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**Physical health inequalities among gay and bisexual men in England: a large community-based cross-sectional survey**

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**ABSTRACT**

Gay and bisexual men experience a disproportionate burden of ill health compared to the general male population. However, little is known regarding health inequalities that exist within this group. We describe five key physical health indicators and their variation across common axes of inequality.

Community-based opportunistic sampling recruited 5799 gay and bisexual men to a self-completion internet survey. Respondents provided data relating to their height, weight, physical activity and substance use (tobacco, alcohol, illicit drugs). Responses were compared across seven demographic characteristics.

Indicators of problematic health behaviour were concentrated within different groups and inequalities were rarely observed in the same direction. Older men were more likely to be overweight and drink alcohol frequently but less likely to smoke or use illicit drugs. Men of Asian ethnicity were more likely to exercise infrequently but less likely to smoke. Men living in London were more likely to smoke and use illicit drugs but less likely to be overweight. However, lower education was associated with being overweight, frequent alcohol, low exercise and smoking.

There is evidence of significant demographic variation in physical health related behaviours among gay and bisexual men, and men with lower levels of education are consistently in greater need.

**KEY WORDS**

Health inequalities; male homosexuality; drug use; exercise; smoking; alcohol consumption.

**INTRODUCTION**

The majority of public health data analysis relating to sexual orientation considers differences in health outcomes between sexual majorities and sexual minorities, usually finding outcomes to be worse among minorities [1, 2]. Minority stress theory is currently the dominant explanation for differences in health between sexual minorities and the sexual majority [3]. However, little data is available about health inequalities *within* sexual minorities.

Describing health inequalities within sexual minorities is challenging primarily due to sampling. Large representative samples are theoretically possible but remain practically unfeasible. There is no sampling frame for sexual minorities and, as they form small proportions of the population, even large representative general population surveys recruit only a small absolute numbers of sexual minority men and women. The majority of population health research with sexual minorities has therefore used convenience samples.

With regard to health differences within gay and bisexual men, studies (in Australia and North America) have identified higher rates of smoking among white compared to ethnic minority men [4] and higher rates of alcohol use among young compared to older men [5]. However, to date, there has been no published data from the UK that examines diversity in health related behaviour among male sexual minorities beyond those which focuses on HIV/STI transmission behaviour.

The aim of the current analysis is to describe variation in health behaviours and indicators of physical health among a large (N=5,799) community-recruited sample of gay and bisexual living in England. We consider five indicators (overweightness, low exercise, frequent alcohol consumption, smoking tobacco and illicit drug use) across seven demographics (age, ethnicity, educational attainment, migrancy, household, income and living in London).

**METHODS**

The Stonewall Gay and Bisexual Men’s Health Survey 2011 was an online, anonymous, self-completed survey. Eligibility was identifying as gay or bisexual (or using another term indicating same-sex attraction), aged 16 years or over and living in England.

*Recruitment*

We attempted to reduce bias through snowball sampling with multiple entry points into the population, drawing upon the communications networks of Stonewall, a sexual minority rights charity. The survey was promoted to approximately 500 employers who were members of Stonewall’s Diversity Champions programme, between them employing around 5 million people across the public, private and third sectors. Employers in turn promoted the survey to their employees, networks and service-users/clients. Requests to participate and to promote the survey were sent to email lists of gay community leaders and professional networks. Between March and October 2011 the survey was repeatedly promoted by Stonewall through social media – *Facebook* (approximately 20,000 friends) and *Twitter* (approximately 10,000 followers). Several high profile gay celebrities and large gay businesses tweeted and posted links. The survey was promoted to Stonewall’s education campaign contacts (approximately 2,000 people), including schools, universities and local authorities who in turn promoted it to their contacts, networks and mailing lists. Finally, a small amount of paid advertising was undertaken for a period of four weeks on an MSM news and dating website (Gaydar.co.uk).

