	Indian	Pakistani	White other	Mixed ethnicity	p value
Sexual behaviour								
Age at first heterosexual intercourse								
Unweighted/weighted base	5187/6096	68/88	105/130	125/186	86/106	311/379	115/115	
Median age (IQR)	17 (15-19)	15 (15-18)	18 (16-21)	22 (18-26)	20 (17-25)	18 (16-19)	16 (15-18)	<0.0001
<16 years old	26.7% (25.3-28.1)	60.6% (49.3-70.8)	20.1% (11.5-32.7)	7.9% (3.1-18.7)	7.7% (3.2-17.5)	17.8% (12.9-24.1)	33.8% (21.8-48.3)	
aAOR*	1	3.69 (1.97-6.91)	0.69 (0.41-1.16)	0.16 (0.06-0.41)	0.28 (0.14-0.55)	0.51 (0.36-0.73)	1.38 (0.86-2.22)	<0.0001
Sexual competence at sexual debut								
Unweighted/weighted base	4750/5745	58/76	85/113	101/160	59/79	279/344	104/108	
Yes†	47.4% (45.8-49.0)	32.9% (23.6-43.9)	21.9% (18.4-41.6)	61.1% (50.4-70.7)	41.9% (30.8-53.8)	42.3% (32.2-50)	24.3% (15.4-36.1)	
aAOR*	1	0.57 (0.33-0.99)	0.39 (0.22-0.69)	1.68 (1.06-2.65)	0.73 (0.43-1.25)	0.8 (0.59-1.09)	0.46 (0.29-0.72)	0.0004
Ever had same-sex experience								
Unweighted/weighted base	5224/6138	70/92	107/133	128/193	87/106	313/387	119/120	
Yes†	8.3% (7.4-9.2)	2.3% (0.5-9.8)	1.8% (0.4-7.8)	3.9% (1.1-13.6)	6.7% (2.4-17.5)	10.5% (6.9-15.6)	6.3% (2.5-15.1)	
aAOR*	1	0.26 (0.06-1.09)	0.23 (0.05-1.01)	0.4 (0.13-1.27)	0.87 (0.34-2.16)	1.25 (0.79-1.96)	1.01 (0.47-2.20)	0.09
Ever had genital contact with same-sex partner								
Unweighted/weighted base	5217/6130	70/92	107/133	128/193	87/106	312/386	119/120	
Yes†	5.7% (4.9-6.4)	1.1% (0.1-8.3)	1.8% (0.4-7.8%)	3.3% (0.7-13.9)	6.7% (2.4-17.5)	7.7% (4.8-12.2)	2.3% (0.9-5.9)	
aAOR*	1	0.19 (0.03-1.41)	0.34 (0.08-1.52)	0.42 (0.09-1.84)	1.29 (0.51-3.27)	1.41 (0.86-2.33)	0.79 (0.28-2.27)	0.21
Lifetime partnerships								
Unweighted/weighted base	5040/5914	63/83	103/126	122/183	83/101	296/363	114/114	
0†	35.0% (3.1-3.9)	2.1% (0.7-6.2)	7.0% (3.9-12.3)	11.3% (7.9-15.7)	14.9% (9.3-22.9)	2.50% (1.3-4.9)	3.1% (1.7-5.6)	<0.0001
1†	11.7% (10.8-12.7)	11.4% (4.9-24.2)	9.6% (4.9-18.2)	37.7% (26.9-49.9)	23.6% (14.1-36.9)	16.8% (11.7-23.7)	3.8% (2.2-6.4)	
2†	8.2% (7.4-9.2)	14.0% (5.9-29.9)	3.9% (1.5-9.8)	8.5% (3.6-18.9)	9.9% (3.6-2.4)	4.2% (2.5-6.9)	3.8% (1.4-9.8)	
3-4†	14.6% (13.5-15.8)	9.2% (3.6-21.8)	10.6% (6.2-17.7)	26.4% (17.3-37.9)	20.0% (17.2-23.2)	14.1% (9.7-20.0)	24.1% (15.9-34.9)	
5-9†	25.2% (23.8-26.6)	10.6% (5.0-19.5)	25.5% (18.0-34.8)	7.5% (3.9-13.7)	24.5% (14.9-37.6)	22.4% (16.9-29.1)	27.4% (17.5-40.2)	
≥10†	36.8% (35.3-38.3)	53.1% (39.5-66.3)	43.3% (34.5-52.6)	8.6% (4.1-17.4)	7.1% (2.2-20.3)	39.9% (32.8-47.6)	37.8% (25.6-51.8)	
Mean (SD)	15.6 (7.69)	23.1 (45.5)	9.2 (10.2)	37 (8.7)	5.8 (15.6)	18 (46.7)	17.9 (32.0)	
Median (IQR)	6 (3-14)	11 (2-20)	6 (1-13)	1 (1-4)	1 (1-5)	6 (3-16)	6 (3-20)	
aAOR*†	1	1.65 (0.81-3.37)	0.87 (0.53-1.42)	0.19 (0.14-0.26)	0.19 (0.11-0.31)	1.09 (0.82-1.45)	1.18 (0.81-1.72)	<0.0001
Partnerships reported in the past 5 years								
Unweighted/weighted base	5079/5951	63/83	102/126	121/179	83/101	297/365	115/115	
0†	9.9% (9.2-10.6)	6.5% (2.1-18.7)	7.8% (4.5-13.1)	22.5% (15.7-31.2)	19.0% (11.9-29.1)	9.9% (6.8-14.3)	7.8% (3.7-15.8)	<0.0001
1†	55.6% (54.3-56.9)	40.5% (27.4-55.1)	30.7% (19.9-44.1)	56.9% (48.0-65.5)	61.4% (49.0-72.5)	50.1% (43.4-56.7)	59.9% (48.8-70.1)	
2-4†	20.6% (19.4-21.8)	25.8% (15.1-40.6)	38.6% (27.8-50.7)	11.9% (7.8-17.6)	7.5% (4.3-12.7)	20.5% (15.5-26.7)	18.1% (11.5-27.3)	
5-9†	7.8% (7.1-8.5)	16.2% (9.6-26.0)	15.8% (9.9-24.3)	3.4% (11.8-9.4)	6.4% (2.3-16.5)	9.3% (6.6-13.0)	3.7% (2.1-6.6)	
≥10†	6.1% (5.5-6.7)	10.9% (5.7-19.8)	7.2% (3.8-13.2)	5.2% (1.8-14.3)	5.7% (1.4-20.8)	10.2% (6.6-15.4)	10.5% (5.7-18.7)	
Mean (SD)	2.8 (7.8)	6.4 (16.7)	3.6 (4.6)	2.1 (4.8)	2.0 (3.4)	3.8 (6.3)	5.4 (9.7)	
Median (IQR)	1 (1-2)	2 (1-4)	2 (1-5)	1 (1-1)	1 (0-2)	1 (1-4)	1 (1-4)	
aAOR*†	1	2.15 (1.12-4.12)	1.79 (1.10-2.90)	0.39 (0.25-0.61)	0.29 (0.16-0.55)	1.28 (0.98-1.67)	1.15 (0.75-1.75)	<0.0001
Concurrent partnerships in the past 5 years								
Unweighted/weighted base	4427/5349	58/78	86/112	90/140	56/74	268/335	100/104	
Yes†	14.8% (13.8-15.9)	26.5% (15.1-42.2)	38.9% (28.7-50.0)	10.0% (5.3-18.0)	3.9% (1.9-7.9)	20.7% (15.5-26.9)	7.7% (4.6-12.5)	
aAOR*	1	1.95 (0.83-4.58)	1.69 (0.98-2.91)	0.65 (0.36-1.17)	0.36 (0.16-0.81)	1.55 (1.08-2.23)	0.67 (0.38-1.17)	0.0013

