

BMJ Open is committed to open peer review. As part of this commitment we make the peer review history of every article we publish publicly available.

When an article is published we post the peer reviewers' comments and the authors' responses online. We also post the versions of the paper that were used during peer review. These are the versions that the peer review comments apply to.

The versions of the paper that follow are the versions that were submitted during the peer review process. They are not the versions of record or the final published versions. They should not be cited or distributed as the published version of this manuscript.

BMJ Open is an open access journal and the full, final, typeset and author-corrected version of record of the manuscript is available on our site with no access controls, subscription charges or pay-per-view fees (http://bmjopen.bmj.com).

If you have any questions on BMJ Open's open peer review process please email info.bmjopen@bmj.com

# **BMJ Open**

# Factors associated with reporting lacking interest in sex and their interaction with gender: Findings from the third British National Survey of Sexual Attitudes and Lifestyles

Journal:	BMJ Open
Manuscript ID	bmjopen-2017-016942
Article Type:	Research
Date Submitted by the Author:	20-Mar-2017
Complete List of Authors:	Graham, Cynthia; University of Southampton, Psychology Mercer, Catherine; University College London, Research Department of Infection and Population Health Tanton, Clare; University College London, Research Department of Infection & Population Health Jones, Kyle; University College London, Research Department of Infection and Population Health Johnson, Anne; University College London, Research Department of Infection and Population Health Wellings, Kaye; London School of Hygiene and Tropical Medicine, Mitchell, Kirstin; London School of Hygiene and Tropical Medicine
<b>Primary Subject Heading</b> :	Sexual health
Secondary Subject Heading:	Epidemiology
Keywords:	SEXUAL MEDICINE, EPIDEMIOLOGY, Sexual and gender disorders < PSYCHIATRY

SCHOLARONE™ Manuscripts

# Factors associated with reporting lacking interest in sex and their interaction with gender: Findings from the third British National Survey of Sexual Attitudes and Lifestyles

Graham, C. A., Mercer, C. H., Tanton, C. Jones, K. G., Johnson, A. M., Wellings, K., Mitchell, K. R.

<sup>1</sup>Centre for Sexual Health Research, Department of Psychology, University of Southampton, Southampton, U.K.

<sup>2</sup>Centre for Sexual Health and HIV Research, Research Department of Infection & Population Health, University College London, London, U.K.

<sup>3</sup>Centre for Sexual and Reproductive Health Research, Department of Social and Environmental Health Research, London School of Hygiene and Tropical Medicine, London, U.K.

<sup>4</sup>MRC/CSO Social and Public Health Sciences Unit, University of Glasgow, 200 Renfield Street, Glasgow G2 3QB, U.K.

Corresponding author:
Cynthia A. Graham
Department of Psychology
Faculty of Social, Human, and Mathematical Sciences
Shackleton Building (B44)
University of Southampton
Highfield, Southampton
SO17 1BJ UK

tel: 023 8059 3091

e-mail: C.A.Graham@soton.ac.uk

Word count: 3,296

#### **ABSTRACT**

**Objectives:** To investigate factors associated with reporting lacking interest in sex, and how these vary by gender.

**Setting**: British general population.

**Design:** Complex survey analyses of data collected for a cross-sectional probability sample survey, undertaken 2010-12, specifically logistic regression to calculate ageadjusted odds ratios (AOR) to identify associated factors.

**Participants:** 4,839 men and 6,669 women aged 16-74 years who reported >=1 sexual partner (opposite-sex or same-sex) in the past year for the third National Survey of Sexual Attitudes and Lifestyles [Natsal-3].

Main outcome measure: Lacking interest in sex for >= 3 months in the past year.

**Results:** Overall, 15.0% (13.9-16.2) of men and 34.2% (32.8-35.5) of women reported lacking interest in sex. This was associated with age and physical and mental health for both men and women, including self-reported general health and current depression. Lacking interest in sex was more prevalent among men and women reporting STI diagnoses (ever), non-volitional sex (ever), and holding sexual attitudes related to normative expectations about sex. Some gender similarities in associated relationship and family-related factors were evident, including partner having had sexual difficulties in the last year (M: AOR:1.41 [1.07-1.86]; W: AOR:1.60 [1.32-1.94]), not feeling emotionally close to partner during sex (M: 3.74 [1.76-7.93]; W: 4.80 [2.99-7.69], and ease of talking about sex (M: 1.53 [1.23-1.90] W: 2.06 [1.77-2.39]). Among women only, lack of interest in sex was higher among those in a relationship of >1 year in duration and those not sharing the same level of interest (4.57 [3.87-5.38]) or preferences (2.91 [2.22-3.83]) with a partner.

**Conclusions**: Both gender similarities and differences were found in factors associated with lacking interest in sex, with the most marked differences in relation to some relationship variables. Findings highlight the need to assess, and if appropriate, treat lacking interest in sex in a holistic and relationship-specific way.

#### ARTICLE SUMMARY

# Strengths and limitations of this study

- This study used nationally representative data to investigate factors associated with reporting lacking interest in sex, and how these vary by gender, in the British population.
- The study included detailed assessment of a range of relationship context and attitudinal variables seldom included in previous population-based surveys.
- Information about lacking interest in sex was assessed with a single item, asking participants whether they had lacked interest in having sex for a period of three months or more in the past year. Those who reported this were also asked whether they experienced associated distress.
- The cross-sectional data do not allow us to establish the causal direction of associations between lacking interest in sex and factors.



In Britain's third National Survey of Sexual Attitudes and Lifestyles (Natsal-3) lacking interest in sex was the most common sexual difficulty reported by both men and women (1). It was more frequently reported by women than by men; 34.2% of women compared with 14.9% of men stated that they had lacked interest in sex for 3 months or more in the past year. When duration and symptom severity criteria are considered (i.e., that symptoms last six months or more and occur "very often" or "always") these prevalence estimates are much lower (2), but the gender difference is maintained.

Researchers have paid more attention to problems of low sexual interest in women than in men (3-5). Among men the predominant focus has been on erectile functioning and on physiological causes of lacking interest in sex such as hormonal status, rather than on psychosocial determinants. This lack of attention to male problems is reflected in recent revisions to the Diagnostic and Statistical Manual (DSM-5) classification of sexual disorders (6) which involved major changes to sexual arousal and desire disorder categories in women, but no substantive changes for male disorders.

Most but not all studies involving men have reported an association between low sexual interest and increasing age (for review, see 7). However, there are conflicting findings on the association with physical and mental health (8,9). Limited research suggests that psychosocial and relationship factors may also be associated with low sexual desire in men (8, 10-12).

Among women, factors that have been consistently associated with lacking interest in sex are relationship problems, relationship quality, and partner's sexual functioning (13-17), poor physical health (18), and negative mood states/depression

(13, 18,19). There are inconsistent findings on the association between low sexual interest and both age and menopausal status (14,18). Few large-scale surveys have examined possible links between lacking interest in sex and sexual attitudes and lifestyles.

Studies have, for the most part, used small, clinical samples of patients seeking treatment for low sexual desire problems. The potential for bias in such studies is revealed in previously reported findings from Natsal-3 that only 14.4% of men and 16.6% of women with sexual function problems had sought help or advice (1). The few large-scale probability-based surveys involving both men and women have focused on associations between low sexual desire and sociodemographic factors. In summary, the evidence on the factors associated with men's and women's reports of low sexual desire is drawn largely from non-representative samples, is somewhat equivocal and, in men, sparse.

The research questions addressed in this paper are: What sociodemographic, relationship, sexual behaviour, and sexual attitudinal factors are associated with lacking interest in sex in sexually active men and women?; and to what extent do these factors vary by gender?

#### **METHOD**

# **Participants and Procedure**

Natsal-3 is a probability sample survey of 15,162 men and women aged 16-74 years in Britain, interviewed between September 2010 and August 2012. A multistage, clustered, and stratified probability sample design was used and participants were interviewed using a combination of computer-assisted personal interviews (CAPI), and computer-assisted self-interviews (CASI). After weighting to adjust for

unequal probabilities of selection and to match the British population in terms of age, gender and geographical region, the Natsal-3 sample was broadly representative, on key variables, of the British population as described by the 2011 Census (20).

The estimated response rate was 57.7%, and the estimated cooperation rate (the number of interviews completed from eligible addresses for which contact was made) was 65.8% (of all eligible addressed contacted) (21). Fuller details of the survey methodology and sample characteristics are published elsewhere (20, 21) and for demographic characteristics of the sample, see (21). Participants provided oral informed consent for interviews and the survey was approved by the NRES Committee South-Central – Oxford A (Ref.: 10/H0604/27).

#### **Outcome Measures**

In the CASI, participants who reported at least one sexual partner in the past year (hereon 'sexually active participants') were asked whether they had lacked interest in having sex for a period of three months or more in the past year. We used selected items from the Natsal-SF, a newly developed and validated measure of sexual function comprising questions about problems with sexual response, relational aspects of sexual function, and self-appraisal of sex life (22, 23).

# **Statistical Analysis**

All analyses were done using the complex survey functions of STATA (version 14; StataCorp LP, College Station, Texas) to account for the weighting, clustering, and stratification of the data. We used multivariable logistic regression to calculate ageadjusted odds ratios (AOR) to examine the associations between reports of lacking interest in sex lasting three months or longer in the past year, and sociodemographic, health, relationship, sexual behaviour, and sexual attitude variables. For each variable,

we also tested the interaction between gender, to see if the magnitude of the associations between the above factors and reports of lacking interest in sex was the same for men and women. We conducted a sensitivity analysis for the outcome variable reporting lack of interest in sex lasting three months or longer *and* distress about this symptom to assess whether similar associations were found. We also examined the association between reporting lacking interest in sex and the other sexual function problems asked about in Natsal-3, using AORs.

#### **RESULTS**

Overall, 15.0 (95% CI 13.9-16.2) of sexually active men and 34.2% (95% CI 32.8-35.5) of sexually active women reported lacking interest in sex for three months or longer in the year prior to interview. Table 1 presents the associations between lacking interest in sex and sociodemographic, health, relationship, sexual behaviour, and sexual attitudinal variables for men and women.

Age was significantly associated with lacking interest in sex. Prevalence increased with age, being lowest among younger participants (16-24 years; M: 11.5%; W: 24.8%) and peaking in men aged 35-44 years (17.2%) and in women aged 55-64 years (38.8%). Regarding demographic variables, after adjusting for age, lack of interest was associated with leaving school at 16 (men only; AOR: 1.31), being unemployed (men only; AOR: 1.44), and less frequent religious practice (women only; AOR: 0.79).

After adjusting for age, there were associations between all physical and mental health variables assessed and lacking interest in sex. Individuals in poorer health (AORs: M: 3.29; W: 1.93), those who had difficulty walking upstairs (AORs: M: 1.8; W: 1.15), those with a longstanding medical condition (AORs: M 1.76; W: 1.35),

and those who had screened positive for current depression (AORs: M: 2.95; W: 2.79) or who had been treated for depression in the past year (AORs: M: 2.82; W: 2.32) were more likely to report lacking interest in sex. The magnitude of these associations was similar for men and women. Menopausal status in women and circumcision in men were not associated with the likelihood of lacking sexual interest.

Regarding sexual behaviour, among both men and women, lack of interest was associated with frequency of sexual activity (defined as vaginal, oral or anal intercourse) in the four weeks prior to interview; 12.4% of men, and 33.8% of women who reported having engaged in at least 3 sexual acts reported lack of interest, vs. 20.7% of men and 42.9% of women who reported no sexual activity. Associations with recent masturbation differed by gender; lack of interest in sex was *more* common among men who reported having recently masturbated but *less* common among women who did so. Women with two or more partners in the past year were less likely to report low sexual interest than those with only one partner (AOR: 0.70) but this association was not seen among men.

Associations were found between lacking interest in sex and several relationship contextual variables and for many of these variables associations were stronger for women than for men. For both men and women, lack of interest was associated with relationship status, although the association was stronger among women than men. Compared to those living with a partner, men and women in a steady relationship but not living together, and women not in a steady relationship were less likely to report lacking interest in sex. Longer duration of most recent sexual relationship was significantly associated with lacking interest in sex only among women, increasing with longer relationship duration. Having been pregnant in the last

year was associated with lacking sexual interest as was having one or more young child(ren).

Among both men and women, there was an association between ease of communication and lacking interest in sex. Those who found it "always easy to talk about sex" with their partner were less likely to report low interest. Lack of interest was more likely among those whose partner had sexual difficulties in the last year, and those who reported a lower assessment of happiness with the relationship, and not feeling emotionally close to partner during sex. Among women but not men, not sharing the same level of sexual interest with a partner, and not sharing the same sexual likes and dislikes, were also associated.

Lack of interest in sex was significantly associated with a range of sexual health indicators, including sexual competence at first sex and previous STI diagnosis. The strength and direction of associations was similar for men and women, except for reporting another sexual function problem, which was significant for two or more problems in men, but one or more problems in women.

Regarding attitudinal variables, both men and women who endorsed statements that "people are under pressure to have sex" and "people want less sex as they age" were more likely to report lacking interest in sex over the past year. The only attitudinal variable that showed a significant interaction with gender was the one related to men having a "naturally higher sex drive than women." Men who agreed with this statement were *less* likely than those who disagreed to lack interest in sex, while the reverse was true among women.

Table 2 (online supplementary file) presents the associations between lacking interest in sex and being distressed about this (as a measure/marker of severity), and

the above sociodemographic, health, and sexual relationship/behaviour variables. While prevalence was lower, the associations and the interactions with gender were generally similar; however, some of the previous gender-specific associations with sociodemographic variables (e.g., Index of Multiple Deprivation and education) were no longer significant when the outcome variable was reported low sexual interest *and* associated distress.

Regarding the association between reporting lacking interest in sex and the other sexual function problems asked about in Natsal-3, the strongest associations were for lacking enjoyment in sex (AORs=9.78 and 8.95 for men and women, respectively), followed by feeling no excitement or arousal during sex (AORs=9.21 and 9.16 for men and women, respectively) (see Table 3).

#### DISCUSSION

We identified a broad range of factors, including some that have not been explored in previous large-scale surveys, that were associated with men's and women's reports of lacking interest in sex in a representative British population-based survey. Our findings, discussed below, revealed some gender similarities as well as some interesting gender differences. The strongest evidence for gender differences was for the relationship context variables, where associations with lacking interest in sex were much stronger for women than for men.

# Interpretation of findings in context of previous research

Our finding relating to differences by age is consistent with some, but not all, results from previous research which has yielded generally inconsistent findings. Some studies have, like ours, shown a higher prevalence of sexual interest problems in older than in younger women (24-26). Others have found no association between age and

low sexual interest complaints (14, 27) and yet more have shown lack of sexual interest to be more common among younger women (18). Whereas we found a marginal relationship with age in men, some studies (though not all e.g., 28) have found a stronger relationship (12, 29). It is possible that the varied findings might in part be a result of varied definitions of low sexual interest or samples with different age ranges.

The finding in this analysis, that having young children appears to increase the likelihood of reporting lack of sexual interest for women, but not for men, remains unchanged since the previous Natsal-2 survey (30). This may be due to fatigue associated with a primary caring role (31), the fact that daily stress appears to affect sexual functioning in women more than men (32), or possibly a shift in focus of attention attendant on bringing up small children.

The finding of a link between lacking interest in sex and lacking enjoyment in sex and/or feeling no excitement or arousal during sex is not surprising and has been shown in previous studies (3). The strong associations between lack of interest in sex and physical and mental health indicators, which we observed for both men and women, is not entirely consistent with findings from other studies. While this link has been persuasively shown for women (13, 18, 19), in men, the evidence is more equivocal. In a study of men attending an outpatient clinic for sexual problems, psychological symptoms such as anxiety and depression were more predictive of low sexual desire than hormonal or other physical markers (11). In contrast, DeRogatis et al. (9), in their study of men with erectile dysfunction, observed no differences in depressive symptoms, concurrent illness, or medication use between men with and without symptoms of low sexual desire.

The gender differences in associations between masturbation and a lack of sexual interest are interesting and have been explored in few previous population-based studies. Our observation that lack of interest was *more* commonly reported by men who had recently masturbated, but *less* commonly reported by women who had done so may reflect a tendency among women for self-pleasuring to be, not a substitute for partnered sex but instead a part of a broader repertoire of sexual fulfilment; this possibility is worthy of further exploration. In contrast, for men frequency of masturbation reflects reduced frequency of partnered sex (33). However, it is worth noting that in the U.S. National Health and Social Life Survey, lifetime number of sexual partners and masturbation practices were unrelated to the likelihood of sexual desire difficulties for either men or women (34).

Our observation that duration of most recent sexual relationship showed a strong association with lacking interest in sex in women is consistent with previous studies (15, 17). There has been little comparable research among men with which to corroborate the absence of such an association among men in our analysis.

Our data confirm the importance of the relational context in individuals' level of sexual interest. The strong associations between relationship and partner factors and sexual interest are consistent with those shown in many previous studies relating to women (13-17) and with a much smaller literature in men (35,36). In particular, sexual dysfunction in a male partner has previously been associated with women's levels of sexual desire (15, 37, 38), and sexual desire discrepancy in couples has been linked to lower reported relationship satisfaction and more couple conflict (39).

The strong links found between several key sexual health outcomes and lack of interest in sex are interesting; among both men and women, reporting an STI

diagnosis, and non-volitional sex were associated with reporting lack of interest in sex. Our finding that lacking "sexual competence" at first sexual intercourse was linked with subsequent lack of interest in sex among women but not men, may reflect a greater salience of contextual aspects of first sex for women. More women than men report being pressured by a partner on the first occasion of heterosexual intercourse, and to have subsequently experienced regret about first sexual experiences (40). These findings suggest that for women, early sexual experiences may shape future sexual encounters/relationships to a greater extent than for men.

To our knowledge no previous studies have assessed the association between attitudes toward sexual matters and lack of interest in sex. Endorsing the assumption that "people want less sex as they age" was associated with lack of interest in both genders. It might be that this belief contributes to a decline in interest, or – equally plausible – that those who lack interest adopt this attitude to avoid viewing their experience as problematic. Interestingly, men who endorsed the view that "men have a higher sex drive than women" were significantly *less* likely to report lacking interest in sex, whereas women who agreed with this statement were *more* likely to do so. If people responded to this statement with reference to their own relationship, these findings may be seen as making intuitive sense. The results suggest that endorsing stereotypical gender-norms related to sex may adversely affect women more than men.

### **Strengths and Limitations**

Strengths of our study include the use of national probability sample survey data involving both men and women across a wide age range (20, 21). With a few exceptions (e.g., 12, 14, 28, 41), most surveys on sexual desire problems have sampled

either men *or* women, precluding direct comparisons within the same sample.

Another strength was the detailed and holistic examination of relationship context and attitudinal variables, which few previous studies have reported. Response rates for Natsal-3 were also similar to those of other major social surveys in Britain (42) and higher than many previous surveys of sexual problems (34, 43).

Limitations include the cross-sectional nature of the data, which mean that we are unable to infer temporality and causality. We only used a single item to assess lacking interest in sex, although we additionally took account of whether those who reported this also reported that it caused them distress, as a way of trying to capture more problematic lack of interest. It is important to acknowledge, however, that these data do not necessarily correspond to clinical diagnoses. This sensitivity analysis enabled us to demonstrate that similar associations exist regardless of whether or not distress was reported.

## **Implications for Research and Practice**

Our findings underscore the importance of the relational context in understanding low sexual interest in both men and women. For women in particular, the experience of sexual interest appears strongly linked with their perceptions of the quality of their relationships, their communication with partners, and their expectations/attitudes about sex. In the context of the recent FDA approval of flibanserin, the first drug to treat low sexual desire in women (44), these findings are relevant to the current debate about whether striving for a pharmaceutical solution to women's sexual desire problems is an appropriate and feasible goal (45, 46). Some authors have suggested that women with complaints of low sexual interest might

benefit most from integrative approaches that accord with a biopsychosocial model (47).

Our findings on the strong association between open sexual communication (i.e., "finding it always easy to talk about sex") and a reduced likelihood of reporting lack of interest in sex, particularly for women, emphasise the importance of providing a broad sexual and relationships education, rather than limiting attention only to adverse consequences of sex and how to prevent them. Similarly, the important role of early sexual experiences, and sexual "competence," especially for women, in shaping later experiences of sexual desire supports the need for comprehensive sex education.

In a clinical context, our findings emphasise the importance of health care professionals assessing psychological and interpersonal variables in individuals presenting with complaints of low sexual interest (48). In couple therapy, it is important that therapists have an awareness of the differences between men and women in the factors associated with low sexual interest. Lastly, our findings support previous research on the critical role of physical and mental health in understanding low sexual interest problems experienced by men and women (11, 18).