*Measures*

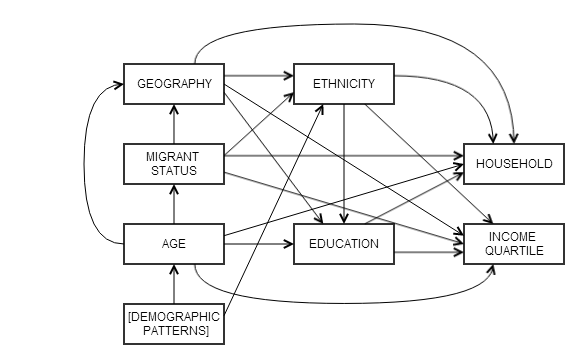
All measures were self-reported. We used five commonly used measures of physical health drawn from existing UK surveys: Body Mass Index (BMI, weight divided by squared height); typical number of days per week featuring moderate to vigorous physical activity of at least 30 minutes [6]; number of days in past week on which alcohol was consumed [7]; tobacco smoking history (never smoked/have smoked but not at the moment/current smoker) [7]; and illicit drugs used in the last four weeks [8].

All outcomes were coded as binary variables: ‘overweight’ was defined as BMI equal to or greater than 25 (as *per* the World Health Organisation definition, [9]); ’low exercise’ was defined as reporting at least 30 minutes moderate to vigorous physical activity on fewer than five days per week (the current UK government recommendation, [6]); ‘frequent alcohol’ was defined as drinking on four or more days a week, to identify those not following the Royal College of Physicians recommendation for alcohol-free days [10]; ‘current smoking’ was defined as responding affirmatively to “Do you smoke cigarettes at all nowadays?”; ‘illicit drug use’ was defined as reporting having taken any of ten named recreational drugs in the previous four weeks (marijuana, ecstasy, LSD, amphetamine, crystal methamphetamine, cocaine, crack cocaine, ketamine, GHB, heroin, inhaled nitrites, erectile dysfunction medications, tranquillisers).

Age, education, ethnicity, migrant status, income, household situation and geography were analysed for their associations with health outcomes. These variables were selected on their basis of their mention within the Public Health England Outcomes Framework LGBT Companion Document [1]. Ages were coded in four bands giving approximately equal sized groups (16-25; 26-35; 36-45; >45). Educational attainment was coded in three groups: to General Certificate of Education (GCSE) or less; post-GCSE qualifications but not a degree; university degree. Ethnicity was recoded as “White”, “Black”, “Asian”, and “Other ethnicity”, from the Office for National Statistics 18 category ethnicity question. Migrant status was coded according to whether or not respondents reported having been born outside of the UK. Income was coded into five bands giving approximately similar sized groups. Household indicates who the respondent lived with (alone; with a male partner; with others but not a male partner). Finally, respondents were assigned to one of two geographical groupings: living in London or not living in London.

*Model development*

We first investigated and reported data missingness, and used cross-tabulation and logistic regression to explore unadjusted trends between each demographic and the health outcomes. Associations were described as odds ratios, with strength of association measured by effect size (p-value from a likelihood ratio test). The associations under investigation were liable to confounding, and in order to select appropriate potential confounders, and to make explicit our assumptions about the causal connections between the variables, we drew a directed acyclical graph (Figure 1). The graph states our assumptions and was developed by the authors. We used the DAGITTY software (<http://www.dagitty.net/>) to identify minimal sufficient adjustment sets of potential confounders. These confounders were used in logistic regression. By identifying confounders in this way, as opposed to including potential confounders on the basis of association with the exposure of interest and the outcome, we aimed to avoid over-fitting the model with variables on the causal pathway [11].



*Figure 1: Assumptions of casual connections between demographic variables*

The arrows represent assumed causal links. Education and migration status are both determined in the ‘past’ and therefore have been placed higher in the causal pathways. Each of these variables is also thought to have a causal relationship with the outcomes (not shown).

Figure 1 indicates that we assumed some demographics were intermediate on the causal pathway between other variables and the outcomes. For each adjusted logistic regression model estimating the association between a particular demographic and a particular outcome, we reported whether or not variables assumed to be on the causal pathway substantially changed the association when added to the model. This was not a formal assessment of mediation in order to make causal claims, but a description of the associations in the sample. When the odds ratio was substantially altered (i.e. by above 10%) by the inclusion of a potential mediator, we described the variable as having at least partially altered the association.