(Table 3 continues on next page)

	White British	Black Caribbean	Black African	Indian	Pakistani	White other	Mixed ethnicity	p value
(Continued from previous page)								
New sex partners outside the UK in the past 5 years								
	Unweighted/weighted base	4441/5368	87/113	91/143	57/75	268/335	100/104	
Yes†		7.2% (6.4-8.0)	20.2% (13.5-29.0)	12.4% (5.7-24.9)	9.5% (3.4-24.2)	20.9% (15.7-27.1)	6.8% (3.9-11.6)	
aAOR*	1	0.88 (0.32-2.40)	4.02 (2.16-7.48)	1.59 (0.78-3.23)	1.19 (0.51-2.82)	3.66 (2.59-5.19)	1.39 (0.71-2.72)	<0.0001
Paid for sex in the past 5 years								
	Unweighted/weighted base	5118/6002	105/131	121/180	85/104	299/367	116/118	
Yes†		3.1% (2.6-3.7)	5.7% (2.5-12.1)	9.5% (4.4-19.3)	9.5% (2.9-2.6)	6.3% (3.6-10.8)	0.3% (0.0-1.9)	
aAOR*	1	2.06 (0.65-6.52)	2.71 (1.10-6.67)	2.81 (1.25-6.38)	2.22 (0.70-7.01)	2.24 (1.25-4.06)	0.16 (0.02-1.17)	0.0014
Any new sexual partners in past year								
	Unweighted/weighted base	5059/5952	98/119	121/179	83/101	293/360	115/115	
Yes†		19.7% (18.7-20.8)	44.9% (36.4-53.9)	15.8% (9.7-24.6)	17.7% (9.4-30.7)	26.9% (21.4-33.1)	25.7% (17.9-35.3)	
aAOR*	1	1.67 (0.88-3.14)	3.19 (1.87-5.42)	0.72 (0.43-1.21)	0.82 (0.46-1.46)	1.49 (1.09-2.06)	1.63 (1.04-2.56)	<0.0001
Condomless sex with >1 partner in past year								
	Unweighted/weighted base	5033/5906	102/125	123/182	83/101	290/354	111/113	
Yes†		7.4% (6.7-8.2)	7.7% (4.2-13.9)	4.7% (1.7-12.6)	3.9% (1.8-8.3)	10.6% (6.7-16.2)	8.4% (4.1-16.5)	
aAOR*	1	1.96 (0.91-4.21)	1.19 (0.57-2.48)	0.52 (0.21-1.28)	0.74 (0.32-1.74)	1.42 (0.85-2.35)	1.15 (0.65-2.04)	0.227
Attitudes towards sexual behaviour								
Perceived concurrency of most recent sex partner								
	Unweighted/weighted base	3966/4944	63/80	76/122	44/60	217/278	78/83	
Yes†		18.1% (16.8-19.5)	27.0% (20.6-34.5)	11.4% (4.9-24.1)	9.1% (3.2-23.5)	14.8% (10.3-20.8)	14.5% (8.1-24.6)	
aAOR*	1	1.43 (0.72-2.85)	0.71 (0.35-1.45)	0.41 (0.16-1.05)	0.42 (0.13-1.28)	0.93 (0.61-1.39)	1.03 (0.58-1.85)	0.25
Non-exclusivity in marriage always wrong								
	Unweighted/weighted base	5146/6050	105/131	128/190	85/105	301/365	117/116	
Always wrong†		56.8% (55.2-58.3)	66.6% (55.5-76.1)	62.6% (52.0-72.0)	60.1% (42.5-75.5)	46.9% (39.9-54.2)	74.3% (61.5-83.9)	
aAOR*	1	1.20 (0.65-2.19)	2.88 (1.63-5.09)	1.11 (0.73-1.72)	1.45 (0.84-2.49)	0.64 (0.49-0.85)	1.55 (0.97-2.48)	0.0037
One-night stands not wrong at all								
	Unweighted/weighted base	5006/5858	100/123	125/183	84/103	292/362	114/113	
Not at all wrong†		18.8% (17.5-20.1)	7.5% (2.4-21.4)	5.9% (3.3-10.2)	1.2% (0.2-5.8)	21.6% (16.0-28.3)	14.2% (8.0-23.9)	
aAOR*	1	0.77 (0.40-1.45)	0.23 (0.11-0.48)	0.34 (0.18-0.63)	0.08 (0.02-0.38)	1.23 (0.88-1.71)	1.11 (0.66-1.88)	<0.0001

aAOR=age-adjusted odds ratio. †Logistic regression using survey function was used to test for ethnic variations and calculate aAORs. ‡Age standardised estimates to account for differences in the age profile by ethnicity were calculated using the overall age distribution among men and women to standardise age distribution in ethnic groups. †aAOR refers to ethnic variation in proportions of explanatory factors adjusted for age.