# **Conclusions**

This study extends our understanding of the factors associated with lack of interest in sex in men and women, the gender similarities and differences, and highlights the need to assess and treat sexual desire problems in a holistic and relationship- as well as gender-specific way.

# **Competing interests statement**

AMJ has been a Governor of the Wellcome Trust since 2011. The remaining authors have nothing to disclose. Completed disclosure of interests form available to view online as supporting information.

### Contribution to authorship

The paper was conceived by CAG, CHM, AMJ, KW, and KRM. CAG wrote the first draft, with further contributions from all authors. Statistical analyses were undertaken by CHM, CT, and KGJ. CHM, AMJ (Principal Investigator) and KW, initial applicants on Natsal-3, wrote the study protocol and obtained funding. Natsal-3 questionnaire design, ethics applications, and piloting were undertaken by CHM, CT, AMJ, KW, and KRM. Data management was undertaken by NatCen Social Research, UCL and LSHTM. All authors contributed to data interpretation, reviewed successive drafts and approved the final version of the manuscript.

# **Details of ethics approval**

Natsal-3 was approved by the NRES Committee South Central-Oxford A (Ref: 10/H0604/27) on 12 July 2010. Participants provided oral informed consent for interviews.

#### **Funding statement**

Natsal-3 was supported by grants from the U.K. Medical Research Council (G0701757) and the Wellcome Trust (084840), with support from the Economic and Social Research Council and the Department of Health. Since September 2015. KRM has been core funded by the UK Medical Research Council through the MRC/CSO Social & Public Health Sciences Unit, University of Glasgow [MC\_UU\_12017-11].

# Data sharing statement

The Natsal-3 dataset is publicly available from the UK Data Service: <a href="https://discover.ukdataservice.ac.uk/">https://discover.ukdataservice.ac.uk/</a>; SN: 7799; persistent identifier: 10.5255/UKDA-SN-77991-1.

#### REFERENCES

- Mitchell KR, Mercer CH, Ploubidis GB, et al. Sexual function in Britain: Findings from the third National Survey of Sexual Attitudes and Lifestyles (Natsal-3). *Lancet* 2013;382:1817-1829. doi 10.1016/S0140-6736(13)62366-1 [published Online First: 26 November 2013].
- 2. Mitchell KR, Jones KG, Wellings K, et al. Estimating the prevalence of sexual function problems: The impact of morbidity criteria. *J Sex Res* 2016;53:55-967. doi 10.1080/00224499.2015.1089214 [published Online First: 25 November 2015].
- Brotto LA. The DSM diagnostic criteria for hypoactive sexual desire disorder in women. Arch Sex Behav 2010a; 39:221-239. doi 10.1007/s10508-009-9543-1 [published Online First: 24 September 2009].
- 4. Carvalho J, Nobre P. Biopsychosocial determinants of men's sexual desire: testing an integrative model. *J Sex Med* 2011;8:754-763. doi 10.1111/j.1743-6109.2010.02156.x [published Online First: 22 December 2010].
- 5. Štulhofer A, Carvalheira AA, Træen B. Is responsive sexual desire for partnered sex problematic among men? Insights from a two-country study. Sex Relation Ther 2013;28:246-258. doi 10.1080/14681994.2012.756137 [published Online First: 21 December 2012].
- 6. American Psychiatric Association. *Diagnostic and statistical manual of mental disorders*, 5th. ed. Arlington, VA: Author 2013.
- 7. Brotto LA. The DSM diagnostic criteria for hypoactive sexual desire disorder in men. J Sex Med 2010b;7:2015-2030. doi 10.1111/j.1743-6109.2010.01860.x [published Online First: 1 June 2010].

- 8. Corona G, Lee DM, Forti G, et al. Age-related changes in general and sexual health in middle-aged and older men: Results from the European Male Ageing Study (EMAS). *J Sex Med* 2010;7:1362-1380. doi 10.1111/j.1743-6109.2009.01601.x [published Online First: 19 November 2009].
- 9. DeRogatis L, Rosen RC, Goldstein I, et al. Characterization of hypoactive sexual desire disorder (HSDD) in men. *J Sex Med* 2012;9:812-820. doi 10.1111/j.1743-6109.2011.02592.x [published Online First: 12 January 2012].
- 10. Carvalheira A, Træen B, Štulhofer A. Correlates of men's sexual interest: a cross-cultural study. *J Sex Med* 2014;11:154-164. doi 10.1111/jsm.12345 [published Online First: 28 October 2013].
- 11. Corona G, Petrone L, Mannucci E, et al. The impotent couple: low desire. *Int J Androl* 2005;28:46-52. doi 10.1111/j.1365-2605.2005.00594.x [published Online First: 18 October. 2005].
- 12. DeLamater JD, Sill M. Sexual desire in later life. *J Sex Res* 2005;42:138-149. doi 10.1080/00224490509552267 [published Online First: 11 January 2010].
- 13. Dennerstein L, Koochaki P, Barton I, et al. Hypoactive sexual desire disorder in menopausal women: a survey of Western European women. *J Sex Med* 2006;3:212-222. doi 10.1111/j.1743-6109.2006.00215.x [published Online First: 20 February 2006].
- 14. Hayes RD, Dennerstein L, Bennett CM, et al. Risk factors for female sexual dysfunction in the general population: Exploring factors associated with low sexual function and sexual distress. *J Sex Med* 2008;5:1681-1693. doi 10.1111/j.1743-6109.2008.00838.x [published Online First: 16 December 2015].

- 15. McCabe MP, Goldhammer DL. Demographic and psychological factors related to sexual desire among heterosexual women in a relationship. *J Sex Res* 2012;49:78-87. doi 10.1080/00224499.2011.569975 [published Online First: 28 April 2011].
- 16. Öberg K, Sjögren Fugl-Meyer K. On Swedish women's distressing sexual dysfunctions: some concomitant conditions and life satisfaction. *J Sex Med* 2005;2:169-180. doi 10.1111/j.1743-6109.2005.20226.x [published Online First: 17 February 2005].
- 17. Witting K, Santtila P, Varjonen M, et al. Female sexual dysfunction, sexual distress, and compatibility with partner. *J Sex Med* 2008;5:2587-2599. doi 10.1111/j.1743-6109.2008.00984.x [published Online First: 27 August 2008]
- 18. Shifren JL, Monz BU, Russo PA, et al. Sexual problems and distress in United States women. *Obstet Gynecol* 2008;112:970-978. doi 10.1097/AOG.0b013e3181898cdb
- 19. Johannes CB, Clayton AH, Odom DM, et al. Distressing sexual problems in United States women revisited: prevalence after accounting for depression. *J Clin Psychiatry* 2009;70:1698-1706. doi 10.4088/JCP.09m05390gry
- 20. Erens B, Phelps A, Clifton S, et al. Methodology of the third British National Survey of Sexual Attitudes and Lifestyles (Natsal-3). Sex Transm Infect 2014;90:84-89. doi 10.1136/sextrans-2013-051359 [published Online First: 25 November 2013].
- 21. Mercer CH, Tanton C, Prah P, et al. Changes in sexual attitudes and lifestyles in

  Britain through the life course and over time: findings from the National

  Surveys of Sexual Attitudes and Lifestyles (Natsal). *Lancet* 2013;382:1781-1794.

- doi 10.1016/S0140-6736(13)62035-8 [published Online First: 26 November 2013].
- 22. Jones KG, Mitchell KR, Ploubidis GB, et al. The Natsal-SF measure of sexual function: Comparison of three scoring methods. *J Sex Res* 2015;52:640-646. doi 10.1080/00224499.2014.985813 [published Online First: 10 February 2015].
- 23. Mitchell KR, Ploubidis GB, Datta J, et al. The Natsal-SF: a validated measure of sexual function for use in community surveys. *Eur J Epidemiol* 2012;27:409-18. doi 10.1007/s10654-012-9697-3 [published Online First: 19 June 2012].
- 24. Abdo CHN, Oliveira WM, Moreira ED, et al. Prevalence of sexual dysfunctions and correlated conditions in a sample of Brazilian women—results of the Brazilian study on sexual behavior (BSSB). *Int J Impot Res* 2004;16:160-166. doi 10.1038/sj.ijir.3901198 [published Online First: 12 February 2004].
- 25. Hayes RD, Dennerstein L, Bennett CM, et al. Relationship between hypoactive sexual desire disorder and aging. *Fertil Steril* 2007;87:107-112. doi 10.1016/j.fertnstert.2006.05.071 [published Online First: 1 November 2006].
- 26. Peixoto MM, Nobre P. Prevalence and sociodemographic predictors of sexual problems in Portugal: A population-based study with women aged 18 to 79 years. *J Sex Marital Ther* 2015;41:169-180. doi 10.1080/0092623X.2013.842195 [published Online First: 23 December 2013].
- 27. Rosen RC, Shifren JL, Monz BU, et al. Correlates of sexually-related personal distress in women with low sexual desire. *J Sex Med* 2009;6:1549-1560. doi 10.1111/j.1743-6109.2009.01252.x [published Online First: 30 March 2009].
- 28. Laumann EO, Glasser DB, Neves RCS, et al. A population-based survey of sexual activity, sexual problems and associated help-seeking behavior patterns in

- mature adults in the United States of America. *Int J Impot Res* 2009;21:171-178. doi 10.1038/ijir.2009.7 [published Online First: 26 February 2009].
- 29. Eplov L, Giraldi A, Davidsen M, et al. Sexual desire in a nationally representative Danish population. *J Sex Med* 2007;4:47-56. doi 10.1111/j.1743-6109.2006.00396.x [published Online First: 3 January 2007].
- 30. Mercer CH, Fenton KA, Johnson AM, et al. Who reports sexual function problems?

  Empirical evidence from Britain's 2000 National Survey of Sexual Attitudes and

  Lifestyles. Sex Transm Infect 2005;81:394-399. doi 10.1136/sti.2005.0151 49

  [published Online First: 30 September 2005].
- 31. Park A, Bryson C, Clery E, et al. British social attitudes 30. London: NatCen 2013.
- 32. Bodenmann G, Ledermann T, Blattner D, et al. Associations among everyday stress, critical life events, and sexual problems. *J of Nerv Ment Dis* 2006;194:494-501. doi 10.1097/01.nmd.0000228504.15569.b6
- 33. Gerressu M, Mercer CH, Graham CA, et al. Prevalence of masturbation of associated factors in a British national probability survey. *Arch Sex Behav* 2008;37:266-278. doi 10.1007/s10508-006-9123-6 [published Online First: 27 February 2007].
- 34. Laumann EO, Paik A, Rosen RC. Sexual dysfunctions in the United States:

  Prevalence and predictors. *JAMA* 1999;281:537-544. doi

  10.1001/jama.281.6.537
- 35. Janssen E, McBride KR, Yarber W, et al. Factors that influence sexual arousal in men: A focus group study. *Arch Sex Behav* 2008;37:252-265. doi 10.1007/s10508-007-9245-5 [published Online First: 27 November 2007].

- 36. Murray S, Milhausen RR, Graham CA, et al. A qualitative exploration of factors that affect sexual desire among men aged 30 to 65 in long-term relationships. *J Sex Res* 2016;doi 10.1080/00224499.2016.1168352 doi 10.1080/00224499.2016.1168352 [published Online First: 2 May 2016].
- 37. Çayan S, Bozlu M, Canpolat B, et al. The assessment of sexual functions in women with male partners complaining of erectile dysfunction: does treatment of male sexual dysfunction improve female partner's sexual functions? *J Sex Marital Ther* 2004;30:333-341. doi 10.1080/00926230490465091 [published Online First: 12 August 2010].
- 38. Fisher WA, Rosen RC, Eardley I, et al. Experience of female partners of men with erectile dysfunction: The female experience of men's attitudes to life events and sexuality (FEMALES) study. *J Sex Med* 2005;2:675-668. doi 10.1111/j.1743-6109.2005.00118.x [published Online First: 16 August 2005].
- 39. Willoughby BJ, Farero AM, Busby DM. Exploring the effects of sexual desire discrepancy among married couples. *Arch Sex Behav* 2014;43:551-562. doi 10.1007/s10508-013-0181-2 [published Online First: 18 September 2013].
- 40. Hawes ZC, Wellings K, Stephenson J. First heterosexual intercourse in the United Kingdom: A review of the literature. *J Sex Res* 2010;47:137-152. doi 10.1080/00224490903509399 [published Online First: 30 March 2010].
- 41. Laumann EO, Nicolosi A, Glasser DB, et al. Sexual problems among women and men aged 40–80 years: Prevalence and correlates identified in the Global Study of Sexual Attitudes and Behaviors. *Int J Impot Res* 2005;17:39-57. doi 10.1038/sj.ijir.3901250 [published Online First: 24 June 2004].
- 42. Park A, Clery E, Curtice J, et al. British social attitudes: The 28th report. London,

England: NatCen 2012.

- 43. Christensen BS, Grønbæk M, Osler M, et al. Sexual dysfunctions and difficulties in Denmark: Prevalence and associated sociodemographic factors. *Arch Sex Behav* 2011;40:121-132. doi 10.1007/s10508-010-9599-y [published Online First: 19 February 2010].
- 44. Woloshin S, Schwartz LM. US Food and Drug Administration approval of flibanserin: Even the Score does not add up. *JAMA Intern Med* 2016; doi: 10.1001/jamainternmed.2016.0073 [published Online First: 29 February 2016].
- 45. Graham CA, Boynton PM, Gould K. Women's sexual desire: Challenging narratives of dysfunction. *Eur Psychol*, in press.
- 46. Hart G, Wellings K. Sexual behaviour and its medicalisation: In sickness and in health. BMJ 2002;324:896-900. doi 10.1136/bmj.324.7342.896 [published Online First: 13 April 2002].
- 47. Frühauf S, Gerger H, Schmidt HM, et al. Efficacy of psychological interventions for sexual dysfunction: a systematic review and meta-analysis. *Arch Sex Behav*2013;42:915-933. doi 10.1136/bmj.324.7342.896 [published Online First: 13
  April 2002].
- 48. Brotto LA, Atallah CS, Johnson-Agbakwu C, et al. Psychological and interpersonal dimensions of sexual function and dysfunction. *J Sex Med* 2016;13:538-571. doi 10.1016/j.jsxm.2016.01.019 [published Online First: 25 March 2016].
- 49. Payne RA, Abel GA. UK indices of multiple deprivation-a way to make comparisons across constituent countries easier. *Health Stat Q* 2012;53:22-37. Retrieved from https://search.proguest.com/docview/1054966975?accountid=13963

Table 1: Factors associated with lacking interest in having sex for at least 3 months in the past year in sexually active men and women

			M	en					Woı	men			_
)	Denom.			Age- adjusted			Denom.			Age- adjusted			p-value for interaction
, 	(unwt, wt)	%	(95%CI)	OR	(95%CI)	p-value	(unwt, wt)	%	(95%CI)	OR	(95%CI)	p-value	with sex <sup>a</sup>
All	4839, 5973	15.0%	(13.9-16.2)				6669, 5755	34.2%	(32.8-35.5)				
3 Socio-demographics													
4 Age group						0.0471						< 0.0001	0.6733
5 16-24	1279, 936	11.5%	(9.4-14.0)	1	-		1662, 923	24.8%	(22.5-27.1)	1	-		
25-34	1376, 1238	14.6%	(12.7-16.6)	1.32	(1.00-1.73)		2236, 1246	31.9%	(29.8-34.1)	1.42	(1.22-1.66)		
7 35-44	719, 1298	17.2%	(14.5-20.4)	1.61	(1.19-2.18)		1050, 1290	36.8%	(33.7-40.1)	1.77	(1.48-2.13)		
8 9 45-54	630, 1186	15.3%	(12.5-18.7)	1.40	(1.01-1.95)		871, 1186	37.9%	(34.5-41.5)	1.86	(1.53-2.25)		
55-64	512, 849	16.5%	(13.4-20.2)	1.53	(1.10-2.13)		569, 755	38.8%	(34.5-43.2)	1.92	(1.55-2.39)		
1 65-74	323, 467	13.9%	(10.4-18.3)	1.22	(0.81-1.82)		281, 355	34.2%	(28.4-40.5)	1.58	(1.18-2.12)		
Index of multiple Graphical deprivation (quintiles)						0.093						0.0316	0.0111
1 (least deprived)	977, 1279	13.9%	(11.6-16.6)	1	-		1248, 1208	35.7%	(32.6-38.9)	1	-		
5 2	962, 1264	13.0%	(10.8-15.6)	0.93	(0.69-1.25)		1290, 1208	33.6%	(30.6-36.7)	0.92	(0.76-1.13)		
6 3	942, 1169	18.0%	(15.2-21.2)	1.38	(1.04-1.85)		1299, 1116	30.1%	(27.2-33.2)	0.81	(0.66-0.99)		
7 4	967, 1184	15.3%	(12.8-18.3)	1.15	(0.86-1.55)		1384, 1137	35.9%	(33.0-39.0)	1.08	(0.89-1.30)		
5 (most deprived)	991, 1077	15.1%	(12.7-17.8)	1.14	(0.85-1.52)		1448, 1086	35.3%	(32.4-38.3)	1.06	(0.87-1.28)		
Education level <sup>c</sup>						0.0083						0.2453	0.2914
Left school aged 17+	2862, 3464	13.5%	(12.1-15.1)	1	-		4150, 3406	32.7%	(31.0-34.5)	1	-		
Left school at 16	1873, 2437	17.2%	(15.3-19.4)	1.31	(1.07-1.60)		2409, 2287	36.6%	(34.4-38.9)	1.08	(0.95-1.23)		
3 Employment status						0.0086						0.0003	0.0766
4 Employed	3211, 4254	14.7%	(13.3-16.1)	1	-		3871, 3517	34.6%	(32.9-36.4)	1	-		
5 Full-time education	542, 431	12.6%	(8.8-17.5)	0.98	(0.64-1.51)		693, 423	22.5%	(19.0-26.4)	0.70	(0.55-0.89)		
0 Unemployed	707, 723	19.6%	(16.3-23.4)	1.44	(1.12-1.86)		1681, 1282	36.1%	(33.4-39.0)	1.11	(0.96-1.28)		
7 Retired	375, 562	13.6%	(10.4-17.7)	0.75	(0.52-1.09)		415, 524	35.8%	(31.0-40.9)	0.75	(0.57-0.99)		
Practises religion at least													
once a month						0.1687						0.0082	0.9966
No	4283, 5179	15.3%	(14.1-16.6)	1	-		5659, 4754	34.8%	(33.3-36.3)	1	-		
Yes	521, 748	12.9%	(10.0-16.4)	0.81	(0.60-1.09)		956, 945	30.7%	(27.5-34.2)	0.79	(0.67-0.94)		
2													

4 Table 1 cont.														
6				N	len					Wo	men			
7 8 9		enom.	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	p-value for interaction with sex <sup>a</sup>
10 Health	,		7	,			•			, ,			•	
11 Calf was a stand can avail be als	h						<0.0001						<0.0001	0.1890
12 Sen-reported general health 13 Very good/Goo		23, 5055	13.4%	(12.2-14.6)	1	-		5683, 4851	32.3%	(30.9-33.8)	1	-		
13 Fa		80, 745	21.9%	(18.3-25.8)	1.8	(1.41-2.30)		780, 709	42.2%	(38.2-46.3)	1.45	(1.21-1.75)		
15 Bad/very ba		35, 171	33.9%	(25.3-43.6)	3.29	(2.14-5.06)		206, 195	49.9%	(42.2-57.7)	1.93	(1.40-2.67)		
16 Difficulty walking up stairs		,		(=0.0 .0.0)		(=== ; ===;		,	101071	( ,		(=:::= =:::,		
probler	m						< 0.0001						0.0497	0.1179
18 No difficult	ty 44	75, 5460	14.1%	(12.9-15.3)	1			6062, 5107	33.3%	(31.8-34.7)	1	-		
19 Some difficult	ty 2	78, 393	23.0%	(18.1-28.8)	1.8	(1.30-2.49)		450, 482	39.2%	(34.4-44.2)	1.15	(0.92-1.43)		
20 Much difficulty/unable to d	lo													
21 th	is 8	36, 120	30.9%	(20.9-43.0)	2.68	(1.57-4.57)		157, 166	47.0%	(38.0-56.1)	1.55	(1.06-2.25)		
22 Longstanding illness or														
23 disability							<0.0001						<0.0001	0.1348
	lo 358	85, 4259	12.8%	(11.6-14.2)	1	-		4843, 4026	31.6%	(30.0-33.2)	1	-		
25 Ye	es 12.	53, 1713	20.5%	(18.1-23.1)	1.76	(1.44-2.16)		1825, 1729	40.1%	(37.5-42.8)	1.35	(1.17-1.55)		
Number of comorbid														
28							<0.0001						<0.0001	0.7951
29		53, 3994	12.8%	(11.5-14.1)	1	-		4357, 3536	29.9%	(28.2-31.5)	1	-		
30		39, 1329	18.9%	(16.2-21.9)	1.64	(1.30-2.06)		1555, 1416	38.6%	(35.9-41.5)	1.42	(1.23-1.64)		
31 >=	2 4	46, 650	21.0%	(17.0-25.6)	1.91	(1.41-2.60)		755, 802	45.1%	(41.2-49.1)	1.75	(1.45-2.13)		
32 Depressive symptoms <sup>e</sup>							<0.0001						< 0.0001	0.6249
	lo 438	83, 5471	13.5%	(12.4-14.8)	1	-		5885, 5149	31.7%	(30.2-33.1)	1	-		
34 <sub>Ye</sub>	es 4	49, 495	31.3%	(26.4-36.7)	2.95	(2.26-3.85)		780, 602	55.2%	(51.0-59.5)	2.79	(2.32-3.37)		
$^{35}$ Treated for depression in the	ne past	year					< 0.0001						<0.0001	0.2447
36 N	lo 452	24, 5630	14.0%	(12.9-15.2)	1	-		5770, 5040	31.7%	(30.2-33.2)	1	-		
37 Ye	es 3:	13, 342	31.5%	(25.7-38.0)	2.82	(2.08-3.83)		897, 713	51.4%	(47.6-55.2)	2.32	(1.96-2.75)		
38		-		,		,		,		,		,		