**RESULTS**

After ineligibility exclusions, there were 5799 valid survey submissions.From the original sample of 7160, 1361 cases were excluded. As this paper focusses specifically on England, 1257 men who lived in Scotland or Wales or provided no evidence of living in England were excluded. A further 112 gave no evidence of sex with men or a gay, bisexual or queer identity, 66 were duplicates, 60 gave no evidence of being aged 16 or above, 35 expressed a female gender identity and 7 gave very inconsistent answers deemed to be nonsensical. Some of these cases overlapped on exclusion criteria. Table 1 presents a description of the sample and results of the logistic regression.

The median age was 32 years with the majority (78%) under 45 years. Most were White (94%) and 58% had degree-level education. There was a broad distribution of incomes and 14% were migrants. Approximately equal numbers reported living alone, living with a male partner, or living with others (not a male partner). 35% lived in London. In the adjusted models: associations with ethnicity were adjusted by age, geography, and migrant status; education was adjusted by age, ethnicity, and living in London; income was adjusted by age, ethnicity, education, migrant status, and living in London; household was adjusted by age, ethnicity, education, migrant status, and living in London; migrant status was adjusted by age; and associations with living in London were adjusted for age and migrant status.

**Overweight**

Overall, 44% of the men were overweight. The proportion overweight increased successively with age. There was strong statistical evidence for an association (p<0.001) and large effect sizes relative to the youngest group: men aged over 45 were more than twice as likely to be overweight relative to those under 25 (percentage overweight aged >45=57%, 16-25=25%; OR=4.08 95% CI: 3.47-4.80). The effect of age was not changed by adjusting for migration status or household living arrangement; adjusting for income, education, and living in London moderately shifted the effect estimates away from the null. This suggested that the effect of age might be slightly weakened because of its intermediate effect on these factors. There was strong evidence of an association between increasing level of education and a lower risk of being overweight (p<0.001), with the strongest effect for the high education category relative to the low category (aOR degree=0.74 95% CI 0.63-0.87). Adjusting for other potentially mediating variables did not change the estimated effect. We found moderate evidence that migrant status was associated with lower risk of being overweight (aOR migrant=0.82 95% CI 0.70-0.96), but that this was strongly altered by adjusting for living in London so that the aOR was 0.93, and the p-value became 0.40.

**Low exercise**

The majority, 61.6%, were physically active (for 30 minutes or more) on fewer than five days per week. There was no evidence of an association with increasing age (p=0.390). Men of Asian ethnicity were less likely to exercise relative to White men, and there was moderate evidence for the association ( aOR 2.02 95% CI 1.25-3.26; p-value overall=0.009). This association was not altered by adjustment for education (aOR Asian | education = 2.04) or income (aOR Asian | 1.94 income). Education was not associated with low exercise. There was no evidence that migrants exercised more or less than non-migrants, while living in London was associated with a modest protective effect (aOR=0.89 95% CI 0.79 – 1.00).

**Frequent alcohol**

Over 43% drank on four or more days in the last week. The proportion was lowest in the 16-35 year olds and highest for men over 45. The association between age and frequent alcohol intake was strong, with substantial effect sizes. Some of this association was altered by adjusting for income (aOR|income: 25-35=1.12; 36-45=1.41; >45=1.77). There was moderate evidence that frequent alcohol increases with income, and strong evidence of association with living in London (aOR living in London 1.24 95% CI 1.11-1.39; p<0.001). The effect of living in London was very slightly moved towards the null when adjusting for income (aOR|income = 1.21), but not by other variables, suggesting that some of the effect is because of geographical income differences, but that there are independent effects on drinking behaviour.

**Smoking**

Approximately 25% currently smoked tobacco. This proportion was highest in men aged 16-25 (30%), successively lower with increasing age, and lowest in men >45 (15%). The age effect was only altered by adjustment for income, and there were substantial residual effects, especially for older ages relative to 16-25 year olds (aOR|income: 25-35=1.09; 36-45=0.96; >45=0.49). Higher education was associated with not smoking (aOR: A-level=0.91; Degree=0.66), and this moved somewhat towards the null when adjusting by income (aOR|income: A-level=0.97; Degree=0.73). There was a strong association between lower income and smoking (p<0.001).