Table 3: Ethnic variation in sexual behaviour and attitudes in men

Black Caribbean, black African, and mixed ethnicity men were significantly less likely, and Indian men more likely, to have been sexually competent at sexual debut than white British men. In women, the median age at sexual debut in white British, black Caribbean, and mixed ethnicity women was lower (17 years) than that of women of other ethnicities (range from 18 to 22 years; table 4). Black African and mixed ethnicity women were less likely, and Indian women more likely, to have been sexually competent at sexual debut than white British women.

In men, the proportion reporting same-sex experience (range from 1·8% to 10·5%) or having had genital contact with a same-sex partner (range from 1·1% to 7·7%) was low across all the ethnic groups (table 3). In women, the proportions of those reporting same-sex experience ranged from 2·2% to 17·4% and those of having had genital contact with a same-sex partner ranged from 0·4% to 8·8%. The proportion of women having had a same-sex experience was significantly higher in white other women (17·4%), and significantly lower in Indian (3·5%) and Pakistani (2·2%) women, than in white British women (12·2%).

The median number of partners in the past 5 years in black Caribbean and black African men was two compared with one in men from other ethnicities (table 3); whereas in women, it did not vary but the upper quartile was highest among mixed ethnicity women (table 4). Black African (5·7%), Indian (9·5%), and white other men (6·3%) were significantly more likely to have paid for sex in the past 5 years than white British men (3·1; table 3). In the past year, 44·9% of black African, 26·9% of white other, and 25·7% of mixed ethnicity men reported new sexual partners, which was significantly higher than the proportion of white British men (19·7%). In women, this proportion was highest among mixed ethnicity women (26·9%), ranging from 8·0% to 16·9% for other ethnic groups (table 4). In men, the proportion reporting condomless sex with more than one partner did not vary significantly by ethnicity and ranged from 3·9% to 11·6% (table 3); in women, it was lower in Indian and Pakistani women (1·6% and 0·5%, respectively) than in white British women (5·0%), but it did not vary among women of other ethnicities (table 4).

Concurrency was most commonly reported by black Caribbean and black African men (26·5% and 38·9%, respectively) although the proportions were not significantly higher than those of white British men. However, white other men were significantly more likely, and Pakistani men less likely, to report concurrency than white British men (table 3). In women, those of mixed ethnicity were most likely (14·3%) and Indian and Pakistani women least likely (2·2% and 0·5%, respectively) to report concurrency compared with white British women (8·0%; table 4). By contrast, perceived concurrency of most recent sex partner did not vary by ethnicity or sex (tables 3 and 4).

With regards to attitudinal differences, black African men (66·6%) and black African (81·6%) and Pakistani (80·4%) women were more likely to consider non-exclusivity in marriage to be “always wrong” than white British men (56·8%) and women (64·1%; tables 3 and 4). The proportion of white British, black Caribbean, white other, and mixed ethnicity people who agreed that one-night stands were “not wrong at all” ranged from 13·1% to 21·6% in men and from 8·2% to 9·9% in women, and that proportion for black African, Indian, and Pakistani people ranged from 1·2% to 7·5% for men and 0·6% and 4·1% for women.

About 25% of black Caribbean men and women, and about 20% of black African men and mixed ethnicity women reported having attended a sexual health clinic in the past 5 years, which was significantly higher than the proportion of white British men and women (about 12%; tables 5 and 6). Adjusting for the variables included in models 1–3 (appendix) did not fully explain this ethnic variation and AORs remained mostly similar. Reporting STI diagnoses was more common in black Caribbean men (8·7%) and mixed ethnicity women (6·7%) than in white British men and women (3·6% in men and 3·2% in women). Adjusting for the variables in models 1–3 attenuated the AORs for black Caribbean men and mixed ethnicity women slightly, but the likelihood of having reported STI diagnoses remained significantly higher for both these groups in all models. Although adjusting for model 2 increased the adjusted odds for reporting of STI diagnoses among black African men relative to white British men, these odds attenuated after adjusting for model 3.

The proportion of people with low sexual function in the past year did not vary by ethnicity for men (table 5), but white other women were more likely and Indian women were less likely to have low sexual function than white British women (table 6). Adjusting for the variables included in models 1–3 did not explain these variations. Emergency contraception use was most commonly reported by black Caribbean (30·7%) and mixed ethnicity women (28·2%). Indian (11·0%) and Pakistani (2·1%) women were less likely to report having used emergency contraception than white British women (23·0%). Adjusting for the variables included in models 2 and 3 increased the AOR in black Caribbean women relative to white British women from 1·49 (95% CI 0·89–2·49; when adjusting for only age) to 2·19 (1·18–4·09).

Individual-level socioeconomic status, recreational drug use, sexual competence at sexual debut, and partner numbers were associated with most sexual health markers examined among men and women (appendix).