1 2 3 4 5	
3	
5	
6	
7 8 9	
8	
10	
11	
12	
13	
14	
16	
16 17	
18	
19	
20	
19 20 21 22 23	
23	
24	
25	
~~	
26 27 28	
28	
30	
31	
32	
33	
34	
35	
32 33 34 35 36 37 38	
38	
39	
40	
41 42	
42 43	
43	
45	
46	
47	
48	
40	

5			N	⁄len					Wo	men			_
) 7 3	Denom.	0/	(050/61)	Age- adjusted	(050/61)		Denom.	۰,	(0.50/.01)	Age- adjusted	(050(01)	1	p-value for interaction
	(unwt, wt)	%	(95%CI)	OR	(95%CI)	p-value	(unwt, wt)	%	(95%CI)	OR	(95%CI)	p-value	with sex <sup>a</sup>
0 Nienopausai status									,,			0.9326	
Not menopausa							5485, 4187	32.3%	(30.9-33.8)	1	-		
2 Menopausa							1167, 1548	38.9%	(36.0-41.9)	0.99	(0.79-1.24)		
3 Circumcised						0.5951							
4 No	3909, 4728	15.1%	(13.8-16.4)	1	-								
5 Yes	857, 1166	14.5%	(12.0-17.4)	0.94	(0.73-1.20)								
6 Sexual behaviour													
Number of occasions of sex,													
8 past 4 weeks						<0.0001						<0.0001	0.4778
20	1013, 1163	20.7%	(17.8-23.8)	1	-		1408, 1245	42.9%	(39.9-45.9)	1	-		
1-2 21	1160, 1566	18.7%	(16.2-21.5)	0.89	(0.69-1.14)		1481, 1373	39.6%	(36.7-42.5)	0.89	(0.75-1.05)		
3-4	870, 1168	12.4%	(10.1-15.1)	0.54	(0.41-0.73)		1240, 1130	33.8%	(30.7-37.0)	0.7	(0.58-0.85)		
. <u>-</u> :3	1617, 1869	9.2%	(7.8-11.0)	0.39	(0.30-0.51)		2078, 1655	22.6%	(20.5-24.8)	0.41	(0.34-0.49)		
Masturbation, past 4 weeks						0.0458						0.0038	0.0005
25 No	1297, 1828	13.7%	(11.8-15.8)	1	-		4032, 3612	36.0%	(34.3-37.7)	1	-		
26 Yes	3531, 4132	15.6%	(14.2-17.0)	1.24	(1.00-1.52)		2615, 2114	30.8%	(28.7-33.0)	0.83	(0.73-0.94)		
7 No. of sexual partners, past													
28 year <sup>f</sup>						0.5348						0.0038	0.0183
29 1	3573, 4824	15.0%	(13.7-16.3)	1	-		5440, 5012	35.3%	(33.8-36.8)	1	-		
30	539, 513	16.2%	(12.9-20.3)	1.14	(0.86-1.52)		570, 364	28.2%	(23.9-32.8)	0.80	(0.63-1.01)		
31	718, 627	13.6%	(11.1-16.6)	0.94	(0.72-1.22)		642, 366	24.8%	(21.0-29.0)	0.70	(0.56-0.88)		
Paid for sex, past year						0.7167							
33 No	4774, 5896	15.0%	(13.9-16.2)	1	-								
35 Yes		13.4%	(6.8-24.7)	0.87	(0.41-1.84)								
6 Ever taken drugs to assist	2 1,1 2		(3.2 =)		(51.12 = 1.3.1)								
sexual performance						0.0175						0.0666	0.8967
38 No	4188, 5180	14.4%	(13.2-15.7)	1	-		6478, 5624	34.0%	(32.6-35.4)	1	-		
39 Yes	636, 776	19.0%	(15.7-22.8)	1.36	(1.06-1.76)		184, 124	40.0%	(32.0-48.5)	1.39	(0.98-1.96)		
	, _		, -/		, -,		,		, -,		/		

Table 1 cont.

2 3														
5 -				N	len					Wo	men			_
6 7 8		Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	p-value for interaction with sex <sup>a</sup>
9	Relationship context													
10 11	Relationship status						0.0383						< 0.0001	0.0001
12	Living with partner In a steady relationship, not	2708, 4266	15.5%	(14.1-17.1)	1	-		3967, 4168	37.9%	(36.3-39.7)	1	-		
13 14	living together	947, 760	12.0%	(9.6-14.8)	0.76	(0.57-1.00)		1360, 790	22.6%	(20.2-25.2)	0.51	(0.43-0.60)		
15 16 17	Not in a steady relationship, but previously cohabited Not in a steady relationship,	446, 388	18.2%	(14.6-22.5)	1.22	(0.91-1.62)		752, 462	28.9%	(25.4-32.8)	0.68	(0.56-0.83)		
18	never cohabited	727, 551	12.4%	(9.9-15.5)	0.8	(0.58-1.09)		580, 330	21.3%	(17.6-25.5)	0.49	(0.38-0.63)		
19	Duration of most recent													
20	sexual relationship						0.494						<0.0001	<0.0001
21	1 year or less	1462, 1260	13.0%	(11.0-15.3)	1	-		1597, 998	21.5%	(19.1-24.1)	1	-		
22	Between 1 and 5 years	1247, 1227	15.3%	(13.2-17.7)	1.21	(0.94-1.55)		1758, 1148	28.5%	(26.1-31.0)	1.45	(1.20-1.76)		
23	Between 5 and 15 years	1065, 1484	14.9%	(12.6-17.5)	1.14	(0.86-1.50)		1774, 1458	39.8%	(37.2-42.4)	2.37	(1.96-2.86)		
24	•	1004, 1904	16.1%	(13.9-18.7)	1.19	(0.87-1.63)		1445, 2036	40.0%	(37.3-42.7)	2.31	(1.84-2.91)		
25	Always easy to talk about													
26 27	sex with partners <sup>g</sup>						0.0001						<0.0001	0.0182
28	Yes	1695, 1899	11.5%	(9.7-13.5)	1	-		1746, 1451	22.6%	(20.4-25.1)	1	-		
29	No/other	3122, 4048	16.7%	(15.3-18.2)	1.53	(1.23-1.90)		4907, 4289	38.0%	(36.4-39.6)	2.06	(1.77-2.39)		
30	Happy with relationshiph						<0.0001						< 0.0001	0.8679
31	Yes	1951, 2791	12.6%	(11.0-14.4)	1	-		2736, 2601	31.5%	(29.5-33.6)	1	-		
32	Other	995, 1430	21.0%	(18.4-23.9)	1.85	(1.47-2.32)		1640, 1617	45.4%	(42.7-48.1)	1.79	(1.55-2.08)		
	Participant does not share sar	ne level of												
	interest in sex as partner						0.2339						< 0.0001	<0.0001
35	No/other	2270, 3233	15.0%	(13.4-16.7)	1	-		3211, 3064	27.2%	(25.4-29.0)	1	-		
36														
37	Yes	676, 988	17.1%	(14.2-20.4)	1.17	(0.90-1.51)		1166, 1155	62.5%	(59.2-65.7)	4.57	(3.87-5.38)		
38														
39														

Table 1 cont.

6 _				N	1en					Wo	men			_
7 8		Denom.			Age- adjusted			Denom.			Age- adjusted			p-value for interaction
9		(unwt, wt)	%	(95%CI)	OR	(95%CI)	p-value	(unwt, wt)	%	(95%CI)	OR	(95%CI)	p-value	with sex <sup>a</sup>
	Participant does not share sar	ne sexual												
12	likes & dislikes as partner						0.4188						<0.0001	<0.0001
13	No/other	2650, 3803	15.3%	(13.8-16.9)	1	-		4079, 3908	34.9%	(33.3-36.6)	1	-		
14	Yes	296, 418	17.3%	(13.0-22.5)	1.16	(0.81-1.66)		297, 310	61.0%	(54.6-67.2)	2.91	(2.22-3.83)		
15	Partner experienced sexual di	fficulties in												
16	past year						0.0136						<0.0001	0.4140
17	No/other	2431, 3454	14.6%	(13.1-16.2)	1	-		3726, 3498	34.8%	(33.1-36.6)	1	-		
18	Yes	513, 763	19.4%	(15.8-23.6)	1.41	(1.07-1.86)		649, 719	46.8%	(42.5-51.1)	1.60	(1.32-1.94)		
	Does not feel emotionally clos	e to partner												
20	when have sex						0.0006						<0.0001	0.5972
21	No/other	2904, 4165	15.1%	(13.7-16.6)	1	-		4263, 4108	35.9%	(34.3-37.6)	1	-		
22	Yes	42, 56	39.9%	(23.6-58.8)	3.74	(1.76-7.93)		112, 109	73.0%	(62.8-81.3)	4.80	(2.99-7.69)		
	<u>Lifestyle</u>													
	1+ child(ren) aged <5 in													
	household						0.9088						<0.0001	0.0216
26	No, none	4100, 5015	15.2%	(13.9-16.5)	1	-		4997, 4671	33.1%	(31.6-34.6)	1	-		
27	Yes, 1+	727, 941	14.5%	(11.9-17.6)	0.98	(0.76-1.28)		1664, 1074	38.6%	(36.0-41.4)	1.55	(1.34-1.79)		
28 29	Pregnant in the last year												0.0114	
30	No							4227, 4122	36.2%	(34.6-37.9)	1	-		
31	Yes							437, 273	41.7%	(36.6-47.1)	1.36	(1.07-1.72)		
32	Used hormonal							,				,		
02	contraceptive, past year												0.05	
34	No							3759, 3838	34.8%	(33.1-36.5)	1	_		
35	Yes							2806, 1831	33.0%	(30.9-35.1)	1.15	(1.00-1.33)		
_	Sexual health indicators							-		· · · · · · · · · · · · · · · · · · ·		•		
	Ever diagnosed with a sexually	v												
	transmitted infection	-					<0.0001						0.0004	0.0651
39	No (or only thrush)	4147, 5127	14.0%	(12.8-15.3)	1	-		5455, 4861	33.4%	(31.9-34.9)	1	-		
40	Yes (excluding thrush)	677, 830	21.4%	(18.1-25.0)	1.67	(1.33-2.10)		1206, 888	38.2%	(35.1-41.5)	1.32	(1.13-1.54)		
41 42	Table 1 cont.		,,	, <b></b>		(=:== =:==)				(	<b>~_</b>	(==== 2.5 .)		
40														

5 6				M	en					Wo	men			
7 8 9		Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	p-value for interaction with sex <sup>a</sup>
10	Ever experienced non-													
11	volitional sex						0.0010						<0.0001	0.3164
12 13	INO	4705, 5824	14.7%	(13.6-16.0)	1	-		5815, 5055	32.8%	(31.4-34.2)	1	-		
14	Yes/Don't know	133, 148	26.1%	(18.9-34.9)	2.07	(1.34-3.18)		848, 695	44.3%	(40.5-48.3)	1.66	(1.40-1.97)		
15	Sexual competence at first													
16	COV						0.0706						<0.0001	0.1797
17		2407, 3037	16.2%	(14.6-17.9)	1	-		3438, 2927	37.6%	(35.7-39.5)	1	-		
18	_	2302, 2784	13.7%	(12.1-15.4)	0.84	(0.69-1.01)		3097, 2716	30.3%	(28.4-32.3)	0.73	(0.65-0.83)		
19	Number of other sexual respo	nse												
20	problems experienced <sup>1</sup>						<0.0001						<0.0001	0.0015
21	0	3208, 3945	11.7%	(10.5-13.1)	1	-		4377, 3759	25.3%	(23.8-26.9)	1	-		
22		1061, 1350	10.9%	(9.0-13.2)	0.91	(0.71-1.17)		1217, 1087	34.8%	(31.7-38.0)	1.55	(1.32-1.82)		
23	——————————————————————————————————————	570, 678	42.5%	(37.9-47.2)	5.58	(4.41-7.04)		1075, 909	69.8%	(66.5-72.9)	6.91	(5.82-8.21)		
24														
25	. copie ai e aiiaei pi cocai e													
26							0.0115						0.0001	0.7970
27	EISE	1799, 2264	13.1%	(11.4-15.0)	1	-		1851, 1570	29.3%	(26.8-31.9)	1	-		
28 29		3038, 3707	16.2%	(14.7-17.8)	1.29	(1.06-1.57)		4817, 4185	36.0%	(34.4-37.6)	1.34	(1.16-1.54)		
30														
31	age						<0.0001						<0.0001	0.9443
32	Else	2943, 3472	11.4%	(10.2-12.8)	1	-		4044, 3278	27.8%	(26.2-29.4)	1	-		
33		1894, 2499	20.0%	(18.0-22.2)	1.93	(1.61-2.32)		2624, 2477	42.6%	(40.4-44.8)	1.85	(1.63-2.10)		
34		ex drive												
35	than women						<0.0001						<0.0001	<0.0001
36		2788, 3441	18.0%	(16.4-19.7)	1	-		3351, 2830	26.0%	(24.3-27.8)	1	-		
37	Strongly agree/agree	2049, 2530	10.9%	(9.4-12.6)	0.56	(0.46-0.68)		3317, 2925	42.0%	(40.0-44.1)	2.04	(1.80-2.31)		
38	Too much sex in the media						0.7069						0.1807	0.4835
39	Else	1986, 2296	14.6%	(12.8-16.6)	1	-		2091, 1618	31.7%	(29.3-34.2)	1	-		
40	Strongly agree/agree	2851, 3675	15.3%	(13.8-16.9)	1.04	(0.85-1.26)		4577, 4137	35.1%	(33.5-36.8)	1.10	(0.96-1.26)		

Denominator is those aged 16-74 years with at least one partner in the past year. Unwt, unweighted; wt, weighted

- <sup>a</sup> P-value for interaction to determine whether the magnitude of association between each variable and lack of interest in sex differs between men and women
- b IMD is a multidimensional measure of area (neighbourhood)-level deprivation based on the participant's postcode. IMD scores for England, Scotland and Wales were adjusted before being combined and assigned to quintiles, using a method by Payne and Abel [49].
- <sup>c</sup> Participants aged ≥17 years.
- d Includes arthritis, heart attack, coronary heart disease, angina, other forms of heart disease, hypertension, stroke, diabetes, broken hip or pelvis, bone or hip replacement ever, backache lasting longer than 3 months, any other muscle or bone disease lasting longer than 3 months, depression, cancer and any thyroid condition treated in the past year.
- e Participants were asked whether they had often been bothered by feeling down, depressed, or hopeless in the past 2 weeks, and whether they had often been bothered by little interest or pleasure in doing things in the past 2 weeks, using a validated two-question patient health questionnaire (PHQ-2).
- <sup>†</sup> Opposite and/or same-sex partners
- 15 gother means easy with a husband or wife or regular partner, but difficult with a new partner; easy with a new partner, but difficul with a husband or wife or regular partner; difficult with any partner, it depends, sometimes easy, and sometimes difficult.
- 17 h Participants were asked to rate how happy they were in their relationship from 1 (very happy) to 7 (very unhappy); responses of 1 or 2 were regarded as denoting participants who were happy 18 with their relationship.
- 19 A constructed variable to measure readiness, combining consensuality, autonomy of decision making, timing and use of effective contraception
- Sexual response problems (for at least 3 months in past year): lacked enjoyment in sex, felt anxious during sex, felt physical pain as a result of sex, felt no excitement or arousal during sex, difficulty in reaching climax, reached a climax more quickly than you would like, trouble getting or keep an erection (men), uncomfortably dry vagina (women)

<sup>4</sup>Table 3: Associations between lack of interest in having sex for at least 3 months in the past year and other sexual response problems lasting 3 months or more in the past year, by sex

7					Men							Women			
8		Didn't l	ack interest	Lacked	interest in				Didn't la	ack interest	Lacked	d interest in			
9		i	n sex		sex		(95%CI)	p-value	ir	n sex		sex		(95%CI)	p-value
10enominators (unwt, wt)		412	26, 5077	71	3, 897	<b>AOR</b> <sup>a</sup>			454	0, 3790	21:	29, 1965	<b>AOR</b> <sup>a</sup>		
11 Lacked enjoyment in having s	ex							<0.0001							<0.0001
13 N	lo	97.7%	(97.1-98.1)	81.5%	(78.2-84.4)	1	-		95.9%	(95.1-96.5)	72.5%	(70.2-74.7)	1	-	
14 Ye	es	2.3%	(1.9-2.9)	18.5%	(15.6-21.8)	9.78	(7.11-13.46)		4.1%	(3.5-4.9)	27.5%	(25.3-29.8)	8.95	(7.28-11.01)	
15elt anxious during sex								<0.0001							<0.0001
	lo	96.1%	(95.5-96.7)	85.8%	(82.6-88.5)	1	-		97.3%	(96.7-97.7)	89.9%	(88.4-91.3)	1	-	
17 10	es	3.9%	(3.3-4.5)	14.2%	(11.5-17.4)	4.16	(3.08-5.62)		2.7%	(2.3-3.3)	10.1%	(8.7-11.6)	4.4	(3.43-5.65)	
18 1 Felt physical pain as a result of	of se	x						0.0213							<0.0001
20 N	lo	98.4%	(97.9-98.8)	97.1%	(95.6-98.1)	1	-		95.7%	(95.0-96.3)	86.5%	(84.6-88.1)	1	-	
21 Ye	es	1.6%	(1.2-2.1)	2.9%	(1.9-4.4)		(1.10-3.19)		4.3%	(3.7-5.0)	13.5%	(11.9-15.4)	3.55	(2.83-4.45)	
<sup>2</sup> Felt no excitement or arousal	l duri	ing sex						<0.0001							<0.0001
23 <sub>N</sub>		98.5%	(98.0-98.9)	87.7%	(85.0-90.0)	1	_		97.5%	(96.9-97.9)	80.9%	(79.0-82.7)	1	-	
24 25 Ye	es	1.5%	(1.1-2.0)	12.3%	(10.0-15.0)	9.21	(6.33-13.40)		2.5%	(2.1-3.1)	19.1%	(17.3-21.0)	9.16	(7.16-11.70)	
26 ifficulty in reaching climax								<0.0001							<0.0001
27 N	lo	92.7%	(91.7-93.5)	80.5%	(76.6-83.8)	1	-		88.3%	(87.2-89.3)	74.9%	(72.7-76.9)	1	-	
28 Ye	es	7.3%	(6.5-8.3)	19.5%	(16.2-23.4)	3.08	(2.37-3.99)		11.7%	(10.7-12.8)	25.1%	(23.1-27.3)	2.6	(2.23-3.03)	
Reached climax more quickly	thar	n you w	ould like					0.0198							0.3658
		85.6%	(84.3-86.9)	82.0%	(78.7-85.0)	1	-		97.8%	(97.2-98.2)	97.5%	(96.7-98.1)	1	-	
	es	14.4%	(13.1-15.7)	18.0%	(15.0-21.3)	1.32	(1.05-1.68)		2.2%	(1.8-2.8)	2.5%	(1.9-3.3)	1.18	(0.82-1.69)	
3∯rouble getting or keeping an			,		,		,	<0.0001				,		,	
34 <sub>n</sub>		88.5%	(87.3-89.6)	79.4%	(75.9-82.6)	1	_								
35		11.5%	(10.4-12.7)	20.6%	(17.4-24.1)	1.97	(1.55-2.51)								
36 3₩ncomfortably dry vagina															<0.0001
380									90.7%	(89.5-91.7)	80.1%	(77.9-82.1)	1	-	
39 <sub>es</sub>									9.3%	(8.3-10.5)	19.9%	(17.9-22.1)	2.28	(1.89-2.76)	
40 anominator is those aged 16-74				!	-4		.d		3.570	(5.0 20.0)	10.070	(=/.0 ==.1)		(=:00 =::0)	