**Illicit drug use**

Approximately 19% had used an illicit drug in the previous four weeks. This proportion was lower in men aged 16-25 (16%) and in men over 45 (11%). Relative to the youngest age group there was increased likelihood of drug use in middle age groups (26-35 years, OR 1.96 95% CI 1.65-2.34; 36-45 years, OR 1.48 95% CI 1.22-1.79) and lower likelihood in men aged >45 (OR 0.64 95% CI 0.51-0.80). These odds-ratios moved towards the null when adjusted for income (aOR|income: 25-35=1.71; 36-45=0.24; >45=0.54) or living in London (aOR|London: 25-35=1.60; 36-45=0.26; >45=0.54). There was strong evidence that men living in London had over twice the odds of illicit drug use in the previous year, with no evidence of mediation by other variables.

**DISCUSSION**

**Main findings of this study**

The findings of the survey indicate widespread problematic behaviours connected with physical ill-health among gay and bisexual men in England: 44% of respondents were overweight; 62% do not meet recommended levels of physical activity; 43% were very frequent drinkers; 26% currently smoked; and 19% used illicit drugs within the previous 4 weeks. Among all UK adult males in the same time period (and utilising the same operational definitions), 66% had a BMI over 25 [12] and 61% had low activity [6], suggesting these sexual minority men had less overweightness and comparable physical activity to the sexual majority. However, the substance use figures were higher than comparable measures for all adult males in similar times periods, where 24% were very frequent drinkers [13], 21% smoked [14] and 12% used illicit drugs [8]. This suggests that male health inequalities across sexuality do not all trend in the same direction.

Our analysis found heterogeneous associations between demographic factors and different health indicators in this sample. We identified that older gay and bisexual men were significantly more likely to be overweight and drink frequently but were less likely to smoke or use illicit drugs than younger men. As in the general male population [14], younger men were most likely to smoke, with only a slow falling off until the over 45s when the decline is steeper. However, illicit drug use was most common in men aged 25-45. Only a small proportion of this association was accounted for by living in London.

In this survey, differences in health outcomes by ethnicity were difficult to detect because of the small numbers of men from specific minority ethnicities. However, Asian men were less likely to take exercise than White men, and that this was not due to differences in education or income. An association between physical inactivity and Asian ethnicity has also been documented in the general population [15]. However, Asian men were also significantly less likely to smoke. In the Health Survey for England 2004 [16] Indian men were less likely to smoke (20%) than the general population (24%) but Pakistani men (29%) and especially Bangladeshi men (40%) were more likely to smoke. Our data do not allow for this level of enquiry.

We found that lower education was associated with being overweight, inactivity, smoking and frequent alcohol use, and that these associations were only slightly mediated by differences in income. Illicit drug use however was mildly associated with higher levels of education, after adjusting for potential confounders. Higher earners were more likely to drink frequently but much less likely to smoke, mirroring biases in the general population [17]. In both cases the effects were progressive with increasing income. Income was not associated with being overweight, exercise, or illicit drug use after adjusting for confounders. Migrants were less likely to be overweight, which was mediated by living in London, and were more likely to exercise frequently, which was independent of living in London.

After controlling for potential confounders, household was not strongly associated with any of the health outcomes, but smoking was slightly less common among men co-habiting with a male partner, which reflects the general population where smoking is less common in married rather than single people [17]. Living in London was strongly associated with a lower risk of being overweight, and this was not mediated by education, income, or any other available factor. Men in London were more likely to drink frequently, and considerably more likely to have used illicit drugs than those living elsewhere. However, as in the general population [14], living in London did not change the likelihood of tobacco use.

**What this study adds**

Our findings contribute a clear, nuanced account of demographic variation in health related behaviours among gay and bisexual living in England, that did not previously exist. That many of these findings mirror those observed among the general population is valuable to document in the context of public health policy or discussion which has often tended to consider minority groups more homogenous than they actually are [18].

The concept of ‘intersectionality’ provides a useful way of interpreting these findings [19]. Applied to gay and bisexual men, intersectionality suggests that the impact of homophobia on health is not felt equally, and further that the negative effect of homophobia may operate differently, and be more or less resisted, exacerbated or mitigated, by membership of other groups. It is possible that the negative health impact of being in a sexual minority can be mitigated by being relatively privileged in other areas of life. There is also a danger that interventions targeted at sexual minorities are least accessed by those marginalised in other ways, such that interventions reinforce health inequalities along lines of ethnicity, education, income and age for example. While this study has identified diversity according to key demographic characteristics, further qualitative research is required to understand the nature of such health related behaviour and the reasons why such divergence may exist.