Discussion

In this study of national probability survey data to examine ethnic inequalities in broad markers of sexual health, we found differences in sexual behaviours by ethnicity and sex, including age and sexual competence at sexual debut,

	White British	Black Caribbean	Black African	Indian	Pakistani	White other	Mixed ethnicity	p value
Sexual behaviour								
Age at first heterosexual intercourse								
Unweighted/weighted base	7255/6214	105/102	157/138	186/172	108/101	462/406	195/138	
Median age (IQR)	17 (16-19)	17 (16-20)	19 (17-22)	22 (19-25)	22 (20-25)	18 (17-20)	17 (16-18)	<0.0001
<16 years old	20.2% (19.2-21.2)	21.2% (14.1-30.5)	12.6% (6.9-21.9)	0.1% (<0.01-0.7)	1.1% (0.2-5.5)	8.3% (6.0-11.4)	17.5% (12.4-24.1)	
aAOR*	1	1.07 (0.63-1.82)	0.45 (0.25-0.85)	0.01 (0.00-0.04)	0.05 (0.01-0.24)	0.35 (0.25-0.48)	0.88 (0.59-1.29)	<0.0001
Sexual competence at sexual debut								
Unweighted/weighted base	6834/5948	99/97	126/116	146/141	75/70	435/391	17/17	
Yes†	47.9% (46.6-49.4)	40.9% (29.5-53.3)	18.0% (11.0-27.9)	61.9% (50.4-72.2)	43.0% (29.3-57.9)	41.3% (35.6-47.2)	35.3% (26.1-45.7)	<0.0001
aAOR*	1	0.68 (0.41-1.14)	0.27 (0.16-0.45)	1.87 (1.19-2.92)	1.11 (0.65-1.88)	0.81 (0.65-1.02)	0.52 (0.36-0.75)	
Ever had same-sex experience								
Unweighted/weighted base	7331/6290	107/105	163/142	192/176	109/102	467/410	198/140	
Yes†	12.2% (11.4-13.0)	8.5% (3.4-19.7)	5.9% (2.7-12.6)	3.5% (1.5-7.9)	2.2% (0.7-6.1)	17.4% (13.4-22.2)	15.8% (10.5-23.0)	
aAOR*	1	0.57 (0.18-1.82)	0.49 (0.21-1.10)	0.25 (0.12-0.49)	0.2 (0.72-0.57)	1.38 (1.02-1.85)	1.49 (0.92-2.42)	<0.0001
Ever had genital contact with same-sex partner								
Unweighted/weighted base	7326/6286	106/102	163/142	192/176	109/102	464/408	198/140	
Yes	6.6% (6.1-7.3)	2.2% (0.8-6.5)	2.7% (0.9-7.5)	0.9% (0.3-2.1)	0.4% (0.1-3.0)	7.7% (5.0-11.6)	8.8% (5.1-14.9)	
aAOR*	1	0.44 (0.11-1.69)	0.42 (0.15-1.14)	0.17 (0.07-0.43)	0.11 (0.01-0.77)	1.04 (0.68-1.59)	1.46 (0.78-2.72)	0.0003
Lifetime partnerships								
Unweighted/weighted base	7109/6078	97/93	147/130	182/163	100/94	440/387	185/127	
0†	2.9% (2.5-3.2)	4.0% (1.7-9.2)	9.5% (6.7-13.3)	10.8% (8.1-14.3)	14.9% (11.3-19.4)	2.2% (1.3-3.9)	2.3% (1.4-3.8)	
1†	19.2% (18.2-20.3)	21.8% (12.2-35.7)	35.1% (23.3-49.1)	64.9% (57.2-72.0)	64.8% (58.6-70.5)	24.4% (19.6-29.9)	19.6% (12.3-29.8)	
2†	11.0% (10.7-12.5)	6.4% (2.7-14.2)	12.4% (5.9-24.1)	9.1% (5.1-15.5)	0.9% (0.33-2.62)	8.4% (5.6-12.4)	12.2% (5.4-25.2)	
3-4†	19.3% (18.3-20.4)	21.4% (12.6-33.9)	15.4% (9.1-24.9)	7.4% (4.1-13.0)	5.7% (2.5-12.3)	18.5% (14.5-23.3)	19.7% (11.9-30.7)	
5-9†	24.8% (23.7-25.9)	31.9% (23.2-42.3)	18.4% (12.6-26.2)	5.5% (2.7-10.9)	0.61% (0.13-2.88)	23.0% (18.6-28.3)	16.7% (11.1-24.5)	
≥10†	22.2% (21.2-23.3)	14.5% (8.8-22.9)	9.2% (4.6-17.7)	2.2% (0.8-5.9)	0.86% (0.12-5.78)	23.5% (19.1-28.4)	29.5% (21.7-38.8)	
Mean (SD)	7.5 (34.7)	6.7 (13.2)	3.8 (5.0)	1.9 (3.9)	1.4 (3.8)	7.9 (22.7)	7.6 (8.1)	
Median (IQR)	4 (2-8)	4 (1-7)	2 (1-6)	1 (1-1)	1 (0-1)	4 (1-9)	5 (2-10)	<0.0001
aAOR*†	1	0.92 (0.62-1.35)	0.34 (0.22-0.51)	0.11 (0.08-0.14)	0.05 (0.03-0.08)	0.97 (0.79-1.20)	1.17 (0.82-1.67)	<0.0001
Partnerships reported in the past 5 years								
Unweighted/weighted base	7136/6103	98/94	147/130	182/163	100/94	442/389	187/130	
0†	13.7% (12.9-14.5)	26.4% (19.0-35.4)	32.9% (24.8-42.2)	27.3% (20.4-35.5)	29.1% (21.1-38.7)	16.8% (12.9-21.6)	3.7% (2.1-6.6)	
1†	60.3% (59.1-61.5)	44.9% (35.4-54.8)	47.8% (37.9-57.7)	63.7% (55.4-71.2)	53.4% (44.0-62.6)	60.9% (55.2-66.3)	59.4% (50.8-67.5)	
2-4†	17.7% (16.9-18.7)	20.9% (14.9-28.7)	15.6% (10.7-22.0)	8.2% (5.2-12.9)	4.8% (2.1-10.5)	15.0% (11.9-18.7)	22.9% (16.4-31.2)	
5-9†	5.5% (5.1-6.0)	4.8% (2.2-10.1)	3.5% (1.9-6.5)	0.2% (0.1-1.4)	0.5% (0.1-3.2)	5.0% (3.3-7.5)	11.5% (7.1-18.0)	
≥10†	2.8% (2.4-3.1)	2.9% (0.9-8.4)	0.2% (0.04-1.8)	0.6% (0.1-2.9)	..	2.2% (1.2-4.1)	2.4% (1.3-4.6)	
Mean (SD)	1.9 (8.4)	2.0 (3.9)	1.4 (1.6)	1.1 (1.9)	0.8 (0.7)	1.9 (2.9)	3.1 (3.9)	
Median (IQR)	1 (1-2)	1 (1-2)	1 (1-2)	1 (1-1)	1 (0-1)	1 (1-2)	1 (1-4)	<0.0001
aAOR*†	1	0.89 (0.56-1.42)	0.45 (0.28-0.71)	0.27 (0.18-0.40)	0.11 (0.05-0.21)	0.82 (0.67-1.01)	1.68 (1.19-2.38)	<0.0001
Concurrent partnerships in the past 5 years								
Unweighted/weighted base	6069/5235	82/76	113/101	138/124	72/63	387/342	171/122	
Yes†	8.0% (7.4-8.7)	9.1% (5.3-15.2)	5.3% (2.8-9.9)	2.2% (0.9-5.1)	0.5% (0.1-3.2)	7.1% (4.9-9.9)	14.3% (9.2-21.7)	
aAOR*	1	1.12 (0.58-2.15)	0.66 (0.33-1.31)	0.24 (0.10-0.58)	0.07 (0.01-0.52)	0.89 (0.61-1.33)	1.65 (1.03-2.63)	0.0005