40enominator is those aged 16-74 years with at least one partner in the past year. Unwt, unweighted; wt, weighted

 $41\hspace{-0.07cm}\text{AOR}$  comparing those lacking interest to those not 42

Table 2: Factors associated with lacking interest in having sex for at least 3 months in the past year and being distressed about it in sexually active men and women

			М	en					Wor	men			_
0	Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	p-value for interaction with sex <sup>a</sup>
3 All	4839, 5973	8.2%	(7.4-9.1)		· ·	•	6669, 5755	20.8%	(19.6-22.0)			•	
4 Socio-demographics				_									
5 Age group						0.0011						<0.0001	0.8971
6 16-24	1279, 936	4.8%	(3.7-6.4)	1	-		1662, 923	15.2%	(13.4-17.3)	1	-		
7 25-34	1376, 1238	8.0%	(6.7-9.5)	1.7	(1.19-2.41)		2236, 1246	20.9%	(19.0-22.8)	1.47	(1.22-1.76)		
8 9	719, 1298	9.6%	(7.5-12.3)	2.09	(1.40-3.13)		1050, 1290	22.9%	(20.3-25.7)	1.65	(1.34-2.04)		
9 0 45-54	630, 1186	9.7%	(7.4-12.6)	2.11	(1.38-3.22)		871, 1186	23.3%	(20.4-26.6)	1.69	(1.35-2.13)		
55-64	512, 849	9.4%	(7.0-12.6)	2.04	(1.30-3.21)		569, 755	21.8%	(18.3-25.8)	1.55	(1.20-2.01)		
2 65-74	323, 467	5.5%	(3.4-8.6)	1.13	(0.65-1.99)		281, 355	16.5%	(12.4-21.7)	1.10	(0.76-1.59)		
3 Index of multiple 4 deprivation (quintiles) <sup>b</sup>						0.8339						0.0938	0.4592
5 1 (least deprived)	977, 1279	8.1%	(6.2-10.4)	1	-		1248, 1208	23.3%	(20.7-26.1)	1	-		
6 2	962, 1264	7.4%	(5.7-9.6)	0.92	(0.62-1.36)		1290, 1208	20.8%	(18.2-23.5)	0.87	(0.69-1.09)		
7	942, 1169	8.3%	(6.4-10.6)	1.05	(0.71-1.55)		1299, 1116	19.6%	(17.1-22.4)	0.82	(0.65-1.03)		
8 4	967, 1184	8.8%	(6.9-11.1)	1.14	(0.78-1.66)		1384, 1137	21.9%	(19.3-24.7)	0.95	(0.76-1.18)		
9 5 (most deprived)	991, 1077	8.6%	(6.7-10.9)	1.12	(0.75-1.65)		1448, 1086	18.2%	(15.9-20.6)	0.75	(0.60-0.94)		
1 Education level <sup>c</sup>						0.4958						0.7324	0.4496
2 Left school aged 17+	2862, 3464	7.9%	(6.8-9.2)	1	-		4150, 3406	20.8%	(19.4-22.4)	1	-		
3 Left school at 16	1873, 2437	8.8%	(7.5-10.4)	1.09	(0.85-1.41)		2409, 2287	21.1%	(19.3-23.1)	0.97	(0.83-1.14)		
4 Employment status						0.0001						0.0003	0.1244
5 Employed	3211, 4254	8.3%	(7.3-9.5)	1	-		3871, 3517	21.6%	(20.1-23.2)	1	-		
6 Full-time education	542, 431	4.9%	(2.8-8.6)	0.74	(0.38-1.44)		693, 423	14.8%	(11.8-18.4)	0.75	(0.56-1.01)		
7 Unemployed	707, 723	12.1%	(9.5-15.3)	1.56	(1.14-2.13)		1681, 1282	22.3%	(19.9-24.9)	1.07	(0.90-1.27)		
o Retired	375, 562	4.9%	(3.1-7.6)	0.41	(0.23-0.71)		415, 524	16.8%	(13.4-20.8)	0.57	(0.41-0.79)		
Practises religion at least						0.4606						0.0467	0.04.45
once a month No	4283, 5179	8.5%	(7.5-9.5)	1	-	0.1638	5659, 4754	21.5%	(20.2-22.9)	1	-	0.0167	0.8143

1 2 3 4 521, 748 Yes 6.4% (4.4-9.4) 0.73 (0.48-1.13)956, 945 18.0% (15.3-20.9) 0.78 (0.63 - 0.96)5 Table 2 cont. 6 Men Women 8 Age-Agep-value for 9 adjusted adjusted interaction Denom. Denom. 10 with sex<sup>a</sup> (unwt, wt) % (95%CI) OR (95%CI) p-value (unwt, wt) % (95%CI) OR (95%CI) p-value 11 Health Self-reported general health < 0.0001 < 0.0001 0.0969 13 Very good/Good 4123, 5055 7.0% (6.1-7.9)1 5683, 4851 19.2% (18.0-20.5)1 14 15 580, 745 13.3% 2.04 (1.50-2.78)27.9% 1.60 Fair (10.5-16.8)780, 709 (24.3-31.9)(1.30-1.97)16 Bad/very bad 135, 171 22.6% (15.3-32.1)3.85 (2.31-6.40)206, 195 33.4% (26.3-41.4)2.05 (1.45 - 2.91)17 Difficulty walking up stairs because of a health problem 0.0001 0.0085 0.1553 19 No difficulty 4475, 5460 7.6% (6.7-8.6)1 6062, 5107 20.1% (18.9-21.4)1 20 Some difficulty 278, 393 (8.8-17.0)(0.93-1.59)12.3% 1.67 (1.11-2.52)450, 482 24.1% (20.0-28.7)1.21 Much difficulty/unable to do 22 (1.79-6.32)86, 120 22.2% (13.5-34.2)3.36 157, 166 32.3% (24.3-41.5)1.81 (1.21-2.70)23 Longstanding illness or disability < 0.0001 < 0.0001 0.0345 25 3585, 4259 6.5% (5.6-7.5)1 4843, 4026 18.7% (17.4-20.0)1 26 (10.6-14.8)1253, 1713 12.5% 2.09 (1.60-2.74)1825, 1729 25.7% (23.4-28.2)1.48 (1.27-1.74)Number of comorbid conditions < 0.0001 < 0.0001 0.5779 29 3453, 3994 6.4% (5.5-7.5)1 4357, 3536 17.3% (15.9-18.7)1 30 (9.0-13.4)1.88 (1.37-2.57)24.1% (21.7-26.7)1 939, 1329 11.0% 1555, 1416 1.54 (1.30-1.83)31 32 >=2 446,650 13.3% (10.1-17.4)2.40 (1.61-3.59)755, 802 30.5% (26.8 - 34.4)2.16 (1.74-2.69)33 Depressive symptoms<sup>e</sup> < 0.0001 < 0.0001 0.0370 34 4383, 5471 (6.0-7.7)1 5885, 5149 1 No 6.8% 18.6% (17.4-19.8)35 449, 495 23.7% (19.3-28.9)4.36 (3.20-5.94)780,602 39.6% (35.4-44.0)2.94 (2.41 - 3.59)Treated for depression in the past year < 0.0001 0.0371 < 0.0001 37 4524, 5630 1 7.3% (6.5-8.2)5770, 5040 18.5% (17.3-19.8)1 38 Yes 313, 342 23.0% (17.9-29.1)3.81 (2.71-5.36)897, 713 36.4% (32.9-40.2)2.54 (2.12-3.03)39 40 41 42 43 44 45 46

Ta	bl	e	2	C	or	١t	

Tuble 2 cont.			N	1en					Wor	men			
	Denom.	0/	(0.50(.01)	Age- adjusted	(050/51)		Denom.	04	(0.50/.01)	Age- adjusted	(050/01)		p-value for interaction
0	(unwt, wt)	%	(95%CI)	OR	(95%CI)	p-value	(unwt, wt)	%	(95%CI)	OR	(95%CI)	p-value	with sex <sup>a</sup>
1 Menopausal status							5405 4407	20.20/	(40.0.24.5)	4		0.9656	
2 Not menopausal							5485, 4187	20.2%	(18.9-21.5)	1	- (0.75.4.02)		
3 Menopausal							1167, 1548	22.5%	(20.0-25.2)	1.01	(0.76-1.32)		
4 Circumcised						0.4097							
5 No	3909, 4728	8.3%	(7.4-9.4)	1	-								
6 Yes	857, 1166	7.5%	(5.7-9.9)	0.87	(0.62-1.22)								
Sexual behaviour  Number of occasions of sex													
^ INGITIBLE OF OCCUSIONS OF SEX,						<0.000						.0.0004	0.5406
n past 4 weeks	1010 1150	40.00/	(0.0.40.7)			1	1100 1015	22.22/	(20 7 25 0)			<0.0001	0.5496
1	1013, 1163	10.3%	(8.3-12.7)	1			1408, 1245	23.2%	(20.7-26.0)	1	-		
2 1-2	1160, 1566	10.5%	(8.6-12.8)	1.02	(0.74-1.42)		1481, 1373	24.2%	(21.8-26.9)	1.06	(0.87-1.30)		
3 3-4	870, 1168	7.4%	(5.6-9.8)	0.71	(0.48-1.04)		1240, 1130	21.3%	(18.7-24.2)	0.91	(0.73-1.13)		
4 5+	1617, 1869	5.0%	(3.9-6.4)	0.46	(0.33-0.66)		2078, 1655	14.7%	(12.9-16.7)	0.58	(0.47-0.72)		
5 Masturbation, past 4 weeks						0.0164						0.7265	0.0309
6 No	1297, 1828	6.9%	(5.5-8.6)	1	-		4032, 3612	21.1%	(19.6-22.6)	1	-		
7 Yes	3531, 4132	8.8%	(7.7-9.9)	1.42	(1.07-1.88)		2615, 2114	20.3%	(18.4-22.2)	0.97	(0.84-1.13)		
8 No. of sexual partners, past													
9 <b>year</b> <sup>f</sup> 0 1						0.2466						0.0016	0.4744
1	3573, 4824	8.5%	,	1	-		5440, 5012	21.6%	(20.3-22.9)	1	-		
2	539, 513	6.3%	(4.3-9.1)	0.75	(0.49-1.14)		570, 364	16.7%	(13.3-20.6)	0.75	(0.57-0.99)		
3	718, 627	6.8%	(5.1-9.0)	0.82	(0.59-1.15)		642, 366	14.1%	(11.0-17.7)	0.62	(0.46-0.83)		
Paid for sex, past year						0.4865							
5 No	4774, 5896	8.2%	(7.4-9.2)	1	-								
6 Yes	64, 75	5.6%	(1.8-16.4)	0.66	(0.20-2.15)								
7 Ever taken drugs to assist													
8 sexual performance						0.0022						0.1055	0.5305
9 No	4188, 5180	7.6%	(6.7-8.6)	1	-		6478, 5624	20.6%	(19.5-21.8)	1	-		
0 Yes	636, 776	12.1%	(9.5-15.4)	1.63	(1.19-2.23)		184, 124	25.9%	(19.2-33.9)	1.38	(0.93-2.05)		

4 5	Table 2 cont.													
6				М	en					Wo	men			
7 8 9		Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	p-value for interaction with sex <sup>a</sup>
10	Relationship context					•	•			,		•	•	
11	Relationship status						0.03						< 0.0001	0.0307
12 13	Living with partner	2708, 4266	8.8%	(7.7-10.1)	1	-		3967, 4168	23.4%	(21.9-24.9)	1	-		
13 14	In a steady relationship, not		3.3.1	(1.1)						(,				
15	living together	947, 760	6.9%	(5.3-9.0)	0.78	(0.56-1.09)		1360, 790	15.4%	(13.4-17.7)	0.59	(0.49-0.71)		
16	Not in a steady relationship,													
17	but previously cohabited	446, 388	8.8%	(6.2-12.2)	1.00	(0.67-1.48)		752, 462	13.6%	(11.1-16.6)	0.51	(0.40-0.66)		
18	Not in a steady relationship,													
19	never cohabited	727, 551	4.7%	(3.3-6.8)	0.52	(0.34-0.81)		580, 330	11.0%	(8.2-14.5)	0.39	(0.28-0.55)		
20	Duration of most recent													
	sexual relationship						0.0143						< 0.0001	0.0719
22	1 year or less	1462, 1260	5.5%	(4.3-7.1)	1	-		1597, 998	11.2%	(9.4-13.2)	1	-		
23	Between 1 and 5 years	1247, 1227	9.0%	(7.3-11.0)	1.67	(1.18-2.36)		1758, 1148	18.5%	(16.5-20.7)	1.81	(1.44-2.29)		
24	Between 5 and 15 years	1065, 1484	9.3%	(7.5-11.6)	1.68	(1.17-2.43)		1774, 1458	25.2%	(23.0-27.6)	2.81	(2.23-3.55)		
25	Over 15 years	1004, 1904	8.8%	(7.1-10.8)	1.47	(0.97-2.22)		1445, 2036	23.8%	(21.5-26.2)	2.83	(2.13-3.75)		
26	Always easy to talk about													
27 28	sex with partners <sup>g</sup>						0						< 0.0001	0.4854
∠8 29	Yes	1695, 1899	4.8%	(3.8-6.0)	1	-		1746, 1451	11.4%	(9.7-13.2)	1	-		
29 30	No/other	3122, 4048	9.8%	(8.7-11.1)	2.15	(1.62-2.87)		4907, 4289	23.9%	(22.5-25.3)	2.43	(2.02-2.93)		
31							<0.000							
32	Happy with relationship <sup>h</sup>						1						<0.0001	0.9717
33	Yes	1951, 2791	7.1%	(5.9-8.6)	1	-		2736, 2601	18.6%	(16.9-20.4)	1	-		
34	Other	995, 1430	13.3%	(11.2-15.8)	2.01	(1.51-2.66)		1640, 1617	31.4%	(28.8-34.0)	2.00	(1.69-2.37)		
	Participant does not share sar	ne level of												
36	interest in sex as partner							0.0311						<0.0001
37	No/other	2270, 3233	8.5%	(7.2-10.0)	1	-		3211, 3064	15.0%	(13.6-16.4)	1	-		
38	Yes	676, 988	11.6%	(9.2-14.4)	1.41	(1.03-1.92)		1166, 1155	46.2%	(42.9-49.6)	4.91	(4.13-5.83)		

Tah	l۵	2	cont
IUU	ľ	_	COIL

S			N	1en					Wor	men			_
, } }	Denom.	24	(050(61)	Age- adjusted	(0.50/01)		Denom.	0/	(050(61)	Age- adjusted	(050/01)		p-value for interaction
O Participant does not share same so	(unwt, wt)	%	(95%CI)	OR	(95%CI)	p-value	(unwt, wt)	%	(95%CI)	OR	(95%CI)	p-value	with sex <sup>a</sup>
1 dislikes as partner	exual likes &					0.0975						<0.0001	0.0212
2	2050 2002	0.00/	(7.7.10.2)	1		0.0373	4070 3000	22.10/	(20 C 22 C)	1		<b>\0.0001</b>	0.0212
3	2650, 3803	8.9%	(7.7-10.2)	1	<del>-</del>		4079, 3908	22.1%	(20.6-23.6)	1	<del>-</del>		
Yes	296, 418	12.2%	(8.6-17.0)	1.43	(0.94-2.18)		297, 310	41.9%	(35.6-48.6)	2.55	(1.93-3.37)		
Partner experienced sexual difficu 5 year	ities in past					0.0027						<0.0001	0.6889
6			()			0.0027			/\	_		<0.0001	0.0889
7	2431, 3454	8.3%	(7.2-9.6)	1	-		3726, 3498	22.1%	(20.6-23.7)	1	-		
Yes	513, 763	13.2%	(10.2-17.0)	1.68	(1.20-2.35)		649, 719	30.4%	(26.5-34.6)	1.58	(1.27-1.95)		
Does not reel emotionally close to	partner					0.0225						.0.0004	0.0220
On						0.0225						<0.0001	0.8228
No/other	2904, 4165	9.1%	(7.9-10.3)	1	-		4263, 4108	22.9%	(21.5-24.4)	1	-		
Yes Yes	42, 56	21.0%	(10.2-38.3)	2.69	(1.15-6.29)		112, 109	47.0%	(36.4-57.8)	2.98	(1.92-4.63)		
Lifestyle													
1+ child(ren) aged <5 in													
household						0.1047						0.0004	0.0042
No, none	4100, 5015	8.6%	(7.6-9.6)	1	=		4997, 4671	20.2%	(18.9-21.5)	1	-		
27 Yes, 1+	727, 941	6.3%	(4.6-8.5)	0.75	(0.52-1.06)		1664, 1074	23.5%	(21.2-25.9)	1.34	(1.14-1.58)		
8 Pregnant in the last year	,	0.0,1	( )		(0.02 2.00)				(==== ===,		(=== ; === ;	0.5927	
9 No							4227, 4122	21.8%	(20.4-23.4)	1		0.3327	
										1	- (0.60.4.04)		
103							437, 273	20.7%	(16.6-25.6)	0.92	(0.69-1.24)		
Used hormonal													
contraceptive, past year												0.1141	
No No							3759, 3838	20.7%	(19.2-22.3)	1	-		
Yes Yes							2806, 1831	20.9%	(19.1-22.7)	1.14	(0.97-1.35)		
Sexual health indicators													
Ever diagnosed with a sexually tra	nsmitted												
infection						<0.0001						0.0002	0.0291
No (or only thrush)	4148, 5128	7.3%	(6.5-8.3)	1	-		5455, 4861	20.0%	(18.7-21.3)	1	-		
Yes (excluding thrush)	677, 830	13.7%	(11.0-17.0)	2.02	(1.51-2.70)		1206, 888	25.1%	(22.3-28.1)	1.39	(1.16-1.65)		
	•				•		•		•				
Table 2 cont.													
Table 2 cont.													

			M	en					Wo	men			_
	Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	p-value fo interactio with sex
Ever experienced non-volitional													
) sex						<0.0001						<0.0001	0.1143
No Yes/Don't know	4706, 5825	7.9%	(7.1-8.9)	1	-		5815, 5055	19.4%	(18.2-20.7)	1	-		
respont know	133, 148	19.4%	(13.1-27.7)	2.83	(1.74-4.59)		848, 695	30.9%	(27.3-34.6)	1.86	(1.55-2.25)		
Sexual competence at mist sex						0.4876						<0.0001	0.0787
Not competent	2408, 3039	8.7%	(7.5-10.0)	1	-		3438, 2927	23.6%	(21.9-25.3)	1	-		
Competent	2302, 2784	7.8%	(6.6-9.2)	0.91	(0.71-1.18)		3097, 2716	17.7%	(16.1-19.3)	0.70	(0.61-0.81)		
Number of other sexual response experienced <sup>i</sup>	problems					<0.0001						<0.0001	0.0262
0	3209, 3947	5.3%	(4.4-6.3)	1		<b>\0.0001</b>	4377, 3759	12.9%	(11.7-14.1)	1	_	<b>\0.0001</b>	0.0202
	1061, 1350	6.1%	(4.7-7.8)	1.14	(0.81-1.59)		1217, 1087	21.7%	(19.0-24.6)	1.86	(1.53-2.26)		
1 2+	570, 678	29.7%	(25.4-34.4)	7.57	(5.68-10.10)			52.4%	(48.9-56.0)	7.48	(6.25-8.94)		
Attitudes 2+	370, 076	29.770	(23.4-34.4)	7.37	(3.08-10.10)		1075, 909	32.470	(46.9-30.0)	7.40	(0.23-6.94)		
People are under pressure													
to have sex						0.1437						<0.0001	0.2192
	1799, 2264	7.4%	(6.0-9.0)	1	-		1851, 1570	16.4%	(14.5-18.5)	1	_		
Strongly agree/agree	3038, 3707	8.7%	` ,	1.21	(0.94-1.57)		4817, 4185	22.4%	(21.0-23.9)	1.47	(1.24-1.74)		
People want less sex as they			(**************************************		(0.0 1 = 0.0 1)				(=====,		(=== : =:: :,		
age						0.0005						< 0.0001	0.8045
Else	2943, 3472	6.7%	(5.7-7.8)	1	-		4044, 3278	17.1%	(15.8-18.6)	1	_		
Strongly agree/agree	1894, 2499	10.3%	(8.8-12.1)	1.58	(1.22-2.04)		2624, 2477	25.6%	(23.7-27.6)	1.64	(1.43-1.90)		
Men have a naturally higher s	ex drive												
than women							<0.0001						<0.0001
Else	2788, 3441	10.2%	(8.9-11.5)	1	-		3351, 2830	15.9%	(14.4-17.4)	1	-		
Strongly agree/agree	2049, 2530	5.5%	(4.4-6.9)	0.52	(0.39-0.68)		3317, 2925	25.5%	(23.8-27.4)	1.81	(1.56-2.09)		
Too much sex in the media						0.3477						0.0693	0.8856
Else	1986, 2296	7.5%	(6.3-9.0)	1	-		2091, 1618	18.8%	(16.8-20.9)	1	-		
Strongly agree/agree	2851, 3675	8.6%	(7.5-9.9)	1.13	(0.88-1.46)		4577, 4137	21.6%	(20.2-23.0)	1.16	(0.99-1.36)		

<sup>40 &</sup>lt;sup>a</sup> P-value for interaction to determine whether the magnitude of association between each variable and lack of interest in sex differs between men and women

b IMD is a multidimensional measure of area (neighbourhood)-level deprivation based on the participant's postcode. IMD scores for England, Scotland and Wales were adjusted before being combined and assigned to quintiles, using a method by Payne and Abel [49].