**Limitations of this study**

While large, this remains a non-representative self-selecting sample of gay and bisexual men. Due to the mode of online completion we are unable to establish a response rate for the survey. Despite controlling for confounders, there may be residual confounding unmeasured factors. The alcohol measure may not reflect the quantity consumed and therefore alcohol-related harm. There is imprecision involved in short self-completion measures of health states.

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**Table 1: Sample description, health outcomes and associations with demographic characteristics: Stonewall’s Gay and Bisexual Men’s Health Survey 2011.**

Column frequencies are shown for the complete dataset. Row frequencies exclude missing data. The adjusted analyses were informed by the causal diagram. The associations with ethnicity were adjusted by age, geography, and migrant status. The associations with education were adjusted by age, ethnicity, and living in London. The associations with income were adjusted for by age, ethnicity, education, migrant status, and living in London. The associations with household living arrangement were adjusted by age, ethnicity, education, migrant status, and living in London. The associations with migrant status were adjusted by age. The associations with living in London were adjusted for age and migrant status. P-values were calculated using likelihood-ratio tests.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Total | Col  % | Overweight (105 missing) | | | | | Low exercise (38 missing) | | | | |
| N | 5799 | - | 2498/5694 (43.9) |  |  |  |  | 3547/5761 (61.6) |  |  |  |  |
|  |  |  | n/N (%) | OR | p-value | aOR |  | n/N (%) | OR | p-value | aOR | p-value |
| **Age** |  |  |  |  |  |  |  |  |  |  |  |  |
| 16-25 | 1539 | 26.4 | 375/1505 (24.9) | 1.00 |  |  |  | 941/1530 (61.5) | 1.00 |  |  |  |
| 26-35 | 1664 | 28.7 | 674/1644 (41.0) | 2.09 (1.80–2.44) |  |  |  | 993/1653 (60.1) | 0.94 (0.82–1.09) |  |  |  |
| 36-45 | 1336 | 23.1 | 739/1311 (56.4) | 3.89 (3.32–4.57) |  |  |  | 837/1326 (63.1) | 1.07 (0.92–1.25) |  |  |  |
| >45 | 1260 | 21.8 | 710/1234 (57.5) | 4.08 (3.47–4.80) | <0.001 |  |  | 776/1252 (62.0) | 1.02 (0.88–1.19) | 0.390 |  |  |
| **Ethnicity** |  |  |  |  |  |  |  |  |  |  |  |  |
| White | 5476 | 94.6 | 2369/5377 (44.1) | 1.00 |  | 1.00 |  | 3331/5440 (61.2) | 1.00 |  | 1.00 |  |
| Black | 52 | 0.9 | 24/52 (46.2) | 1.09 (0.63–1.88) |  | 1.42 (0.80–2.52) |  | 30/52 (57.7) | 0.86 (0.50–1.50) |  | 0.94 (0.54–1.63) |  |
| Asian | 93 | 1.6 | 38/92 (41.3) | 0.89 (0.59–1.36) |  | 1.24 (0.80–1.92) |  | 68/91 (74.7) | 1.87 (1.16–3.01) |  | 2.02 (1.25–3.26) |  |