(Table 4 continues on next page)

	White British	Black Caribbean	Black African	Indian	Pakistani	White other	Mixed ethnicity	p value
<i>(Continued from previous page)</i>								
New sex partners outside the UK in the past 5 years								
Unweighted/weighted base	6089/5255	83/76	114/102	138/124	72/63	392/347	172/122	
Yes†	3.5% (3.1-4.0)	5.5% (2.4-11.9)	7.4% (3.8-14.0)	9.5% (5.4-16.2)	1.7% (0.6-4.6)	12.4% (9.7-15.9)	10.3% (5.4-18.5)	
aAOR*	1	1.5 (0.58-3.88)	2.49 (1.11-5.61)	2.24 (1.24-4.04)	0.99 (0.34-2.93)	4.12 (2.95-5.74)	2.53 (1.27-5.06)	<0.0001
Paid for sex in the past 5 years								
Unweighted/weighted base	7202/6165	101/96	152/134	183/165	100/94	449/394	190/131	
Yes†	0.03% (0.01-11.5)	0.0% (0.00)	1.7% (0.3-9.9)	0.0% (0.00)	0.0% (0.00)	0.0% (0.00)	0.0% (0.00)	
aAOR‡	
Any new sexual partners in past year								
Unweighted/weighted base	7114/6080	97/92	147/130	179/162	99/93	441/388	188/130	
Yes†	14.7% (13.9-15.5)	16.9% (11.5-24.2)	11.4% (7.7-16.7)	13.8% (8.3-22.1)	8.0% (4.6-13.8)	15.9% (12.7-19.7)	26.9% (19.4-36.1)	
aAOR*	1	1.19 (0.71-2.02)	0.75 (0.47-1.22)	0.74 (0.43-1.30)	0.52 (0.26-1.04)	1.08 (0.82-1.43)	1.77 (1.19-2.61)	0.03
Condomless sex with >1 partner in past year								
Unweighted/weighted base	7114/6086	101/96	150/133	180/162	100/93	444/389	187/130	
Yes†	5.0% (4.5-5.5)	5.9% (3.1-10.9)	2.1% (0.9-4.8)	1.6% (0.6-3.3)	0.5% (0.1-3.3)	6.4% (4.3-9.4)	8.4% (4.6-15.1)	
aAOR*	1	1.19 (0.59-2.40)	0.43 (0.17-1.06)	0.28 (0.10-0.84)	0.12 (0.02-0.86)	1.3 (0.84-2.02)	1.58 (0.86-2.90)	0.01
Attitudes towards sexual behaviours								
Perceived concurrency of most recent sex partner								
Unweighted/weighted base	5688/4958	76/72	97/88	124/110	60/52	350/312	150/106	
Yes†	17.6% (16.5-18.7)	33.2% (22.9-45.5)	30.7% (24.1-38.3)	11.6% (5.5-22.9)	8.6% (3.9-17.7)	18.3% (13.9-23.5)	23.5% (15.5-33.9)	
aAOR*	1	1.33 (0.72-2.45)	1.15 (0.63-2.09)	0.54 (0.27-1.05)	0.54 (0.25-1.17)	1.1 (0.81-1.49)	1.42 (0.91-2.23)	0.10
Non-exclusivity in marriage always wrong								
Unweighted/weighted base	7219/6181	102/101	163/145	188/174	110/105	454/397	194/137	
Always wrong†	64.1% (62.8-65.4)	69.3% (57.5-78.9)	81.6% (70.4-89.2)	75.2% (67.8-81.4)	80.4% (66.9-89.2)	60.9% (55.2-66.3)	72.7% (64.1-79.9)	
aAOR*	1	1.23 (0.76-1.98)	2.39 (1.46-3.93)	1.43 (0.95-2.16)	2.09 (1.24-3.55)	0.79 (0.63-0.99)	1.05 (0.71-1.55)	0.0003
One-night stands not wrong at all								
Unweighted/weighted base	7069/6047	99/95	153/137	185/168	109/104	442/388	185/131	
Not at all wrong†	9.9% (9.2-10.8)	9.8% (5.3-17.2)	3.2% (1.6-6.2)	4.1% (1.9-8.5)	0.6% (0.1-3.0)	9.8% (7.4-12.9)	8.2% (4.8-13.6)	
aAOR*	1	1.09 (0.54-2.20)	0.34 (0.17-0.69)	0.37 (0.18-0.75)	0.08 (0.02-0.35)	1.18 (0.86-1.63)	0.96 (0.56-1.63)	<0.0001

aAOR=age-adjusted odds ratio. †Age standardised estimates to account for differences in the age profile by ethnicity were calculated using the overall age distribution among men and women to standardise age distribution in ethnic groups. * Logistic regression using survey function was used to test for ethnic variations and calculate aAORs. ‡ aAOR refer to ethnic variation in proportions of the explanatory factors adjusted for age. §aAOR could not be calculated due to small numbers in some cells.