<sup>&</sup>lt;sup>c</sup> Participants aged ≥17 years.

d Includes arthritis, heart attack, coronary heart disease, angina, other forms of heart disease, hypertension, stroke, diabetes, broken hip or pelvis, bone or hip replacement ever, backache lasting longer than 3 months, any other muscle or bone disease lasting longer than 3 months, depression, cancer and any thyroid condition treated in the past year.

e Participants were asked whether they had often been bothered by feeling down, depressed, or hopeless in the past 2 weeks, and whether they had often been bothered by little interest or pleasure in doing things in the past 2 weeks, using a validated two-question patient health questionnaire (PHQ-2).

<sup>&</sup>lt;sup>†</sup> Opposite and/or same-sex partners

<sup>14 &</sup>lt;sup>g</sup> Other means easy with a husband or wife or regular partner, but difficult with a new partner; easy with a new partner, but difficul with a husband or wife or regular partner; difficult with any partner, it depends, sometimes easy, and sometimes difficult.

<sup>16</sup> harticipants were asked to rate how happy they were in their relationship from 1 (very happy) to 7 (very unhappy); responses of 1 or 2 were regarded as denoting participants who were happy with their relationship.

A constructed variable to measure readiness, combining consensuality, autonomy of decision making, timing and use of effective contraception

<sup>19</sup> Sexual response problems (for at least 3 months in past year): lacked enjoyment in sex, felt anxious during sex, felt physical pain as a result of sex, felt no excitement or arousal during sex, a difficulty in reaching climax, reached a climax more quickly than you would like, trouble getting or keep an erection (men), uncomfortably dry vagina (women)

# **BMJ Open**

What factors are associated with reporting lacking interest in sex and how do these vary by gender?: Findings from the third British National Survey of Sexual Attitudes and Lifestyles

Journal:	BMJ Open
Manuscript ID	bmjopen-2017-016942.R1
Article Type:	Research
Date Submitted by the Author:	16-Jun-2017
Complete List of Authors:	Graham, Cynthia; University of Southampton, Psychology Mercer, Catherine; University College London, Research Department of Infection and Population Health Tanton, Clare; University College London, Research Department of Infection & Population Health Jones, Kyle; University College London, Research Department of Infection and Population Health Johnson, Anne; University College London, Research Department of Infection and Population Health Wellings, Kaye; London School of Hygiene and Tropical Medicine, Mitchell, Kirstin; London School of Hygiene and Tropical Medicine
<b>Primary Subject Heading</b> :	Sexual health
Secondary Subject Heading:	Epidemiology
Keywords:	SEXUAL MEDICINE, EPIDEMIOLOGY, Sexual and gender disorders < PSYCHIATRY

SCHOLARONE™ Manuscripts What factors are associated with reporting lacking interest in sex and how do these vary by gender?: Findings from the third British National Survey of Sexual Attitudes and Lifestyles

Graham, C. A., Mercer, C. H., Tanton, C. Jones, K. G., Johnson, A. M., Wellings, K., Mitchell, K. R.

<sup>1</sup>Centre for Sexual Health Research, Department of Psychology, University of Southampton, Southampton, U.K.

<sup>2</sup>Centre for Sexual Health and HIV Research, Research Department of Infection & Population Health, University College London, London, U.K.

<sup>3</sup>Centre for Sexual and Reproductive Health Research, Department of Social and Environmental Health Research, London School of Hygiene and Tropical Medicine, London, U.K.

<sup>4</sup>MRC/CSO Social and Public Health Sciences Unit, University of Glasgow, 200 Renfield Street, Glasgow G2 3QB, U.K.

Corresponding author:
Cynthia A. Graham
Department of Psychology
Faculty of Social, Human, and Mathematical Sciences
Shackleton Building (B44)
University of Southampton
Highfield, Southampton
SO17 1BJ UK

tel: 023 8059 3091

e-mail: C.A.Graham@soton.ac.uk

Word count: 3,900

#### **ABSTRACT**

**Objectives:** To investigate factors associated with reporting lacking interest in sex, and how these vary by gender.

**Setting**: British general population.

**Design:** Complex survey analyses of data collected for a cross-sectional probability sample survey, undertaken 2010-12, specifically logistic regression to calculate ageadjusted odds ratios (AOR) to identify associated factors.

**Participants:** 4,839 men and 6,669 women aged 16-74 years who reported >=1 sexual partner (opposite-sex or same-sex) in the past year for the third National Survey of Sexual Attitudes and Lifestyles [Natsal-3].

Main outcome measure: Lacking interest in sex for >= 3 months in the past year.

Results: Overall, 15.0% (13.9-16.2) of men and 34.2% (32.8-35.5) of women reported lacking interest in sex. This was associated with age and physical and mental health for both men and women, including self-reported general health and current depression. Lacking interest in sex was more prevalent among men and women reporting STI diagnoses (ever), non-volitional sex (ever), and holding sexual attitudes related to normative expectations about sex. Some gender similarities in associated relationship and family-related factors were evident, including partner having had sexual difficulties in the last year (M: AOR:1.41 [1.07-1.86]; W: AOR:1.60 [1.32-1.94]), not feeling emotionally close to partner during sex (M: 3.74 [1.76-7.93]; W: 4.80 [2.99-7.69], and ease of talking about sex (M: 1.53 [1.23-1.90] W: 2.06 [1.77-2.39]). Among women only, lack of interest in sex was higher among those in a relationship of >1 year in duration and those not sharing the same level of interest (4.57 [3.87-5.38]) or preferences (2.91 [2.22-3.83]) with a partner.

**Conclusions**: Both gender similarities and differences were found in factors associated with lacking interest in sex, with the most marked differences in relation to some relationship variables. Findings highlight the need to assess, and if appropriate, treat lacking interest in sex in a holistic and relationship-specific way.

#### ARTICLE SUMMARY

# Strengths and limitations of this study

- This study used nationally representative data to investigate factors associated with reporting lacking interest in sex, and how these vary by gender, in the British population.
- Few previous population-based studies have obtained data on low sexual interest from men and women and made direct comparisons between them.
- The study included detailed assessment of a range of relationship context and attitudinal variables seldom included in previous population-based surveys.
- Information about lacking interest in sex was assessed with a single item, asking participants whether they had lacked interest in having sex for a period of three months or more in the past year. Those who reported this were also asked whether they experienced associated distress.
- The cross-sectional data do not allow us to establish the causal direction of associations between lacking interest in sex and variables of interest.



In Britain's third National Survey of Sexual Attitudes and Lifestyles (Natsal-3) lacking interest in sex was the most common sexual difficulty reported by both men and women (1). Lacking interest in sex for 3 months or more in the past year was twice as common in women compared to men. When duration and symptom severity criteria are considered (i.e., that symptoms last six months or more and occur "very often" or "always") these prevalence estimates are much lower (2), but the gender difference is maintained.

Researchers have paid more attention to problems of low sexual interest in women than in men (3-5). Among men the predominant focus has been on erectile functioning and on physiological causes of lacking interest in sex such as hormonal status, rather than on psychosocial determinants. This lack of attention to male problems is reflected in recent revisions to the Diagnostic and Statistical Manual (DSM-5) classification of sexual disorders (6) which involved major changes to sexual arousal and desire disorder categories in women, but no substantive changes for male disorders.

Most but not all studies involving men have reported an association between low sexual interest and increasing age (for review, see 7). However, there are conflicting findings on the association with physical and mental health (8,9). Limited research suggests that psychosocial and relationship factors may also be associated with low sexual desire in men (8, 10-12).

Among women, factors that have been consistently associated with lacking interest in sex are relationship problems, relationship quality, and partner's sexual functioning (13-17), poor physical health (18), and negative mood states/depression (13, 18,19). There are inconsistent findings on the association between low sexual

interest and both age and menopausal status (14,18). Few large-scale surveys have examined possible links between lacking interest in sex and either sexual attitudes or sexual behaviour. In the second wave of the British National Survey of Sexual Attitudes and Lifestyles (Natsal-2), among women, lacking interest in sex was associated with lower frequency of sex and attitudes according sex low priority (20).

Studies have, for the most part, used small, clinical samples of patients seeking treatment for low sexual desire problems. The potential for bias in such studies is revealed in previously reported findings from Natsal-3 that only around a third of men and women with one or more sexual function problems meeting DSM 5 morbidity criteria had sought professional help in the last year. (2). The few large-scale probability-based surveys involving both men and women have focused on associations between low sexual desire and sociodemographic factors.

In summary, the evidence on the factors associated with men's and women's reports of low sexual desire is drawn largely from non-representative samples, is somewhat equivocal and, in men, sparse. Given that most previous research has involved non-representative samples, it is important to explore how correlates might differ in a population-based sample. Understanding the correlates of lacking interest in sex is key to informing therapeutic options for this group.

The research questions addressed in this paper are: (1) What sociodemographic, relationship, sexual behaviour, and sexual attitudinal factors are associated with lacking interest in sex in sexually active men and women?; (2) To what extent do these factors vary by gender?; (3) To what extent does lacking interest in sex co-exist with other sexual function problems?

# **METHOD**

## **Participants and Procedure**

Natsal-3 is a probability sample survey of 15,162 men and women aged 16-74 years in Britain, interviewed between September 2010 and August 2012. A multistage, clustered, and stratified probability sample design was used and participants were interviewed in their homes by professional interviewers using a combination of computer-assisted personal interviews (CAPI), and computer-assisted self-interviews (CASI) for the more sensitive questions (including, of relevance to this paper, those on sexual function), Interviewers were present in the room while participants completed the CASI, but did not view responses (20). After weighting to adjust for unequal probabilities of selection and to match the British population in terms of age, gender and geographical region, the Natsal-3 sample was broadly representative, on key variables, of the British population as described by the 2011 Census (21).

The estimated response rate was 57.7%, and the estimated cooperation rate (the number of interviews completed from eligible addresses for which contact was made) was 65.8% (of all eligible addressed contacted) (22). More extensive details of the survey methodology and sample characteristics are published elsewhere (21,22) and for demographic characteristics of the sample, see (22). Participants provided oral informed consent for interviews and the survey was approved by the NRES Committee South-Central – Oxford A (Ref.: 10/H0604/27).

For the current analyses, only respondents who reported >=1 sexual partner (opposite-sex or same-sex) in the past year were included (4,839 men and 6,669 women).

### **Outcome Measures**

Items were drawn from the Natsal-SF, a measure of sexual function, designed and validated for population surveys (Comparative Fit Index = 0.963 Tucker Lewis Index = 0.951; Root Mean Square Error of Approximation = 0.064). The measure comprised items on problems with sexual response, relational aspects of sexual function, and self-appraisal of sex life (23,24). Participants who reported at least one sexual partner in the past year (hereon 'sexually active participants') were asked: 'In the last year, have you experienced any of the following for a period of 3 months or longer?' and were given a list of difficulties and asked to indicate which they had experienced. The list included 'Lacked interest in having sex'. Those indicating this difficulty were defined as lacking interest in having sex for a period of three months or more in the past year (the outcome for this analysis). Individuals reporting lacking interest in sex for at least 3 months were then asked 'And how do you feel about this?' with response options: not at all distressed, a little distressed, fairly distressed; very distressed. Those answering a little, fairly or very distressed were defined as lacking interest in sex and having distress about this symptom (outcome for sensitivity analysis, see below).

# Statistical Analysis

All analyses were done using the complex survey functions of STATA (version 14; StataCorp LP, College Station, Texas) to account for the weighting, clustering, and stratification of the data. We used multivariable logistic regression to calculate ageadjusted odds ratios (AOR) to examine the associations between reports of lacking interest in sex lasting three months or longer in the past year, and sociodemographic, health, relationship, sexual behaviour, and sexual attitude variables. For each variable, we also tested the interaction with gender, to see if the magnitude of the associations

between the above factors and reports of lacking interest in sex was the same for men and women. We conducted a sensitivity analysis for the outcome variable reporting lack of interest in sex lasting three months or longer *and* distress about this symptom to assess whether similar associations were found. We also examined the association between reporting lacking interest in sex and the other sexual function problems asked about in Natsal-3, using AORs.

#### RESULTS

Overall, 15.0 (95% CI 13.9-16.2) of sexually active men and 34.2% (95% CI 32.8-35.5) of sexually active women reported lacking interest in sex for three months or longer in the year prior to interview. Table 1 presents the associations between lacking interest in sex and sociodemographic, health, relationship, sexual behaviour, and sexual attitudinal variables for men and women.

Age was significantly associated with lacking interest in sex. Prevalence increased with age, being lowest among younger participants (16-24 years; M: 11.5%; W: 24.8%) and peaking in men aged 35-44 years (17.2%) and in women aged 55-64 years (38.8%). Regarding demographic variables, after adjusting for age, lack of interest was associated with leaving school at 16 (men only; AORS: 1.31), being unemployed (men only AORs: M: 1.44), and less frequent religious practice (women only; AOR: 0.79). In women, after adjusting for age, those who were students or retired were less likely to lack desire.

After adjusting for age, there were associations between all physical and mental health variables assessed and lacking interest in sex. Individuals in poorer health (AORs: M: 3.29; W: 1.93), those who had much difficulty walking upstairs (AORs: M: 2.68; W: 1.55), those with a longstanding medical condition (AORs: M 1.76;

W: 1.35), and those who had screened positive for current depression (AORs: M: 2.95; W: 2.79) or who had been treated for depression in the past year (AORs: M: 2.82; W: 2.32) were more likely to report lacking interest in sex. The magnitude of these associations was similar for men and women. A greater number of comorbid health conditions was significantly associated with lacking interest in sex among both men and women. Menopausal status in women and circumcision in men were not associated with the likelihood of lacking sexual interest.

Regarding sexual behaviour, among both men and women, lack of interest was associated with frequency of sexual activity (defined as vaginal, oral or anal intercourse) in the four weeks prior to interview; 12.4% of men, and 33.8% of women who reported having engaged in 3-4 sexual acts reported lack of interest, vs. 20.7% of men and 42.9% of women who reported no sexual activity. Associations with recent masturbation differed by gender; lack of interest in sex was slightly *more* common among men who reported having recently masturbated but *less* common among women who did so. Women with three or more partners in the past year were less likely to report low sexual interest than those with only one partner (AOR: 0.70) but there was no association between partner numbers and lacking interest in sex in men. Among men only, those who reported ever having taken drugs to assist sexual performance were more likely to report lacking interest in sex (AOR: 1.36). A similar magnitude association was seen for women (AOR: 1.39) however, fewer women reported ever having taken drugs and the 95%CI therefore crosses 1.

Associations were found between lacking interest in sex and several relationship contextual variables and for many of these variables associations were stronger for women than for men. For both men and women, lack of interest was

associated with relationship status; women living with a partner were more likely to lack interest in sex than those in other relationship categories (see Table 1). For women, all relationship categories had lower AORs than living with partner. Duration of most recent sexual relationship was significantly associated with lacking interest in sex only among women, being more common among those in longer relationships.

Among both men and women, there was an association between ease of communication and lacking interest in sex. Those who found it "always easy to talk about sex" with their partner were less likely to report low interest. Lack of interest was more likely among those whose partner had sexual difficulties in the last year, and those who reported a lower assessment of happiness with the relationship, and not feeling emotionally close to partner during sex. Among women but not men, not sharing the same level of sexual interest with a partner, and not sharing the same sexual likes and dislikes, were also associated.

Having been pregnant in the last year was associated with lacking sexual interest as was having one or more young child(ren) (women only). Lack of interest in sex was significantly associated with sexual health indicators, including previous STI diagnosis and ever having experienced non-volitional sex. The strength and direction of associations was similar for men and women, except for reporting another sexual function problem, which was significant for two or more problems in men, but one or more problems in women. Sexual competence at first sex was significantly associated with lack of interest in sex only among women.

Regarding attitudinal variables, both men and women who endorsed statements that "people are under pressure to have sex" and "people want less sex as they age" were more likely to report lacking interest in sex over the past year. The

only attitudinal variable that showed a significant interaction with gender was that which related to men having a "naturally higher sex drive than women." Men who agreed with this statement were *less* likely than those who disagreed to lack interest in sex, while the reverse was true among women.

Table 2 presents the associations between lacking interest in sex and being distressed about this (as a measure/marker of severity), and the above sociodemographic, health, and sexual relationship/behaviour variables. While prevalence was lower, the associations and the interactions with gender were generally similar; however, some of the previous gender-specific associations with variables (e.g., masturbation, and pregnancy in women, and education in men) were no longer significant when the outcome variable was reported low sexual interest and associated distress. In addition, some associations became stronger when considering only those who reported a distressing lack of interest in sex (vs. lack of interest without any reported distress). For example, the association between depressive symptoms and having been treated for depression in the past year, was stronger in men than in women.

Regarding the association between reporting lacking interest in sex and the other sexual function problems asked about in Natsal-3, the strongest (positive) associations were for lacking enjoyment in sex (AORs=9.78 and 8.95 for men and women, respectively), followed by feeling no excitement or arousal during sex (AORs=9.21 and 9.16 for men and women, respectively) (see Table 3).

## **DISCUSSION**

We identified a broad range of factors, including some that have not been explored in previous large-scale surveys, that were associated with men's and

women's reports of lacking interest in sex in a representative British population-based survey. Our findings, discussed below, revealed some gender similarities as well as some interesting gender differences. The strongest evidence for gender differences was for the relationship context variables, where associations with lacking interest in sex were much stronger for women than for men.

# Interpretation of findings in context of previous research

Our finding relating to differences by age is consistent with some, but not all, results from previous research which has yielded generally inconsistent findings. Some studies have, like ours, shown a higher prevalence of sexual interest problems in older than in younger women (25-27). Others have found no association between age and low sexual interest complaints (14, 28) and yet more have shown lack of sexual interest to be more common among younger women (18). Whereas we found a marginal relationship with age in men, some studies (though not all e.g., 29) have found a stronger relationship (12, 30). It is possible that the varied findings might in part be a result of varied definitions of low sexual interest or differences in sampling.

The finding in this analysis that having young children appears to increase the likelihood of reporting lack of sexual interest for women, but not for men, remains unchanged since the previous Natsal-2 survey (31). This may be due to fatigue associated with a primary caring role (32), the fact that daily stress appears to affect sexual functioning in women more than men (33), or possibly a shift in focus of attention attendant on bringing up small children.

The finding of a link between lacking interest in sex and lacking enjoyment in sex and/or feeling no excitement or arousal during sex is not surprising and has been shown in previous studies (3). The strong associations between lack of interest in sex

and physical and mental health indicators, which we observed for both men and women, is not entirely consistent with findings from other studies. While this link has been persuasively shown for women (13, 18, 19), in men, the evidence is more equivocal. In a study of men attending an outpatient clinic for sexual problems, psychological symptoms such as anxiety and depression were more predictive of low sexual desire than hormonal or other physical markers (11). In contrast, DeRogatis et al. (9), in their study of men with erectile dysfunction, observed no differences in depressive symptoms, concurrent illness, or medication use between men with and without symptoms of low sexual desire.