| Mixed & Other | 171 | 2.9 | 65/167 (38.9) | 0.81 (0.59–1.11) | 0.550 | 1.08 (0.77–1.51) | 0.486 | 113/171 (66.1) | 1.23 (0.89–1.70) | 0.027 | 1.32 (0.95–1.83) | 0.009 |
| Missing | 7 |  |  |  |  |  |  |  |  |  |  |  |
| **Education** |  |  |  |  |  |  |  |  |  |  |  |  |
| No A-level | 946 | 16.4 | 460/922 (49.9) | 1.00 |  | 1.00 |  | 572/937 (61.0) | 1.00 |  | 1.00 |  |
| A-level ,diploma, HE below degree | 1457 | 25.2 | 610/1431 (42.6) | 0.75 (0.63–0.88) |  | 0.93 (0.78–1.11) |  | 917/1446 (63.4) | 1.11 (0.93–1.31) |  | 1.13 (0.95–1.34) |  |
| Degree level | 3379 | 58.4 | 1421/3328 (42.7) | 0.75 (0.65–0.87) | <0.001 | 0.74 (0.63–0.87) | <0.001 | 2053/3365 (61.0) | 1.00 (0.86–1.16) | 0.267 | 1.02 (0.87–1.18) | 0.235 |
| Missing | 17 |  |  |  |  |  |  |  |  |  |  |  |
| **Migrant** |  |  |  |  |  |  |  |  |  |  |  |  |
| No | 4963 | 86.4 | 2148/4863 (44.2) | 1.00 |  | 1.00 |  | 3054/4928 (62.0) | 1.00 |  | 1.00 |  |
| Yes | 779 | 13.6 | 326/774 (42.1) | 0.92 (0.79–1.07) | 0.285 | 0.82 (0.70–0.96) | 0.011 | 459/777 (59.1) | 0.89 (0.76–1.03) | 0.124 | 0.89 (0.76–1.04) | 0.130 |
| Missing | 57 |  |  |  |  |  |  |  |  |  |  |  |
| **Income** |  |  |  |  |  |  |  |  |  |  |  |  |
| <10,400 | 1327 | 23.2 | 453/1294 (35.0) | 1.00 |  | 1.00 |  | 818/1320 (62.0) | 1.00 |  | 1.00 |  |
| 10,400-18,199 | 924 | 16.2 | 407/913 (44.6) | 1.49 (1.26–1.78) |  | 1.08 (0.89–1.31) |  | 555/918 (60.5) | 0.94 (0.79–1.12) |  | 0.95 (0.80–1.14) |  |
| 18,200-31,199 | 1525 | 26.7 | 675/1501 (45.0) | 1.52 (1.30–1.77) |  | 1.00 (0.84–1.20) |  | 933/1515 (61.6) | 0.98 (0.85–1.15) |  | 1.02 (0.86–1.21) |  |
| 31,200-46,799 | 964 | 17 | 440/952 (46.2) | 1.60 (1.34–1.89) |  | 0.95 (0.78–1.16) |  | 608/959 (63.4) | 1.06 (0.89–1.26) |  | 1.10 (0.90–1.34) |  |
| 46,800+ | 968 | 17 | 495/957 (51.7) | 1.99 (1.68–2.36) | <0.001 | 1.15 (0.93–1.41) | 0.300 | 582/963 (60.4) | 0.94 (0.79–1.11) | 0.653 | 0.98 (0.80–1.20) | 0.665 |
| Missing | 91 |  |  |  |  |  |  |  |  |  |  |  |
| **Household situation** | |  |  |  |  |  |  |  |  |  |  |  |
| Live alone | 1448 | 25.1 | 718/1420 (50.6) | 1.00 |  | 1.00 |  | 890/1435 (62.0) | 1.00 |  | 1.00 |  |
| Lives with male partner | 2068 | 35.8 | 1009/2039 (49.5) | 0.96 (0.84–1.10) |  | 1.04 (0.90–1.19) |  | 1271/2057 (61.8) | 0.99 (0.86–1.14) |  | 1.00 (0.87–1.15) |  |
| Lives with others (not male partner) | 2263 | 39.1 | 764/2215 (34.5) | 0.51 (0.45–0.59) | <0.001 | 0.91 (0.78–1.07) | 0.207 | 1373/2249 (61.0) | 0.96 (0.84–1.10) | 0.810 | 0.99 (0.84–1.14) | 0.949 |
| Missing | 20 |  |  |  |  |  |  |  |  |  |  |  |
| **Lives in London** |  |  |  |  |  |  |  |  |  |  |  |  |
| No | 3796 | 65.5 | 1714/3726 (46.0) | 1.00 |  | 1.00 |  | 2360/3770 (62.6) | 1.00 |  | 1.00 |  |