Table 4: Ethnic variations in sexual behaviours and attitudes in women

	White British	Black Caribbean	Black African	Indian	Pakistani	White other	Mixed ethnicity	p value
Attended sexual health clinic in the past 5 years*								
Unweighted/weighted base	4731/5704	58/80	86/112	99/156	58/77	278/344	103/107	
Yes†	11.8% (10.9–12.7)	23.6% (14.9–35.2)	19.8% (13.1–28.8)	4.3% (1.9–9.0)	8.5% (4.7–14.8)	15.2% (10.9–20.8)	13.1% (8.2–20.1)	
aAOR‡	1	3.25 (1.44–7.33)	2.50 (1.29–4.86)	0.41 (0.18–0.96)	0.88 (0.40–1.91)	1.33 (0.87–2.04)	1.12 (0.6–1.91)	0.002
Model 1	1	3.71 (1.67–8.26)	3.00 (1.44–6.24)	0.48 (0.19–1.17)	1.18 (0.51–2.71)	1.38 (0.89–2.14)	1.19 (0.69–2.04)	0.001
Model 2	1	4.03 (1.90–8.54)	3.37 (1.64–6.91)	0.48 (0.19–1.21)	1.35 (0.58–3.16)	1.23 (0.79–1.92)	1.08 (0.62–1.88)	0.0003
Model 3	1	3.39 (1.66–6.94)	2.60 (1.33–5.11)	0.53 (0.21–1.37)	1.43 (0.59–3.42)	1.12 (0.71–1.79)	0.98 (0.51–1.87)	0.003
STI diagnoses in the past 5 years*§								
Unweighted/weighted base	4748/5717	60/81	88/112	98/154	55/73	280/347	104/108	
Yes†	3.6% (3.1–4.2)	8.7% (4.4–16.5)	5.6% (2.4–12.3)	NA	0.6% (0.09–4.3)	3.8% (2.0–6.9)	5.3% (2.5–11.1)	
aAOR‡	1	3.22 (1.31–7.89)	1.75 (0.73–4.22)	NA	0.20 (0.03–1.48)	1.14 (0.56–2.34)	1.63 (0.73–3.64)	0.04
Model 1	1	3.68 (1.56–8.66)	2.17 (0.87–5.43)	NA	0.26 (0.04–1.89)	1.17 (0.57–2.38)	1.89 (0.85–4.21)	0.01
Model 2	1	4.14 (1.66–10.30)	2.71 (1.09–6.73)	NA	0.39 (0.05–2.93)	0.94 (0.46–1.91)	1.48 (0.63–3.47)	0.01
Model 3	1	2.48 (1.05–5.88)	2.03 (0.76–5.41)	NA	0.54 (0.07–3.89)	0.93 (0.44–1.96)	1.42 (0.61–3.31)	0.23
Low sexual function in the past year								
Unweighted/weighted base	4108/4998	56/76	83/108	84/132	55/73	254/320	90/94	
Low score†	20.2% (18.8–21.6)	24.9% (15.4–37.8)	30.9% (22.7–40.5)	14.7% (8.3–24.7)	37.3% (26.1–49.9)	22.6% (16.3–30.4)	14.5% (6.7–28.5)	
aAOR‡	1	1.48 (0.75–2.92)	0.72 (0.37–1.39)	0.81 (0.42–1.57)	1.72 (0.89–3.29)	1.18 (0.82–1.69)	0.73 (0.35–1.56)	0.39
Model 1	1	1.42 (0.71–2.87)	0.73 (0.38–1.41)	0.87 (0.45–1.70)	1.88 (0.97–3.62)	1.19 (0.83–1.70)	0.71 (0.33–1.51)	0.35
Model 2	1	1.38 (0.67–2.87)	0.73 (0.37–1.42)	0.83 (0.39–1.72)	1.86 (0.97–3.58)	1.12 (0.78–1.62)	0.74 (0.34–1.59)	0.43
Model 3	1	1.69 (0.82–3.53)	0.68 (0.34–1.36)	0.69 (0.33–1.51)	1.62 (0.82–3.21)	1.05 (0.72–1.52)	0.76 (0.36–1.64)	0.39

Data are AOR (95% CI), unless otherwise stated. p values refer to ethnic variation in sexual health outcomes, adjusting for other factors in each model. AOR=adjusted odds ratio. aAOR=age-adjusted odds ratio. STI=sexually transmitted disease. NA=not achievable. See appendix table 3 for variables included in Model 1, 2, and retained in final model 3 using hierarchical backward stepwise logistic regression for complex survey data. *If had ≥1 lifetime partner. †Age standardised estimates to account for differences in the age profile by ethnicity were calculated using the overall age distribution among men and women to standardise age distribution in ethnic groups. ‡Logistic regression using survey function was used to test for ethnic variations and calculate AORs. §Diagnosis with any of the following STIs in the past 5 years were included: trichomonas, gonorrhoea, chlamydia, syphilis, non-gonococcal urethritis or non-specific urethritis, genital warts, and herpes.

Table 5: Ethnic variation in sexual health and wellbeing outcomes in men

partner numbers, and concurrency. Adjusting for hypothesised explanatory factors (including socioeconomic status, substance use, depressive symptoms, and sexual behaviours) only partly explained inequalities in attendance at a sexual health clinic, STI diagnoses, and emergency contraception use among some ethnic groups relative to white British ethnicity but did not eliminate ethnic differences in these markers.

Limitations of our study include that, despite Natsal-3's large sample size, a relatively small proportion of participants were of non-white British ethnicity reflecting Britain's ethnic composition. Unlike Natsal-2,⁵ Natsal-3 did not oversample ethnic minorities, therefore limiting the power to detect ethnic differences as reflected in some wide confidence intervals. The ethnic composition of Britain may have changed since 2010–12 when Natsal-3 was conducted, because of the continued immigration from EU and non-EU countries.²⁸ EU nationals are likely to identify as white other, so we treated white other as a separate ethnic group in our analyses instead of combining it with white British. We broadly categorised people according to their self-reported ethnicity and acknowledge that heterogeneity exists within all ethnic groups, particularly mixed ethnicity and white other.