The gender differences in associations between masturbation and a lack of sexual interest are interesting and have been explored in few previous population-based studies. Our observation that lack of interest was *more* commonly reported by men who had recently masturbated, but *less* commonly reported by women who had done so may reflect a tendency among women for self-pleasuring to be, not a substitute for partnered sex but instead a part of a broader repertoire of sexual fulfilment; this possibility is worthy of further exploration. In contrast, for men frequency of masturbation reflects reduced frequency of partnered sex (34). However, it is worth noting that in the U.S. National Health and Social Life Survey, lifetime number of sexual partners and masturbation practices were unrelated to the likelihood of sexual desire difficulties for either men or women (35).

Our observation that duration of most recent sexual relationship showed a strong association with lacking interest in sex in women is consistent with previous studies (15, 17). There has been little comparable research on men with which to corroborate the absence of such an association among men in our analysis.

Our data confirm the importance of the relational context in individuals' level of sexual interest. The strong associations between relationship and partner factors and sexual interest are consistent with those shown in many previous studies relating to women (13-17) and with a much smaller literature in men (36,37). In particular, sexual dysfunction in a male partner has previously been associated with women's levels of sexual desire (15, 38, 39), and sexual desire discrepancy in couples has been linked to lower reported relationship satisfaction and more couple conflict (40).

The strong links found between several key sexual health outcomes and lack of interest in sex are interesting; among both men and women, reporting an STI diagnosis and non-volitional sex were associated with reporting lack of interest in sex.

Our finding that lacking "sexual competence" at first sexual intercourse was linked with subsequent lack of interest in sex among women but not men, may reflect a greater salience of contextual aspects of first sex for women. More women than men report being pressured by a partner on the first occasion of heterosexual intercourse, and to have subsequently experienced regret about first sexual experiences (41).

These findings suggest that for women, early sexual experiences may shape future sexual encounters/relationships to a greater extent than for men.

To our knowledge no previous studies have assessed the association between attitudes toward sexual matters and lack of interest in sex. Endorsing the assumption that "people want less sex as they age" was associated with lack of interest in both genders. It might be that this belief contributes to a decline in interest, or – equally plausible – that those who lack interest adopt this attitude to avoid viewing their experience as problematic. Interestingly, men who endorsed the view that "men have a higher sex drive than women" were significantly *less* likely to report lacking interest

in sex, whereas women who agreed with this statement were *more* likely to do so. If people responded to this statement with reference to their own relationship, these findings may be seen as making intuitive sense. The results suggest that endorsing stereotypical gender-norms related to sex may adversely affect women more than men.

# **Strengths and Limitations**

Strengths of our study include the use of national probability sample survey data involving both men and women across a wide age range (21, 22). With a few exceptions (e.g., 12, 14, 29, 42), most surveys on sexual desire problems have sampled either men *or* women, precluding direct comparisons within the same sample.

Another strength was the detailed and holistic examination of relationship context and attitudinal variables, which few previous studies have reported. Response rates for Natsal-3 were also similar to those of other major social surveys in Britain (43) and higher than many previous surveys of sexual problems (35, 44).

Limitations include the cross-sectional nature of the data, which mean that we are unable to infer temporality and causality. We included only respondents who reported >=1 sexual partner (opposite-sex or same-sex) in the past year, excluding those who had not had sex because of lack of interest. We only used a single item to assess lacking interest in sex, although we additionally took account of whether those who reported this also reported that it caused them distress, as a way of trying to capture more problematic lack of interest. This sensitivity analysis enabled us to demonstrate that for most variables, similar associations exist regardless of whether or not distress was reported. It is important to acknowledge, however, that these data do not necessarily correspond to clinical diagnoses. Finally, we have tested many

associations within this study and some will have been significant by chance. We did not formally correct our p-values and therefore where 0.01<p<0.05 we advise caution in concluding association.

# Implications for Research and Practice

The findings indicate that lack of interest in sex is associated with a broad range of factors across sociodemographic, relationship, sexual behaviour, and sexual attitudinal domains. There are both research and clinical applications of our results.

Firstly, our findings underscore the importance of the relational context in understanding low sexual interest in both men and women. For women in particular, the experience of sexual interest appears strongly linked with their perceptions of the quality of their relationships, their communication with partners, and their expectations/attitudes about sex. Our findings support the view that transient (and often adaptive) reductions in sexual desire are not evidence of "dysfunction" (45). In the context of the recent FDA approval of flibanserin, the first drug to treat low sexual desire in women (46), these findings are relevant to the current debate about whether striving for a pharmaceutical solution to women's sexual desire problems is an appropriate and feasible goal (45, 47). Some authors have suggested that women with complaints of low sexual interest might benefit most from integrative approaches that accord with a biopsychosocial model (48).

Secondly, our findings on the strong association between open sexual communication (i.e., "finding it always easy to talk about sex") and a reduced likelihood of reporting lack of interest in sex, particularly for women, emphasise the importance of providing a broad sexual and relationships education, rather than limiting attention only to adverse consequences of sex and how to prevent them.

Similarly, the important role of early sexual experiences, and sexual "competence," especially for women, in shaping later experiences of sexual desire supports the need for comprehensive sex education.

In a clinical context, our findings emphasise the importance of health care professionals assessing psychological and interpersonal variables in individuals presenting with complaints of low sexual interest (49). In couple therapy, it is important that therapists have an awareness of the differences between men and women in the factors associated with low sexual interest. For example, among the subgroup of participants reporting both lack of interest in sex and related distress, we found a stronger association between depressive symptoms and treatment for depression in the last year among men compared with women. Lastly, our findings support previous research on the critical role of physical and mental health in understanding low sexual interest problems experienced by men and women (11, 18).

## Conclusions

This study extends our understanding of the factors associated with lack of interest in sex in men and women, the gender similarities and differences, and highlights the need to assess and – if necessary – treat sexual desire problems in a holistic and relationship- as well as gender-specific way.

# Contribution to authorship

The paper was conceived by CAG, CHM, AMJ, KW, and KRM. CAG wrote the first draft, with further contributions from all authors. Statistical analyses were undertaken by CHM, CT, and KGJ. CHM, AMJ (Principal Investigator) and KW, initial applicants on Natsal-3, wrote the study protocol and obtained funding. Natsal-3 questionnaire design, ethics applications, and piloting were undertaken by CHM, CT, AMJ, KW, and KRM. Data management was undertaken by NatCen Social Research, UCL and LSHTM. All authors contributed to data interpretation, reviewed successive drafts and approved the final version of the manuscript.

# **Competing interests statement**

AMJ has been a Governor of the Wellcome Trust since 2011. The remaining authors have nothing to disclose. Completed disclosure of interests form available to view online as supporting information.

# **Funding Statement**

Natsal-3 was supported by grants from the U.K. Medical Research Council (G0701757) and the Wellcome Trust (084840), with support from the Economic and Social Research Council and the Department of Health. Since September 2015, Kirstin Mitchell has been supported by the United Kingdom Medical Research Council grant MC\_UU\_12017/11, and Scottish Government Chief Scientist Office grant SPHSU11.

## Details of ethics approval

Natsal-3 was approved by the NRES Committee South Central-Oxford A (Ref: 10/H0604/27) on 12 July 2010. Participants provided oral informed consent for interviews.

# Data sharing statement

The Natsal-3 dataset is publicly available from the UK Data Service: <a href="https://discover.ukdataservice.ac.uk/">https://discover.ukdataservice.ac.uk/</a>; SN: 7799; persistent identifier: 10.5255/UKDA-SN-77991-1.

### **REFERENCES**

- Mitchell KR, Mercer CH, Ploubidis GB, et al. Sexual function in Britain: Findings from the third National Survey of Sexual Attitudes and Lifestyles (Natsal-3). *Lancet* 2013;382:1817-1829.
- 2. Mitchell KR, Jones KG, Wellings K, et al. Estimating the prevalence of sexual function problems: The impact of morbidity criteria. *J Sex Res* 2016;53:55-967.
- 3. Brotto LA. The DSM diagnostic criteria for hypoactive sexual desire disorder in women. *Arch Sex Behav* 2010a; 39:221-239.
- 4. Carvalho J, Nobre P. Biopsychosocial determinants of men's sexual desire: testing an integrative model. *J Sex Med* 2011;8:754-763.
- 5. Štulhofer A, Carvalheira AA, Træen B. Is responsive sexual desire for partnered sex problematic among men? Insights from a two-country study. *Sex Relation Ther* 2013;28:246-258.
- 6. American Psychiatric Association. *Diagnostic and statistical manual of mental disorders*, 5th. ed. Arlington, VA: Author 2013.
- 7. Brotto LA. The DSM diagnostic criteria for hypoactive sexual desire disorder in men. *J Sex Med* 2010b;7:2015-2030.
- 8. Corona G, Lee DM, Forti G, et al. Age-related changes in general and sexual health in middle-aged and older men: Results from the European Male Ageing Study (EMAS). *J Sex Med* 2010;7:1362-1380.
- DeRogatis L, Rosen RC, Goldstein I, et al. Characterization of hypoactive sexual desire disorder (HSDD) in men. J Sex Med 2012;9:812-820.
- 10. Carvalheira A, Træen B, Štulhofer A. Correlates of men's sexual interest: a cross-cultural study. *J Sex Med* 2014;11:154-164.

- 11. Corona G, Petrone L, Mannucci E, et al. The impotent couple: low desire. *Int J*Androl 2005;28:46-52.
- 12. DeLamater JD, Sill M. Sexual desire in later life. J Sex Res 2005;42:138-149.
- 13. Dennerstein L, Koochaki P, Barton I, et al. Hypoactive sexual desire disorder in menopausal women: a survey of Western European women. *J Sex Med* 2006;3:212-222.
- 14. Hayes RD, Dennerstein L, Bennett CM, et al. Risk factors for female sexual dysfunction in the general population: Exploring factors associated with low sexual function and sexual distress. *J Sex Med* 2008;5:1681-1693.
- 15. McCabe MP, Goldhammer DL. Demographic and psychological factors related to sexual desire among heterosexual women in a relationship. *J Sex Res* 2012;49:78-87.
- 16. Öberg K, Sjögren Fugl-Meyer K. On Swedish women's distressing sexual dysfunctions: some concomitant conditions and life satisfaction. *J Sex Med* 2005;2:169-180.
- 17. Witting K, Santtila P, Varjonen M, et al. Female sexual dysfunction, sexual distress, and compatibility with partner. *J Sex Med* 2008;5:2587-2599.
- 18. Shifren JL, Monz BU, Russo PA, et al. Sexual problems and distress in United States women. *Obstet Gynecol* 2008;112:970-978.
- 19. Johannes CB, Clayton AH, Odom DM, et al. Distressing sexual problems in United States women revisited: prevalence after accounting for depression. *J Clin Psychiatry* 2009;70:1698-1706.

- 20. Mitchell KR, Mercer CH, Wellings K, Johnson AM. Prevalence of low sexual desire among women in Britain: Associated factors. *J Sex Med*. 2009; 1;6(9):2434-2444.
- 21. Erens B, Phelps A, Clifton S, et al. Methodology of the third British National Survey of Sexual Attitudes and Lifestyles (Natsal-3). *Sex Transm Infect* 2014;90:84-89.
- 22. Mercer CH, Tanton C, Prah P, et al. Changes in sexual attitudes and lifestyles in

  Britain through the life course and over time: findings from the National

  Surveys of Sexual Attitudes and Lifestyles (Natsal). *Lancet* 2013;382:1781-1794.
- 23. Jones KG, Mitchell KR, Ploubidis GB, et al. The Natsal-SF measure of sexual function: Comparison of three scoring methods. *J Sex Res* 2015;52:640-646.
- 24. Mitchell KR, Ploubidis GB, Datta J, et al. The Natsal-SF: a validated measure of sexual function for use in community surveys. *Eur J Epidemiol* 2012;27:409-18.
- 25. Abdo CHN, Oliveira WM, Moreira ED, et al. Prevalence of sexual dysfunctions and correlated conditions in a sample of Brazilian women—results of the Brazilian study on sexual behavior (BSSB). *Int J Impot Res* 2004;16:160-166.
- 26. Hayes RD, Dennerstein L, Bennett CM, et al. Relationship between hypoactive sexual desire disorder and aging. *Fertil Steril* 2007;87:107-112.
- 27. Peixoto MM, Nobre P. Prevalence and sociodemographic predictors of sexual problems in Portugal: A population-based study with women aged 18 to 79 years. *J Sex Marital Ther* 2015;41:169-180.
- 28. Rosen RC, Shifren JL, Monz BU, et al. Correlates of sexually-related personal distress in women with low sexual desire. *J Sex Med* 2009;6:1549-1560.
- 29. Laumann EO, Glasser DB, Neves RCS, et al. A population-based survey of sexual activity, sexual problems and associated help-seeking behavior patterns in

- mature adults in the United States of America. *Int J Impot Res* 2009;21:171-178.
- 30. Eplov L, Giraldi A, Davidsen M, et al. Sexual desire in a nationally representative Danish population. *J Sex Med* 2007;4:47-56.
- 31. Mercer CH, Fenton KA, Johnson AM, et al. Who reports sexual function problems?

  Empirical evidence from Britain's 2000 National Survey of Sexual Attitudes and

  Lifestyles. Sex Transm Infect 2005;81:394-399.
- 32. Park A, Bryson C, Clery E, et al. British social attitudes 30. London: NatCen 2013.
- 33. Bodenmann G, Ledermann T, Blattner D, et al. Associations among everyday stress, critical life events, and sexual problems. *J of Nerv Ment Dis* 2006;194:494-501.
- 34. Gerressu M, Mercer CH, Graham CA, et al. Prevalence of masturbation of associated factors in a British national probability survey. *Arch Sex Behav* 2008;37:266-278.
- 35. Laumann EO, Paik A, Rosen RC. Sexual dysfunctions in the United States:

  Prevalence and predictors. *JAMA* 1999;281:537-544.
- 36. Janssen E, McBride KR, Yarber W, et al. Factors that influence sexual arousal in men: A focus group study. *Arch Sex Behav* 2008;37:252-265.
- 37. Murray S, Milhausen RR, Graham CA, et al. A qualitative exploration of factors that affect sexual desire among men aged 30 to 65 in long-term relationships. *J Sex*Res 2016;doi 10.1080/00224499.2016.1168352
- 38. Çayan S, Bozlu M, Canpolat B, et al. The assessment of sexual functions in women with male partners complaining of erectile dysfunction: does treatment of

- male sexual dysfunction improve female partner's sexual functions? *J Sex Marital Ther* 2004;30:333-341.
- 39. Fisher WA, Rosen RC, Eardley I, et al. Experience of female partners of men with erectile dysfunction: The female experience of men's attitudes to life events and sexuality (FEMALES) study. *J Sex Med* 2005;2:675-668.
- 40. Willoughby BJ, Farero AM, Busby DM. Exploring the effects of sexual desire discrepancy among married couples. *Arch Sex Behav* 2014;43:551-562.
- 41. Hawes ZC, Wellings K, Stephenson J. First heterosexual intercourse in the United Kingdom: A review of the literature. *J Sex Res* 2010;47:137-152.
- 42. Laumann EO, Nicolosi A, Glasser DB, et al. Sexual problems among women and men aged 40–80 years: Prevalence and correlates identified in the Global Study of Sexual Attitudes and Behaviors. *Int J Impot Res* 2005;17:39-57.
- 43. Park A, Clery E, Curtice J, et al. *British social attitudes: The 28th report*. London, England: NatCen 2012.
- 44. Christensen BS, Grønbæk M, Osler M, et al. Sexual dysfunctions and difficulties in Denmark: Prevalence and associated sociodemographic factors. *Arch Sex Behav* 2011;40:121-132.
- 45. Graham CA, Boynton PM, Gould K. Women's sexual desire: Challenging narratives of dysfunction. *Eur Psychol*, in press.
- 46. Woloshin S, Schwartz LM. US Food and Drug Administration approval of flibanserin: Even the Score does not add up. *JAMA Intern Med* 2016; doi: 10.1001/jamainternmed.2016.0073
- 47. Hart G, Wellings K. Sexual behaviour and its medicalisation: In sickness and in health. BMJ 2002;324:896-900.

- 48. Frühauf S, Gerger H, Schmidt HM, et al. Efficacy of psychological interventions for sexual dysfunction: a systematic review and meta-analysis. Arch Sex Behav 2013;42:915-933.
- Agbak

  JK indices of multiple de

  "ituent countries easier. Health S 49. Brotto LA, Atallah CS, Johnson-Agbakwu C, et al. Psychological and interpersonal
- 50. Payne RA, Abel GA. UK indices of multiple deprivation-a way to make comparisons

Table 1: Factors associated with lacking interest in having sex for at least 3 months in the past year in sexually active men and women

			Me	en					Wor	men			_
)	Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	p-value for interaction with sex <sup>a</sup>
2 All	4839, 5973	15.0%	(13.9-16.2)		, ,		6669, 5755	34.2%	(32.8-35.5)		· · ·	•	
Socio-demographics			<b>U</b> A										
Age group						0.0471						< 0.0001	0.6733
	1279, 936	11.5%	(9.4-14.0)	1	-		1662, 923	24.8%	(22.5-27.1)	1	-		
5 16-24 7 25-34	1376, 1238	14.6%	(12.7-16.6)	1.32	(1.00-1.73)		2236, 1246	31.9%	(29.8-34.1)	1.42	(1.22-1.66)		
35-44	719, 1298	17.2%	(14.5-20.4)	1.61	(1.19-2.18)		1050, 1290	36.8%	(33.7-40.1)	1.77	(1.48-2.13)		
45-54	630, 1186	15.3%	(12.5-18.7)	1.40	(1.01-1.95)		871, 1186	37.9%	(34.5-41.5)	1.86	(1.53-2.25)		
55-64	512, 849	16.5%	(13.4-20.2)	1.53	(1.10-2.13)		569, 755	38.8%	(34.5-43.2)	1.92	(1.55-2.39)		
65-74	323, 467	13.9%	(10.4-18.3)	1.22	(0.81-1.82)		281, 355	34.2%	(28.4-40.5)	1.58	(1.18-2.12)		
2 Index of Multiple													
Deprivation (quintiles) <sup>b</sup>						0.093						0.0316	0.0111
1 (least deprived)	977, 1279	13.9%	(11.6-16.6)	1	-		1248, 1208	35.7%	(32.6-38.9)	1	-		
2	962, 1264	13.0%	(10.8-15.6)	0.93	(0.69-1.25)		1290, 1208	33.6%	(30.6-36.7)	0.92	(0.76-1.13)		
7	942, 1169	18.0%	(15.2-21.2)	1.38	(1.04-1.85)		1299, 1116	30.1%	(27.2-33.2)	0.81	(0.66-0.99)		
3	967, 1184	15.3%	(12.8-18.3)	1.15	(0.86-1.55)		1384, 1137	35.9%	(33.0-39.0)	1.08	(0.89-1.30)		
5 (most deprived)	991, 1077	15.1%	(12.7-17.8)	1.14	(0.85-1.52)		1448, 1086	35.3%	(32.4-38.3)	1.06	(0.87-1.28)		
Education level <sup>c</sup>						0.0083						0.2453	0.2914
Left school aged 17+	2862, 3464	13.5%	(12.1-15.1)	1	-		4150, 3406	32.7%	(31.0-34.5)	1	-		
Left school at 16	1873, 2437	17.2%	(15.3-19.4)	1.31	(1.07-1.60)		2409, 2287	36.6%	(34.4-38.9)	1.08	(0.95-1.23)		
Employment status						0.0086						0.0003	0.0766
Employed	3211, 4254	14.7%	(13.3-16.1)	1	-		3871, 3517	34.6%	(32.9-36.4)	1	-		
Full-time education	542, 431	12.6%	(8.8-17.5)	0.98	(0.64-1.51)		693, 423	22.5%	(19.0-26.4)	0.70	(0.55-0.89)		
7 Unemployed	707, 723	19.6%	(16.3-23.4)	1.44	(1.12-1.86)		1681, 1282	36.1%	(33.4-39.0)	1.11	(0.96-1.28)		
Retired	375, 562	13.6%	(10.4-17.7)	0.75	(0.52-1.09)		415, 524	35.8%	(31.0-40.9)	0.75	(0.57-0.99)		
Practises religion at least													
once a month						0.1687						0.0082	0.9966
l No	4283, 5179	15.3%	(14.1-16.6)	1	-		5659, 4754	34.8%	(33.3-36.3)	1	-		
<u>Yes</u>	521, 748	12.9%	(10.0-16.4)	0.81	(0.60-1.09)		956, 945	30.7%	(27.5-34.2)	0.79	(0.67-0.94)		
3													

Table 1 cont.