| Yes | 2003 | 34.5 | 784/1968 (39.8) | 0.78 (0.70–0.87) | <0.001 | 0.65 (0.58–0.74) | <0.001 | 1187/1991 (59.6) | 0.88 (0.79–0.99) | 0.027 | 0.89 (0.79–1.00) | 0.057 |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Frequent alcohol use (missing 29) | | | | | Smokes tobacco (missing 44) | | | | | Has taken Class A in last year (missing 44) | | | | |
| N | 2505/5770 (43.4) |  |  |  |  | 1469/5755 (25.5) |  |  |  |  | 1103/5755 (19.2) | |  |  |  |
|  | n/N (%) | OR | p-value | aOR | p-value | n/N (%) | OR | p-value | aOR | p-value | n/N (%) | OR | p-value | aOR | p-value |
| **Age** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 16-25 | 551/1531 (36.0) | 1.00 |  |  |  | 460/1528 (30.1) | 1.00 |  |  |  | 239/1519 (15.7) | 1.00 |  |  |  |
| 26-35 | 671/1656 (40.5) | 1.21 (1.05–1.40) |  |  |  | 482/1653 (29.2) | 0.96 (0.82–1.11) |  |  |  | 443/1652 (26.8) | 1.96 (1.65–2.34) |  |  |  |
| 36-45 | 624/1329 (47.0) | 1.57 (1.35–1.83) |  |  |  | 338/1324 (25.5) | 0.80 (0.67–0.94) |  |  |  | 288/1330 (21.7) | 1.48 (1.22–1.79) |  |  |  |
| >45 | 659/1254 (52.6) | 1.97 (1.69–2.29) | <0.001 |  |  | 189/1250 (15.1) | 0.41 (0.34–0.50) | <0.001 |  |  | 133/1254 (10.6) | 0.64 (0.51–0.80) | <0.001 |  |  |
| **Ethnicity** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| White | 2381/5448 (43.7) | 1.00 |  | 1.00 |  | 1381/5433 (25.4) | 1.00 |  | 1.00 |  | 1028/5436 (18.9) | 1.00 |  | 1.00 |  |
| Black | 18/52 (34.6) | 0.68 (0.38–1.21) |  | 0.66 (0.37–1.18) |  | 17/52 (32.7) | 1.43 (0.80–2.55) |  | 1.31 (0.73–2.37) |  | 10/52 (19.2) | 1.02 (0.51–2.04) |  | 0.69 (0.34–1.40) |  |
| Asian | 30/93 (32.3) | 0.61 (0.40–0.95) |  | 0.69 (0.44–1.07) |  | 17/93 (18.3) | 0.66 (0.39–1.11) |  | 0.57 (0.33–0.97) |  | 13/91 (14.3) | 0.71 (0.40–1.29) |  | 0.56 (0.31–1.03) |  |
| Mixed & Other | 74/170 (43.5) | 0.99 (0.73–1.35) | 0.082 | 1.06 (0.77–1.46) | 0.170 | 52/170 (30.6) | 1.29 (0.93–1.80) | 0.097 | 1.21 (0.86–1.70) | 0.075 | 51/169 (30.2) | 1.85 (1.33–2.59) | 0.004 | 1.55 (1.08–2.20) | 0.011 |
| Missing |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Education** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| No A-level | 438/944 (46.4) | 1.00 |  | 1.00 |  | 275/936 (29.4) | 1.00 |  | 1.00 |  | 137/941 (14.6) | 1.00 |  | 1.00 |  |
| A-level, etc | 605/1449 (41.8) | 0.83 (0.70–0.98) |  | 0.89 (0.75–1.06) |  | 428/1453 (29.5) | 1.00 (0.84–1.20) |  | 0.91 (0.76–1.09) |  | 279/1446 (19.3) | 1.40 (1.12–1.75) |  | 1.29 (1.02–1.62) |  |
| Degree level | 1454/3364 (43.2) | 0.88 (0.76–1.02) | 0.079 | 0.85 (0.73–0.98) | 0.088 | 761/3353 (22.7) | 0.71 (0.60–0.83) | <0.001 | 0.66 (0.56–0.78) | <0.001 | 684/3355 (20.4) | 1.50 (1.23–1.84) | <0.001 | 1.13 (0.92–1.39) | 0.083 |