Natsal-3 is a cross-sectional survey, therefore we cannot infer causal associations between the factors hypothesised to have a hierarchical relationship in the proposed conceptual framework and recognise that associations can be bidirectional. Nevertheless, our conceptual framework is informed by theoretical frameworks and existing evidence from longitudinal studies,^{8,26,27} adding to the literature on the broader sexual health markers and their drivers. The response rate of Natsal-3, although lower than previous Natsal surveys,^{29,30} is in line with other major surveys completed in Britain around the same time.^{31,32} We addressed the potential for non-response bias by weighting the sample so that it is broadly representative of the underlying population according to sex, age, and region, as per the 2011 census. However, the under-representation of the Asian population¹³ suggests that non-response might have been greater in Asians than in other ethnic groups, and some non-response bias could remain after weighting.

Consistent with other studies,^{5,8} average age at sexual debut was lowest for black Caribbean men, and lower than observed for Britain as a whole (ie, 17 [16–19] for men and 17 [15–22] for women).¹⁴ Black Caribbean and

	White British	Black Caribbean	Black African	Indian	Pakistani	White Other	Mixed ethnicity	p value
Attended sexual health clinic in the past 5 years*								
Unweighted/ weighted base	6802/5922	90/87	118/108	148/137	75/70	428/381	173/122	
Yes†	12.7% (11.9–13.4)	26.8% (21.1–33.4)	14.6% (9.9–20.9)	7.3% (4.5–11.7)	7.2% (3.1–15.6)	13.9% (11.0–17.4)	20.7% (15.2–27.5)	
aAOR‡	1	3.39 (2.09–5.48)	1.35 (0.75–2.41)	0.34 (0.18–0.64)	0.46 (0.19–1.09)	1.16 (0.83–1.62)	2.06 (1.25–3.39)	<0.0001
Model 1	1	2.24 (1.33–3.79)	1.36 (0.71–2.57)	0.41 (0.21–0.78)	0.62 (0.22–1.77)	1.08 (0.77–1.52)	1.79 (1.11–2.92)	0.0002
Model 2	1	2.41 (1.25–4.66)	1.33 (0.67–2.64)	0.43 (0.21–0.87)	0.77 (0.27–2.19)	1.07 (0.73–1.57)	1.89 (1.11–3.23)	0.003
Model 3	1	2.80 (1.43–5.46)	1.33 (0.67–2.68)	0.51 (0.23–1.11)	1.02 (0.36–2.89)	1.11 (0.73–1.67)	1.71 (1.03–2.84)	0.008
STI diagnoses in the past 5 years*§								
Unweighted/ weighted base	6821/5926	92/89	121/112	148/139	73/67	425/377	172/120	
Yes†	3.2% (2.9–3.7)	5.3% (2.6–10.2)	3.9% (1.9–7.5)	0.9% (0.3–3.5)	NA	3.9% (2.2–6.8)	6.7% (3.9–11.1)	
aAOR‡	1	1.75 (0.73–4.20)	1.2 (0.57–2.55)	0.33 (0.93–1.18)	NA	1.15 (0.64–2.05)	2.23 (1.25–3.96)	0.04
Model 1	1	1.56 (0.67–3.61)	1.36 (0.63–2.93)	0.42 (0.12–1.52)	NA	1.13 (0.63–2.04)	2.12 (1.19–3.79)	0.08
Model 2	1	1.55 (0.55–4.33)	0.96 (0.38–2.47)	0.68 (0.16–2.84)	NA	0.86 (0.46–1.61)	2.04 (1.09–3.82)	0.19
Model 3	1	1.71 (0.65–4.51)	1.24 (0.52–2.99)	0.94 (0.21–4.18)	NA	0.86 (0.44–1.69)	2.01 (1.04–3.92)	0.26
Low sexual function in the past year								
Unweighted/ weighted base	5616/4844	68/62	109/98	131/116	67/59	373/326	161/115	
Low score†	20.6% (19.3–21.9)	10.1% (4.8–20.2)	12.9% (8.6–19.6)	8.8% (4.9–15.3)	24.9% (19.2–31.8)	30.1% (23.2–38.1)	25.4% (15.8–38.3)	
aAOR‡	1	0.56 (0.23–1.34)	0.91 (0.54–1.53)	0.43 (0.22–0.83)	0.71 (0.33–1.54)	1.40 (1.05–1.87)	1.28 (0.81–2.03)	0.01
Model 1¶	1	0.56 (0.23–1.34)	0.91 (0.54–1.53)	0.43 (0.22–0.83)	0.71 (0.33–1.54)	1.40 (1.05–1.87)	1.28 (0.81–2.03)	0.01
Model 2	1	0.56 (0.22–1.46)	0.77 (0.42–1.42)	0.41 (0.21–0.77)	0.70 (0.30–1.62)	1.44 (1.06–1.94)	1.17 (0.74–1.86)	0.009
Model 3	1	0.56 (0.22–1.47)	0.73 (0.39–1.34)	0.47 (0.25–0.88)	0.66 (0.28–1.58)	1.38 (1.02–1.89)	1.19 (0.74–1.89)	0.026
Ever used emergency contraception*								
Unweighted/ weighted base	6890/6008	99/97	130/119	154/149	82/77	446/397	176/127	
Yes†	23.0% (22.0–24.1)	30.7% (23.0–39.5)	16.9% (11.5–24.3)	11.0% (6.8–17.2)	2.1% (0.9–4.6)	18.1% (14.6–22.3)	28.2% (22.5–34.7)	
aAOR‡	1	1.49 (0.89–2.49)	0.73 (0.43–1.23)	0.38 (0.23–0.63)	0.12 (0.05–0.29)	0.75 (0.57–0.99)	1.40 (0.98–2.01)	<0.0001
Model 1	1	1.37 (0.81–2.32)	0.71 (0.41–1.22)	0.35 (0.21–0.59)	0.15 (0.06–0.36)	0.69 (0.52–0.92)	1.43 (0.99–2.08)	<0.0001
Model 2	1	1.99 (1.08–3.67)	0.74 (0.42–1.31)	0.38 (0.21–0.69)	0.19 (0.07–0.47)	0.69 (0.51–0.94)	1.34 (0.88–2.05)	<0.0001
Model 3	1	2.19 (1.18–4.09)	0.74 (0.42–1.32)	0.41 (0.23–0.73)	0.22 (0.09–0.53)	0.75 (0.55–1.01)	1.23 (0.79–1.93)	0.0001