			IV	1en					Wo	men			_
0	Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	p-value for interaction with sex <sup>a</sup>
0 1_ <u>Health</u>	(0)		(00/00.)		(55755.)	p raine	(0.11110)		(55755.)		(55755.)	<b>P</b> 10.00	
2 Self-reported general health						<0.0001						<0.0001	0.1890
3 Very good/Good	4123, 5055	13.4%	(12.2-14.6)	1	-		5683, 4851	32.3%	(30.9-33.8)	1	-		
4 Fair	580, 745	21.9%	(18.3-25.8)	1.8	(1.41-2.30)		780, 709	42.2%	(38.2-46.3)	1.45	(1.21-1.75)		
5 Bad/very bad	135, 171	33.9%	(25.3-43.6)	3.29	(2.14-5.06)		206, 195	49.9%	(42.2-57.7)	1.93	(1.40-2.67)		
Difficulty walking up stairs	,		`		,		ŕ		,		,		
because of a health problem						<0.0001						0.0497	0.1179
9 No difficulty	4475, 5460	14.1%	(12.9-15.3)	1			6062, 5107	33.3%	(31.8-34.7)	1	-		
Some difficulty	278, 393	23.0%	(18.1-28.8)	1.8	(1.30-2.49)		450, 482	39.2%	(34.4-44.2)	1.15	(0.92-1.43)		
1 Much difficulty/unable to do													
2	86, 120	30.9%	(20.9-43.0)	2.68	(1.57-4.57)		157, 166	47.0%	(38.0-56.1)	1.55	(1.06-2.25)		
Longstanding illness or						10.0001						10.0001	0.1240
4 disability	2505 4250	12.00/	(44.6.44.2)	4		<0.0001	1012 1026	24.60/	(20.0.22.2)	4		<0.0001	0.1348
5 No	<i>3585, 4259</i>	12.8%	(11.6-14.2)	1	-		4843, 4026	31.6%	(30.0-33.2)	1	- (4 47 4 55)		
6 Yes 7 Number of comorbid	1253, 1713	20.5%	(18.1-23.1)	1.76	(1.44-2.16)		1825, 1729	40.1%	(37.5-42.8)	1.35	(1.17-1.55)		
8 conditions <sup>d</sup>						<0.0001						<0.0001	0.7951
9 0	3453, 3994	12.8%	(11.5-14.1)	1	_	10.0001	4357, 3536	29.9%	(28.2-31.5)	1	_	10.0001	0.7331
0 1	939, 1329	18.9%	(16.2-21.9)	1.64	(1.30-2.06)		1555, 1416	38.6%	(35.9-41.5)	1.42	(1.23-1.64)		
1 >=2	446, 650	21.0%	(17.0-25.6)	1.91	(1.41-2.60)		755, 802		(41.2-49.1)	1.75	(1.45-2.13)		
2 Depressive symptoms <sup>e</sup>	440, 030	21.070	(17.0 25.0)	1.51	(1.41 2.00)	<0.0001	755,002	43.170	(41.2 43.1)	1.73	(1.43 2.13)	<0.0001	0.6249
3	4202 5471	12 50/	(12 4 14 9)	1		<0.0001	E00E E140	24 70/	(20.2.22.1)	1		<0.0001	0.6249
4 No	4383, 5471	13.5%	(12.4-14.8)	1	- (2.26.2.05)		5885, 5149	31.7%	(30.2-33.1)	1	- (2.22.2.27)		
5 Yes	449, 495	31.3%	(26.4-36.7)	2.95	(2.26-3.85)	.0.0004	780, 602	55.2%	(51.0-59.5)	2.79	(2.32-3.37)	.0.0004	0.2447
6 Treated for depression, past y		4.4.004	(42.0.45.3)	4		<0.0001	F770 F040	24 701	(20.2.22.2)	4		<0.0001	0.2447
7 No 8 Yes	4524, 5630	14.0%	(12.9-15.2)	1	-		5770, 5040	31.7%	(30.2-33.2)	1	-		
8 Yes 9	313, 342	31.5%	(25.7-38.0)	2.82	(2.08-3.83)		897, 713	51.4%	(47.6-55.2)	2.32	(1.96-2.75)		

1 2 3 4 5 6 7 8 9 10 11 12 13	N
14 15 16 17	С
18	<u>S</u>
18 19 20	N
20 21 22 23 24 25	p
26 27 28	N
29	N
30 31 32 33	y
34 35 36 37	P
37 38	E
39	Se
40	
41	
42 43	
43 44	
45	
46	
47	
40	

5	Table 1 cont.													
6 7 -				N	⁄len					Wo	omen			<u> </u>
3 9		Denom.	9/	(05%(01)	Age- adjusted OR	(05%(01)	n valua	Denom.	0/	(05%(01)	Age- adjusted OR	(05%(01)	n value	p-value for interaction with sex <sup>a</sup>
10_ 11	Managarias atatus	(unwt, wt)	%	(95%CI)	UK	(95%CI)	p-value	(unwt, wt)	%	(95%CI)	UK	(95%CI)	p-value	with sex
12	Menopausal status							5485, 4187	32.3%	(20.0.22.0)	1		0.9326	
13	Not menopausal							ŕ		(30.9-33.8)	1	- (0.70.1.24)		
14	Menopausal						0.5051	1167, 1548	38.9%	(36.0-41.9)	0.99	(0.79-1.24)		
15	Circumcised	2000 4720	15 10/	(12.0.16.4)	1		0.5951							
16	No	,	15.1%	(13.8-16.4)	1	- (0.72.4.20)								
17_	Yes	857, 1166	14.5%	(12.0-17.4)	0.94	(0.73-1.20)								
	Sexual behaviour Number of occasions of sex,													
	past 4 weeks						<0.0001						<0.0001	0.4778
21	0	1013, 1163	20.7%	(17.8-23.8)	1	_	10.0001	1408, 1245	42.9%	(39.9-45.9)	1	_	10.0001	0.770
22	1-2	1160, 1566	18.7%	(16.2-21.5)	0.89	(0.69-1.14)		1481, 1373	39.6%	(36.7-42.5)	0.89	(0.75-1.05)		
23	3-4	870, 1168	12.4%	(10.1-15.1)	0.54	(0.41-0.73)		1240, 1130	33.8%	(30.7-37.0)	0.7	(0.58-0.85)		
24	5+	1617, 1869	9.2%	(7.8-11.0)	0.39	(0.30-0.51)		2078, 1655	22.6%	(20.5-24.8)	0.41	(0.34-0.49)		
25	Masturbation, past 4 weeks	1017, 1003	3.270	(7.0 11.0)	0.55	(0.50 0.51)	0.0458	2070, 1033	22.070	(20.5 24.0)	0.41	(0.54 0.45)	0.0038	0.0005
26	No	1297, 1828	13.7%	(11.8-15.8)	1	_	0.0436	4032, 3612	36.0%	(34.3-37.7)	1	_	0.0036	0.0003
27	Yes	3531, 4132	15.6%	(14.2-17.0)	1.24	(1.00-1.52)		2615, 2114	30.8%	(28.7-33.0)	0.83	(0.73-0.94)		
28	No. of sexual partners, past	3331, 4132	13.0%	(14.2-17.0)	1.24	(1.00-1.52)		2013, 2114	30.676	(28.7-33.0)	0.63	(0.73-0.94)		
29 20	year <sup>f</sup>						0.5348						0.0038	0.0183
31	1	3573, 4824	15.0%	(13.7-16.3)	1	-		5440, 5012	35.3%	(33.8-36.8)	1	-		
32	2	539, 513	16.2%	(12.9-20.3)	1.14	(0.86-1.52)		570, 364	28.2%	(23.9-32.8)	0.80	(0.63-1.01)		
33	3+	718, 627	13.6%	(11.1-16.6)	0.94	(0.72-1.22)		642, 366	24.8%	(21.0-29.0)	0.70	(0.56-0.88)		
~ 4	Paid for sex, past year	-, -		,		,	0.7167	,				(,		
35	No	4774, 5896	15.0%	(13.9-16.2)	1	-								
36	Yes	64, 75	13.4%	(6.8-24.7)	0.87	(0.41-1.84)								
37	Ever taken drugs to assist	0.,,.0	20	(3.5 =)	0.0.	(32 2.3 1)								
ч×	sexual performance						0.0175						0.0666	0.8967
39 40	No	4188, 5180	14.4%	(13.2-15.7)	1	-		6478, 5624	34.0%	(32.6-35.4)	1	-		
+0 41_	Yes	636, 776	19.0%	(15.7-22.8)	1.36	(1.06-1.76)		184, 124	40.0%	(32.0-48.5)	1.39	(0.98-1.96)		

Table 1 cont.

			N	1en					Wo	men			
3	Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	p-value for interaction with sex <sup>a</sup>
1 Relationship context			· · · · · · · · · · · · · · · · · · ·		•	•			<u> </u>		<u> </u>		_
2 Relationship status						0.0383						<0.0001	0.0001
Living with partner	2708, 4266	15.5%	(14.1-17.1)	1	_		3967, 4168	37.9%	(36.3-39.7)	1	-		
In a steady relationship, not													
5 living together	947, 760	12.0%	(9.6-14.8)	0.76	(0.57-1.00)		1360, 790	22.6%	(20.2-25.2)	0.51	(0.43-0.60)		
Not in a steady relationship, but previously cohabited Not in a steady relationship,	446, 388	18.2%	(14.6-22.5)	1.22	(0.91-1.62)		752, 462	28.9%	(25.4-32.8)	0.68	(0.56-0.83)		
never cohabited	727, 551	12.4%	(9.9-15.5)	0.8	(0.58-1.09)		580, 330	21.3%	(17.6-25.5)	0.49	(0.38-0.63)		
Duration of most recent sexual relationship	·		,			0.494	,		,		,	<0.0001	<0.0001
23 1 year or less	1462, 1260	13.0%	(11.0-15.3)	1	-		1597, 998	21.5%	(19.1-24.1)	1	-		
Between 1 and 5 years	1247, 1227	15.3%	(13.2-17.7)	1.21	(0.94-1.55)		1758, 1148	28.5%	(26.1-31.0)	1.45	(1.20-1.76)		
Between 5 and 15 years	1065, 1484	14.9%	(12.6-17.5)	1.14	(0.86-1.50)		1774, 1458	39.8%	(37.2-42.4)	2.37	(1.96-2.86)		
26 Over 15 years	1004, 1904	16.1%	(13.9-18.7)	1.19	(0.87-1.63)		1445, 2036	40.0%	(37.3-42.7)	2.31	(1.84-2.91)		
27 Always easy to talk about						0.0001						40 0001	0.0103
28 sex with partners <sup>g</sup> 29 Yes	1695, 1899	11.5%	(9.7-13.5)	1		0.0001	1746, 1451	22.6%	(20.4-25.1)	1		<0.0001	0.0182
Yes No/other	3122, 4048	16.7%	(15.3-18.2)	1.53	(1.23-1.90)		4907, 4289	38.0%	(36.4-39.6)	2.06	- (1.77-2.39)		
110, 011101	3122, 4048	10.776	(13.3-16.2)	1.55	(1.23-1.90)	.0.0004	4307, 4203	36.076	(30.4-33.0)	2.00	(1.77-2.33)	.0.0004	0.0670
Happy with relationship No.	1051 3701	12 60/	(11 0 14 4)	1		<0.0001	2726 2601	21 50/	(20 F 22 6)	1		<0.0001	0.8679
Yes Yes	1951, 2791	12.6%	(11.0-14.4)	1	- (1 47 2 22)		2736, 2601	31.5%	(29.5-33.6)	1 70	- (1 [[ 2 00]		
Other Participant does not share sar	995, 1430 ne level of	21.0%	(18.4-23.9)	1.85	(1.47-2.32)		1640, 1617	45.4%	(42.7-48.1)	1.79	(1.55-2.08)		
interest in sex as partner	iic icvci oi					0.2339						<0.0001	<0.0001
00	2270, 3233	15.0%	(13.4-16.7)	1	-		3211, 3064	27.2%	(25.4-29.0)	1	-		
88 89 Yes	676, 988		(14.2-20.4)	1.17	(0.90-1.51)		1166, 1155	62.5%	(59.2-65.7)	4.57	(3.87-5.38)		

45 46

47

Table 1 cont.

8			N	len					Wo	men			<u> </u>
9 10 11	Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	p-value for interaction with sex <sup>a</sup>
12 Participant does not share sa			(control)		(00,10.)	<b>P</b>	(5)		(00,10.)		(00)101	<b>P</b>	
13 likes & dislikes as partner						0.4188						< 0.0001	<0.0001
14 No/other	2650, 3803	15.3%	(13.8-16.9)	1	-		4079, 3908	34.9%	(33.3-36.6)	1	-		
15 Yes	296, 418	17.3%	(13.0-22.5)	1.16	(0.81-1.66)		297, 310	61.0%	(54.6-67.2)	2.91	(2.22-3.83)		
6 Partner experienced sexual d			· ·		,		,		,		,		
7 past year						0.0136						< 0.0001	0.4140
8 No/other	2431, 3454	14.6%	(13.1-16.2)	1	<u>_</u>		3726, 3498	34.8%	(33.1-36.6)	1	-		
9 Yes	513, 763	19.4%	(15.8-23.6)	1.41	(1.07-1.86)		649, 719	46.8%	(42.5-51.1)	1.60	(1.32-1.94)		
Does not feel emotionally clo	se to partner		,				,		,		,		
when have sex						0.0006						< 0.0001	0.5972
No/other	2904, 4165	15.1%	(13.7-16.6)	1	-		4263, 4108	35.9%	(34.3-37.6)	1	-		
23 Noyother 24 Yes	42, 56	39.9%	(23.6-58.8)	3.74	(1.76-7.93)		112, 109	73.0%	(62.8-81.3)	4.80	(2.99-7.69)		
5 <u>Lifestyle</u>	*		,										
1+ child(ren) aged <5 in													
household						0.9088						< 0.0001	0.0216
No, none	4100, 5015	15.2%	(13.9-16.5)	1	-		4997, 4671	33.1%	(31.6-34.6)	1	-		
29 Yes, 1+	727, 941	14.5%	(11.9-17.6)	0.98	(0.76-1.28)		1664, 1074	38.6%	(36.0-41.4)	1.55	(1.34-1.79)		
Pregnant in the last year	,		,		,		,				,	0.0114	
No No							4227, 4122	36.2%	(34.6-37.9)	1	_		
32 <sub>Yes</sub>							437, 273	41.7%	(36.6-47.1)	1.36	(1.07-1.72)		
33 Used hormonal							137,273	11.770	(30.0 17.1)	1.50	(1.07 1.72)		
34 contraceptive, past year												0.05	
35 No.							3759, 3838	34.8%	(33.1-36.5)	1	-		
36 Yes							2806, 1831	33.0%	(30.9-35.1)	1.15	(1.00-1.33)		
3/									(0000 0000)		(=:00 =:00)		
38 Sexual health indicators  Sexual health indicators  Sexual health indicators	lv												
transmitted infection	•					<0.0001						0.0004	0.0651
41 No (or only thrush)	4147, 5127	14.0%	(12.8-15.3)	1	-		5455, 4861	33.4%	(31.9-34.9)	1	-		
42 Yes (excluding thrush)		21.4%	(18.1-25.0)	1.67	(1.33-2.10)		1206, 888	38.2%	(35.1-41.5)	1.32	(1.13-1.54)		
43 44	0,7,000	2170	(10.1 20.0)	1.07	(1.55 2.10)		2200, 000	33.270	(55.1 .1.5)	1.02	(1.15 1.54)		

Table 1 cont.

7 8				М	en					Wo	men			
9 10 11		Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	p-value for interaction with sex <sup>a</sup>
	Ever experienced non-	, , ,	7			•	•			•		•	•	·
	volitional sex						0.0010						<0.0001	0.3164
14		4705, 5824	14.7%	(13.6-16.0)	1	-		5815, 5055	32.8%	(31.4-34.2)	1	-		
15	1 00, 2 011 0 11110 11	133, 148	26.1%	(18.9-34.9)	2.07	(1.34-3.18)		848, 695	44.3%	(40.5-48.3)	1.66	(1.40-1.97)		
16	Sexual competence at first													
17	sex <sup>i</sup>						0.0706						<0.0001	0.1797
19	Not competent		16.2%	(14.6-17.9)	1			3438, 2927	37.6%	(35.7-39.5)	1	-		
20	Competent		13.7%	(12.1-15.4)	0.84	(0.69-1.01)		3097, 2716	30.3%	(28.4-32.3)	0.73	(0.65-0.83)		
21	Number of other sexual respon	nse					0.0004						0.0004	0.0045
22	problems experienced						<0.0001						<0.0001	0.0015
23	0	3208, 3945	11.7%	(10.5-13.1)	1	-		4377, 3759	25.3%	(23.8-26.9)	1	-		
24	1	1061, 1350	10.9%	(9.0-13.2)	0.91	(0.71-1.17)		1217, 1087	34.8%	(31.7-38.0)	1.55	(1.32-1.82)		
25	2+	570, 678	42.5%	(37.9-47.2)	5.58	(4.41-7.04)		1075, 909	69.8%	(66.5-72.9)	6.91	(5.82-8.21)		
	<u>Attitudes</u>													
	People are under pressure													
	to have sex						0.0115						0.0001	0.7970
29		1799, 2264	13.1%	(11.4-15.0)	1	-		1851, 1570	29.3%	(26.8-31.9)	1	-		
30	Strongly agree/agree	3038, 3707	16.2%	(14.7-17.8)	1.29	(1.06-1.57)		4817, 4185	36.0%	(34.4-37.6)	1.34	(1.16-1.54)		
31	People want less sex as they						0.0004						0.0004	0.0440
33	age						<0.0001						<0.0001	0.9443
34		2943, 3472	11.4%	(10.2-12.8)	1	-		4044, 3278	27.8%	(26.2-29.4)	1	-		
	Strongly agree/agree		20.0%	(18.0-22.2)	1.93	(1.61-2.32)		2624, 2477	42.6%	(40.4-44.8)	1.85	(1.63-2.10)		
36	Men have a naturally higher se	ex drive												
35 36 37	than women						<0.0001						<0.0001	<0.0001
38		2788, 3441	18.0%	(16.4-19.7)	1	-		3351, 2830	26.0%	(24.3-27.8)	1	-		
39	Strongly agree/agree	2049, 2530	10.9%	(9.4-12.6)	0.56	(0.46-0.68)		3317, 2925	42.0%	(40.0-44.1)	2.04	(1.80-2.31)		
40	Too much sex in the media						0.7069						0.1807	0.4835
41	Else	1986, 2296	14.6%	(12.8-16.6)	1	-		2091, 1618	31.7%	(29.3-34.2)	1	-		
42	Strongly agree/agree	2851, 3675	15.3%	(13.8-16.9)	1.04	(0.85-1.26)		4577, 4137	35.1%	(33.5-36.8)	1.10	(0.96-1.26)		

Denominator is those aged 16-74 years with at least one partner in the past year. Unwt, unweighted; wt, weighted

- <sup>a</sup> P-value for interaction to determine whether the magnitude of association between each variable and lack of interest in sex differs between men and women
- b IMD is a multidimensional measure of area (neighbourhood)-level deprivation based on the participant's postcode. IMD scores for England, Scotland and Wales were adjusted before being combined and assigned to quintiles, using a method by Payne and Abel (50).
- <sup>c</sup> Participants aged ≥17 years.
- 11 d Includes arthritis, heart attack, coronary heart disease, angina, other forms of heart disease, hypertension, stroke, diabetes, broken hip or pelvis, bone or hip replacement ever, backache lasting longer than 3 months, any other muscle or bone disease lasting longer than 3 months, depression, cancer and any thyroid condition treated in the past year.
- Participants were asked whether they had often been bothered by feeling down, depressed, or hopeless in the past 2 weeks, and whether they had often been bothered by little interest or pleasure in doing things in the past 2 weeks, using a validated two-question patient health questionnaire (PHQ-2).
  - f Opposite and/or same-sex partners
  - gother means easy with a husband or wife or regular partner, but difficult with a new partner; easy with a new partner, but difficult with a husband or wife or regular partner; difficult with any partner, it depends, sometimes easy, and sometimes difficult.
  - h Participants were asked to rate how happy they were in their relationship from 1 (very happy) to 7 (very unhappy); responses of 1 or 2 were regarded as denoting participants who were happy with their relationship.
  - A constructed variable to measure readiness, combining consensuality, autonomy of decision making, timing and use of effective contraception
- 22 Sexual response problems (for at least 3 months in past year): lacked enjoyment in sex, felt anxious during sex, felt physical pain as a result of sex, felt no excitement or arousal during sex, 23 difficulty in reaching climax, reached a climax more quickly than you would like, trouble getting or keep an erection (men), uncomfortably dry vagina (women)