| Missing |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Migrant** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| No | 2147/4935 (43.5) | 1.00 |  | 1.00 |  | 1258/4925 (25.5) | 1.00 |  | 1.00 |  | 921/4925 (18.7) | 1.00 |  | 1.00 |  |
| Yes | 335/778 (43.1) | 0.98 (0.84–1.14) | 0.815 | 0.95 (0.81–1.11) | 0.505 | 196/775 (25.3) | 0.99 (0.83–1.17) | 0.881 | 1.00 (0.83–1.19) | 0.965 | 171/773 (22.1) | 1.23 (1.03–1.48) | 0.027 | 1.15 (0.95–1.38) | 0.161 |
| Missing |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Income (£)** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <10,400 | 493/1322 (37.3) | 1.00 |  | 1.00 |  | 382/1314 (29.1) | 1.00 |  | 1.00 |  | 203/1315 (15.4) | 1.00 |  | 1.00 |  |
| 10,400-18,199 | 396/922 (43.0) | 1.27 (1.07–1.50) |  | 1.15 (0.96–1.37) |  | 270/918 (29.4) | 1.02 (0.84–1.22) |  | 1.09 (0.89–1.32) |  | 168/918 (18.3) | 1.23 (0.98–1.54) |  | 1.22 (0.96–1.55) |  |
| 18,200-31,199 | 642/1514 (42.4) | 1.24 (1.06–1.44) |  | 1.11 (0.94–1.31) |  | 399/1511 (26.4) | 0.88 (0.74–1.03) |  | 0.95 (0.79–1.15) |  | 303/1513 (20.0) | 1.37 (1.13–1.67) |  | 1.15 (0.92–1.44) |  |
| 31,200-46,799 | 454/963 (47.1) | 1.50 (1.27–1.78) |  | 1.26 (1.03–1.53) |  | 230/962 (23.9) | 0.77 (0.63–0.93) |  | 0.87 (0.70–1.09) |  | 212/961 (22.1) | 1.55 (1.25–1.92) |  | 1.16 (0.90–1.50) |  |
| 46,800+ | 484/963 (50.3) | 1.70 (1.44–2.01) | <0.001 | 1.36 (1.11–1.66) | 0.032 | 165/963 (17.1) | 0.50 (0.41–0.62) | <0.001 | 0.61 (0.48–0.77) | <0.001 | 207/961 (21.5) | 1.50 (1.21–1.86) | <0.001 | 1.17 (0.90–1.52) | 0.567 |
| Missing |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Household** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Lives alone | 649/1445 (44.9) | 1.00 |  | 1.00 |  | 359/1431 (25.1) | 1.00 |  | 1.00 |  | 266/1439 (18.5) | 1.00 |  | 1.00 |  |
| With male partner | 958/2054 (46.6) | 1.07 (0.94–1.23) |  | 1.11 (0.97–1.28) |  | 462/2057 (22.5) | 0.86 (0.74–1.01) |  | 0.82 (0.70–0.97) |  | 373/2056 (18.1) | 0.98 (0.82–1.16) |  | 0.88 (0.73–1.05) |  |
| Lives with others | 891/2251 (39.6) | 0.80 (0.70–0.92) | <0.001 | 1.03 (0.89–1.20) | 0.265 | 643/2247 (28.6) | 1.20 (1.03–1.39) | <0.001 | 0.91 (0.76–1.08) | 0.059 | 461/2241 (20.6) | 1.14 (0.97–1.35) | 0.098 | 1.13 (0.94–1.37) | 0.014 |
| Missing |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Lives in London** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| No | 1569/3783 (41.5) | 1.00 |  | 1.00 |  | 948/3765 (25.2) | 1.00 |  | 1.00 |  | 525/3769 (13.9) | 1.00 |  | 1.00 | <0.001 |
| Yes | 936/1987 (47.1) | 1.26 (1.13–1.40) | <0.001 | 1.24 (1.11–1.39) | <0.001 | 521/1990 (26.2) | 1.05 (0.93–1.19) | 0.408 | 1.10 (0.96–1.25) | 0.169 | 578/1986 (29.1) | 2.54 (2.22–2.90) | <0.001 | 2.53 (2.19–2.91) |  |