Data are AOR (95% CI), unless otherwise stated. p values refer to ethnic variation in sexual health outcomes, adjusting for other factors in each model. AOR=adjusted odds ratio. aAOR=age-adjusted odds ratio. STI=sexually transmitted disease. NA=not achievable. See appendix table 3 for variables included in Model 1, 2, and retained in final model 3 using hierarchical backward stepwise logistic regression for complex survey data. †If had ≥1 lifetime partner. ‡Age standardised estimates to account for differences in the age profile by ethnicity were calculated using the overall age distribution among men and women to standardise age distribution in ethnic groups. §Logistic regression using survey function was used to test for ethnic variations and calculate aAORs. ¶Diagnosis with any of the following STIs in the past 5 years were included: trichomonas, gonorrhoea, chlamydia, syphilis, non-gonococcal urethritis or non-specific urethritis, genital warts, and herpes. ¶¶No socioeconomic variables were retained in the backwards selection process so the adjusted odds ratios in this model are same as the aAORs.

Table 6: Ethnic variation in sexual health and wellbeing outcomes in women

mixed ethnicity participants were also less likely to be sexually competent at sexual debut,⁵ which is associated with reporting subsequent sexual risk behaviours,⁸ STI diagnoses (as we observed), and, among women, non-volitional sex and unplanned pregnancy.^{33,34} These multiple, negative health implications of low sexual competence at sexual debut highlight the public health importance of sex and relationship education (SRE), especially among young people in these ethnic groups. Recently, the UK government announced plans to make SRE compulsory in all secondary schools across the educational system.³⁵ Our findings emphasise that SRE should promote negotiation skills and improve individuals' ability to resist coercion, especially at the time of sexual debut, to initiate a healthy sex life.³³

Natsal-3 did not collect data on the time at which participants who were born abroad first moved to the UK, so we cannot estimate the proportion of our sample who may have experienced sexual debut outside Britain. However, data from the 2011 census³⁶ and routine STI surveillance from England³⁷ indicate that the majority of black Caribbean, black African, and mixed ethnicity people are UK-born and can benefit from SRE. Besides SRE, interventions addressing broader, family-related issues could potentially be important for improving early sexual experiences of ethnic minority youth as evidence shows that ethnic variations in family support,⁸ family conflict,³⁸ and family structure³⁹ are associated with earlier sexual debut and lower sexual competence at sexual debut. However, further research is needed to

understand the pathways through which these family-related influences might operate.

Overall, substantial ethnic variations in the magnitude of differences in reporting sexual behaviours between men and women were noted, despite a narrowing of this gender gap over time at a population level.¹⁴ Men generally reported greater sexual risk behaviour than did women, which might be due to social desirability bias, but corroborates with the higher proportion of men reporting STI diagnoses than that of women. Our finding of greater reporting of STI diagnoses by black Caribbean men and mixed ethnicity women concurs with other UK studies,^{7,8,16} and concurs with English sexual health surveillance data showing high STI diagnoses rates among black Caribbean compared with white British individuals.⁶ However, unlike the surveillance data we did not find a greater reporting of STI in white other people and no association between STI diagnoses and IMD.⁶ Previous Natsal-3 analyses have shown that low sexual function is associated with other factors that were not examined in our analysis because of sample size limitations—eg, non-volitional sex.¹⁹ Therefore, further research to examine the drivers of ethnic variations in sexual function among women is needed. The high prevalence of emergency contraception use reported among black Caribbean and mixed ethnicity women suggests an unmet need for accessible, effective, long-acting, reversible contraception, and implies non-use or ineffective use of condoms. Previous research has shown that pregnancy prevention is of greater concern to young black Caribbean women than is STI prevention,⁴⁰ suggesting the need to better understand factors influencing their contraceptive choices, especially fertility expectations and cultural norms. Furthermore, although the use of emergency contraception was not associated with reporting abortion in the past 5 years,⁴¹ the overlap in factors associated with emergency contraception use and STI diagnoses highlights the need for sexual health promotion in women using emergency contraception.

Interventions that address multiple modifiable behavioural factors—including recreational drug use and high number of partners, which are both associated with several sexual health markers—should be developed. Such holistic interventions can potentially reduce ethnic inequalities in multiple sexual health markers simultaneously and thus could be more cost-effective than interventions that just address a single marker. Identifying risk factors for sexual ill-health during clinic consultations has been emphasised⁴² to enable the delivery of effective and appropriate behaviour change interventions.⁴³ The increased likelihood of attendance at a sexual health clinic in ethnic groups at risk of poor sexual health offers an opportunity for implementing such interventions. However, the feasibility of achieving this implementation is questionable because of sustained disinvestment in sexual health, leading to increasing pressure on sexual health services to focus exclusively on STI care.⁴⁴ This

pressure adversely affects public health interventions such as partner notification that address the individuals' position in, and thus risk from, their sexual networks,⁴⁵ especially given the geographical clustering of STI.⁴⁶ Broader social and ecological factors highlighted in ecosocial and intersectionality theories, but which were not asked about in Natsal-3, may be crucial to our understanding in order to reduce ethnic inequalities in sexual health. Future research should collect data for these factors (for example, exposure to discrimination and other forms of mental and physical trauma).^{10,11} Longitudinal studies are needed to better understand the causal pathway of drivers of poor sexual health. Further research on the factors contributing to ethnic inequalities in sexual health is underway for England's National Institute for Health Research's Health Protection Research Unit in Blood Borne and Sexually Transmitted Infections.⁴⁷ This research can contribute to the development of interventions to reduce ethnic inequalities in sexual health, in line with the 2013 England Framework for Sexual Health Improvement.⁴⁸

Contributors

SW, GH, and CHM conceived this Article. SW developed the theoretical framework for analysis, analysed the data, and wrote the first draft of the report. All authors contributed to subsequent drafts of the report and approved the final version.

Declaration of interests

We declare no competing interests.

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