Table 2: Factors associated with lacking interest in having sex for at least 3 months in the past year and being distressed about it in sexually active men and women

			N	1en					Woi	men			_
	Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	p-value for interaction with sex <sup>a</sup>
All	4839, 5973	8.2%	(7.4-9.1)				6669, 5755	20.8%	(19.6-22.0)			•	
Socio-demographics									•				
Age group						0.0011						< 0.0001	0.8971
16-24	1279, 936	4.8%	(3.7-6.4)	1	-		1662, 923	15.2%	(13.4-17.3)	1	-		
25-34	1376, 1238	8.0%	(6.7-9.5)	1.7	(1.19-2.41)		2236, 1246	20.9%	(19.0-22.8)	1.47	(1.22-1.76)		
35-44	719, 1298	9.6%	(7.5-12.3)	2.09	(1.40-3.13)		1050, 1290	22.9%	(20.3-25.7)	1.65	(1.34-2.04)		
45-54	630, 1186	9.7%	(7.4-12.6)	2.11	(1.38-3.22)		871, 1186	23.3%	(20.4-26.6)	1.69	(1.35-2.13)		
55-64	512, 849	9.4%	(7.0-12.6)	2.04	(1.30-3.21)		569, 755	21.8%	(18.3-25.8)	1.55	(1.20-2.01)		
65-74	323, 467	5.5%	(3.4-8.6)	1.13	(0.65-1.99)		281, 355	16.5%	(12.4-21.7)	1.10	(0.76-1.59)		
Index of Multiple													
Deprivation (quintiles) <sup>b</sup>						0.8339						0.0938	0.4592
1 (least deprived)	977, 1279	8.1%	(6.2-10.4)	1	-		1248, 1208	23.3%	(20.7-26.1)	1	-		
2	962, 1264	7.4%	(5.7-9.6)	0.92	(0.62-1.36)		1290, 1208	20.8%	(18.2-23.5)	0.87	(0.69-1.09)		
3	942, 1169	8.3%	(6.4-10.6)	1.05	(0.71-1.55)		1299, 1116	19.6%	(17.1-22.4)	0.82	(0.65-1.03)		
3	967, 1184	8.8%	(6.9-11.1)	1.14	(0.78-1.66)		1384, 1137	21.9%	(19.3-24.7)	0.95	(0.76-1.18)		
5 (most deprived)	991, 1077	8.6%	(6.7-10.9)	1.12	(0.75-1.65)		1448, 1086	18.2%	(15.9-20.6)	0.75	(0.60-0.94)		
Education level <sup>c</sup>						0.4958						0.7324	0.4496
Left school aged 17+	2862, 3464	7.9%	(6.8-9.2)	1	-		4150, 3406	20.8%	(19.4-22.4)	1	-		
Left school at 16	1873, 2437	8.8%	(7.5-10.4)	1.09	(0.85-1.41)		2409, 2287	21.1%	(19.3-23.1)	0.97	(0.83-1.14)		
Employment status						0.0001						0.0003	0.1244
Employed	3211, 4254	8.3%	(7.3-9.5)	1	-		3871, 3517	21.6%	(20.1-23.2)	1	-		
Full-time education	542, 431	4.9%	(2.8-8.6)	0.74	(0.38-1.44)		693, 423	14.8%	(11.8-18.4)	0.75	(0.56-1.01)		
7 Unemployed	707, 723	12.1%	(9.5-15.3)	1.56	(1.14-2.13)		1681, 1282	22.3%	(19.9-24.9)	1.07	(0.90-1.27)		
Retired	375, 562	4.9%	(3.1-7.6)	0.41	(0.23-0.71)		415, 524	16.8%	(13.4-20.8)	0.57	(0.41-0.79)		
Practises religion at least						0.1630						0.0167	0.04.43
once a month	4202 5470	0.50/	/7 F O F\	4		0.1638	ECEO 47E4	24 50/	(20.2.22.0)	4		0.0167	0.8143
No Yes	4283, 5179	8.5%	(7.5-9.5)	1	-		5659, 4754	21.5%	(20.2-22.9)	1	-		
Yes	521, 748	6.4%	(4.4-9.4)	0.73	(0.48-1.13)		956, 945	18.0%	(15.3-20.9)	0.78	(0.63-0.96)		

	1 1		$\sim$		
Iα	hI	e	"	con	1

·			IV	1en			Women						_
0	Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	p-value for interaction with sex <sup>a</sup>
1 <u>Health</u>					•				<u> </u>		•		
2 Self-reported general health						<0.0001						<0.0001	0.0969
3 Very good/Good	4123, 5055	7.0%	(6.1-7.9)	1	-		5683, 4851	19.2%	(18.0-20.5)	1	-		
4 Fair	580, 745	13.3%	(10.5-16.8)	2.04	(1.50-2.78)		780, 709	27.9%	(24.3-31.9)	1.60	(1.30-1.97)		
5 Bad/very bad	135, 171	22.6%	(15.3-32.1)	3.85	(2.31-6.40)		206, 195	33.4%	(26.3-41.4)	2.05	(1.45-2.91)		
Difficulty walking up stairs	,				,		,		,		,		
because of a health problem						0.0001						0.0085	0.1553
9 No difficulty	4475, 5460	7.6%	(6.7-8.6)	1			6062, 5107	20.1%	(18.9-21.4)	1	-		
Some difficulty	278, 393	12.3%	(8.8-17.0)	1.67	(1.11-2.52)		450, 482	24.1%	(20.0-28.7)	1.21	(0.93-1.59)		
1 Much difficulty/unable to do													
2 this	86, 120	22.2%	(13.5-34.2)	3.36	(1.79-6.32)		157, 166	32.3%	(24.3-41.5)	1.81	(1.21-2.70)		
3 Longstanding illness or						0.0004						0.0004	0.0045
4 disability			( <u>)</u>			<0.0001			(.=			<0.0001	0.0345
5 No	3585, 4259	6.5%	. ,	1	-		4843, 4026	18.7%	(17.4-20.0)	1	-		
6 Yes	1253, 1713	12.5%	(10.6-14.8)	2.09	(1.60-2.74)		1825, 1729	25.7%	(23.4-28.2)	1.48	(1.27-1.74)		
7 Number of comorbid 8 conditions <sup>d</sup>						<0.0001						<0.0001	0.5779
8 conditions <sup>4</sup> 0	3453, 3994	C 10/	(E E 7 E)	1		<0.0001	4357, 3536	17.20/	(15 0 10 7)	1		<0.0001	0.3779
^	,	6.4%		1	- (4 27 2 57)			17.3%	(15.9-18.7)	1	- (4.20.4.92)		
4	939, 1329	11.0%	(9.0-13.4)	1.88	(1.37-2.57)		1555, 1416	24.1%	(21.7-26.7)	1.54	(1.30-1.83)		
>=2	446, 650	13.3%	(10.1-17.4)	2.40	(1.61-3.59)		755, 802	30.5%	(26.8-34.4)	2.16	(1.74-2.69)		
Depressive symptoms <sup>e</sup>						<0.0001						<0.0001	0.0370
4 No	4383, 5471	6.8%	(6.0-7.7)	1	-		5885, 5149	18.6%	(17.4-19.8)	1	-		
5 Yes	449, 495	23.7%	(19.3-28.9)	4.36	(3.20-5.94)		780, 602	39.6%	(35.4-44.0)	2.94	(2.41-3.59)		
6 Treated for depression, past y	<i>r</i> ear					<0.0001						<0.0001	0.0371
7 No	4524, 5630	7.3%	(6.5-8.2)	1	-		5770, 5040	18.5%	(17.3-19.8)	1	-		
8 Yes	313, 342	23.0%	(17.9-29.1)	3.81	(2.71-5.36)		897, 713	36.4%	(32.9-40.2)	2.54	(2.12-3.03)		
9													

Table 2 cont.

6				N	1en					Wor	men			
8 9 10		Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	p-value for interaction with sex <sup>a</sup>
	Menopausal status												0.9656	
12	Not menopausal							5485, 4187	20.2%	(18.9-21.5)	1	-		
13								1167, 1548	22.5%	(20.0-25.2)	1.01	(0.76-1.32)		
14							0.4097							
15	No	3909, 4728	8.3%	(7.4-9.4)	1	-								
16 17		857, 1166	7.5%	(5.7-9.9)	0.87	(0.62-1.22)								
18	Sexual behaviour	,		, ,										
19	Number of occasions of sex,						<0.000							
	past 4 weeks						1						<0.0001	0.5496
21	0	1013, 1163	10.3%	(8.3-12.7)	1	-		1408, 1245	23.2%	(20.7-26.0)	1	-		
22		1160, 1566	10.5%	(8.6-12.8)	1.02	(0.74-1.42)		1481, 1373	24.2%	(21.8-26.9)	1.06	(0.87-1.30)		
23		870, 1168	7.4%	(5.6-9.8)	0.71	(0.48-1.04)		1240, 1130	21.3%	(18.7-24.2)	0.91	(0.73-1.13)		
24		1617, 1869	5.0%	(3.9-6.4)	0.46	(0.33-0.66)		2078, 1655	14.7%	(12.9-16.7)	0.58	(0.47-0.72)		
25 26	Masturbation, past 4 weeks						0.0164						0.7265	0.0309
26 27	No	1297, 1828	6.9%	(5.5-8.6)	1	-		4032, 3612	21.1%	(19.6-22.6)	1	-		
28		3531, 4132	8.8%	(7.7-9.9)	1.42	(1.07-1.88)		2615, 2114	20.3%	(18.4-22.2)	0.97	(0.84-1.13)		
29	No. of sexual partners, past													
30	year <sup>f</sup>						0.2466						0.0016	0.4744
31	1	3573, 4824	8.5%	(7.5-9.6)	1	-		5440, 5012	21.6%	(20.3-22.9)	1	-		
32	2	539, 513	6.3%	(4.3-9.1)	0.75	(0.49-1.14)		570, 364	16.7%	(13.3-20.6)	0.75	(0.57-0.99)		
33		718, 627	6.8%	(5.1-9.0)	0.82	(0.59-1.15)		642, 366	14.1%	(11.0-17.7)	0.62	(0.46-0.83)		
34	Paid for sex, past year						0.4865							
35		4774, 5896	8.2%	(7.4-9.2)	1	-								
36	Yes	64, 75	5.6%	(1.8-16.4)	0.66	(0.20-2.15)								
37 38	Ever taken drugs to assist													
39	sexual performance						0.0022						0.1055	0.5305
40		4188, 5180	7.6%	(6.7-8.6)	1	-		6478, 5624	20.6%	(19.5-21.8)	1	-		
41		636, 776	12.1%	(9.5-15.4)	1.63	(1.19-2.23)		184, 124	25.9%	(19.2-33.9)	1.38	(0.93-2.05)		

1 1	1	$\sim$		
 วก	10	•	con	ď
 av.	ı	4	COH	Ł

5 7			M	len			Women						
3 )	Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	p-value for interaction with sex <sup>a</sup>
1 Relationship context													
2 Relationship status						0.03						< 0.0001	0.0307
3 Living with partner	2708, 4266	8.8%	(7.7-10.1)	1	-		3967, 4168	23.4%	(21.9-24.9)	1	-		
4 In a steady relationship, not													
5 living together	947, 760	6.9%	(5.3-9.0)	0.78	(0.56-1.09)		1360, 790	15.4%	(13.4-17.7)	0.59	(0.49-0.71)		
Not in a steady relationship, but previously cohabited Not in a steady relationship,	446, 388	8.8%	(6.2-12.2)	1.00	(0.67-1.48)		752, 462	13.6%	(11.1-16.6)	0.51	(0.40-0.66)		
9 never cohabited	727, 551	4.7%	(3.3-6.8)	0.52	(0.34-0.81)		580, 330	11.0%	(8.2-14.5)	0.39	(0.28-0.55)		
Duration of most recent sexual relationship						0.0143						<0.0001	0.0719
1 year or less	1462, 1260	5.5%	(4.3-7.1)	1	-		1597, 998	11.2%	(9.4-13.2)	1	-		
Between 1 and 5 years	1247, 1227	9.0%	(7.3-11.0)	1.67	(1.18-2.36)		1758, 1148	18.5%	(16.5-20.7)	1.81	(1.44-2.29)		
Between 5 and 15 years	1065, 1484	9.3%	(7.5-11.6)	1.68	(1.17-2.43)		1774, 1458	25.2%	(23.0-27.6)	2.81	(2.23-3.55)		
Over 15 years	1004, 1904	8.8%	(7.1-10.8)	1.47	(0.97-2.22)		1445, 2036	23.8%	(21.5-26.2)	2.83	(2.13-3.75)		
27 Always easy to talk about						0						.0.0004	0.4054
sex with partners <sup>g</sup>	1605 1000	4.00/	(2.0.6.0)	4		0	1746 1451	11 10/	(0.7.42.2)	4		<0.0001	0.4854
29 Yes	1695, 1899	4.8%	(3.8-6.0)	1	- (4 62 2 07)		1746, 1451	11.4%	(9.7-13.2)	1	- (2.02.2.02)		
No/other	3122, 4048	9.8%	(8.7-11.1)	2.15	(1.62-2.87)	<0.000	4907, 4289	23.9%	(22.5-25.3)	2.43	(2.02-2.93)		
32 Happy with relationship <sup>h</sup>						1						<0.0001	0.9717
33 Yes	1951, 2791	7.1%	(5.9-8.6)	1	-		2736, 2601	18.6%	(16.9-20.4)	1	_		
34 Other	995, 1430	13.3%	(11.2-15.8)	2.01	(1.51-2.66)		1640, 1617	31.4%	(28.8-34.0)	2.00	(1.69-2.37)		
Participant does not share sar	,	20.070	(22.2 20.0)		(2.02 2.00)			32	(=0.0 00)		(2.00 2.07)		
interest in sex as partner							0.0311						<0.0001
No/other	2270, 3233	8.5%	(7.2-10.0)	1	-		3211, 3064	15.0%	(13.6-16.4)	1	-		
88 Yes	676, 988	11.6%	(9.2-14.4)	1.41	(1.03-1.92)		1166, 1155	46.2%	(42.9-49.6)	4.91	(4.13-5.83)		

Table 2 cont.

6 7 -				N	⁄len					Wor	men			<u> </u>
8 9 10		Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	p-value for interaction with sex <sup>a</sup>
11	Participant does not share sam	e sexual likes &												
12	dislikes as partner						0.0975						<0.0001	0.0212
13	No/othe	er 2650, 3803	8.9%	(7.7-10.2)	1	-		4079, 3908	22.1%	(20.6-23.6)	1	-		
14	Ye	s 296, 418	12.2%	(8.6-17.0)	1.43	(0.94-2.18)		297, 310	41.9%	(35.6-48.6)	2.55	(1.93-3.37)		
	Partner experienced sexual dif	ficulties in past												
	year						0.0027						<0.0001	0.6889
17	No/othe	er 2431, 3454	8.3%	(7.2-9.6)	1	-		3726, 3498	22.1%	(20.6-23.7)	1	-		
18	Ye	s 513, 763	13.2%	(10.2-17.0)	1.68	(1.20-2.35)		649, 719	30.4%	(26.5-34.6)	1.58	(1.27-1.95)		
	Does not feel emotionally clos	e to partner												
20	when have sex						0.0225						<0.0001	0.8228
21	No/othe	er 2904, 4165	9.1%	(7.9-10.3)	1	-		4263, 4108	22.9%	(21.5-24.4)	1	-		
22	Υe	s 42, 56	21.0%	(10.2-38.3)	2.69	(1.15-6.29)		112, 109	47.0%	(36.4-57.8)	2.98	(1.92-4.63)		
_	<u>Lifestyle</u>	·		·		,				,		•		
	1+ child(ren) aged <5 in													
	household						0.1047						0.0004	0.0042
26	No, non	e 4100, 5015	8.6%	(7.6-9.6)	1	_		4997, 4671	20.2%	(18.9-21.5)	1	_		
27	Yes, 1		6.3%	(4.6-8.5)	0.75	(0.52-1.06)		1664, 1074	23.5%		1.34	/1 1/ 1 50\		
28	,	+ /2/, 941	0.5%	(4.0-8.5)	0.75	(0.52-1.06)		1004, 1074	23.5%	(21.2-25.9)	1.34	(1.14-1.58)	0.5005	
29	Pregnant in the last year												0.5927	
30	N	0						4227, 4122	21.8%	(20.4-23.4)	1	-		
31	Ye	S						437, 273	20.7%	(16.6-25.6)	0.92	(0.69-1.24)		
32	Used hormonal													
33	contraceptive, past year												0.1141	
34	N	0						3759, 3838	20.7%	(19.2-22.3)	1	-		
35	Ye	S						2806, 1831	20.9%	(19.1-22.7)	1.14	(0.97-1.35)		
	Sexual health indicators							-		· · · · · · · · · · · · · · · · · · ·		•		
	Ever diagnosed with a sexually	transmitted												
	infection						< 0.0001						0.0002	0.0291
39	No (or only thrush	4148, 5128	7.3%	(6.5-8.3)	1	-		5455, 4861	20.0%	(18.7-21.3)	1	-		
40	Yes (excluding thrush		13.7%	(11.0-17.0)	2.02	(1.51-2.70)		1206, 888	25.1%	(22.3-28.1)	1.39	(1.16-1.65)		
41	res (exeracing till asi	., 0,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	13.770	(11.0 17.0)	2.02	(1.51 2.70)		2200, 000	23.170	(22.3 23.1)	1.55	(1.10 1.03)		
12														

Table 2 cont.

i adic 2 cont.			N/	1en					Wo	men			
3	Denom.	%	(95%CI)	Age- adjusted OR	(95%CI)		Denom.	%	(95%CI)	Age- adjusted OR	(95%CI)	,, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	p-value for interaction with sex <sup>a</sup>
0  1 Ever experienced non-volitional	(unwt, wt)	70	(95%CI)	UK	(95%CI)	p-value	(unwt, wt)	76	(95%CI)	UK	(95%CI)	p-value	with sex
2 sex						<0.0001						<0.0001	0.1143
3 No	4706, 5825	7.9%	(7.1-8.9)	1	-		5815, 5055	19.4%	(18.2-20.7)	1	_		
4 Yes/Don't know	133, 148	19.4%		2.83	(1.74-4.59)		848, 695	30.9%	(27.3-34.6)	1.86	(1.55-2.25)		
5 Sexual competence at first sex					,	0.4876	,		,		,	<0.0001	0.0787
6 Not competent	2408, 3039	8.7%	(7.5-10.0)	1	-		3438, 2927	23.6%	(21.9-25.3)	1	-		
7 Competent		7.8%	,	0.91	(0.71-1.18)		3097, 2716	17.7%	(16.1-19.3)	0.70	(0.61-0.81)		
8 Number of other sexual respons	e problems		(515 512)						(=====,		(0.02 0.02)		
9 experienced <sup>J</sup>						<0.0001						<0.0001	0.0262
20 0	3209, 3947	5.3%	(4.4-6.3)	1	-		4377, 3759	12.9%	(11.7-14.1)	1	-		
21 1	1061, 1350	6.1%	(4.7-7.8)	1.14	(0.81-1.59)		1217, 1087	21.7%	(19.0-24.6)	1.86	(1.53-2.26)		
23 2+	570, 678	29.7%	(25.4-34.4)	7.57	(5.68-10.10)		1075, 909	52.4%	(48.9-56.0)	7.48	(6.25-8.94)		
、 Attitudes													
People are under pressure													
26 to have sex						0.1437						<0.0001	0.2192
27 Else	1799, 2264	7.4%	,	1	-		1851, 1570	16.4%	(14.5-18.5)	1	-		
Strongly agree/agree	3038, 3707	8.7%	(7.6-9.9)	1.21	(0.94-1.57)		4817, 4185	22.4%	(21.0-23.9)	1.47	(1.24-1.74)		
People want less sex as they						0.0005						-0.0001	0.0045
30 age	2042 2472	6.70/	(5.7.7.0)	4		0.0005	40.44. 2270	47.40/	(4E 0 40 C)	4		<0.0001	0.8045
· ·	2943, 3472		(5.7-7.8)	1	-		4044, 3278	17.1%	(15.8-18.6)	1	- (4, 42, 4, 00)		
32 Strongly agree/agree 33 <b>Men have a naturally higher</b> s		10.3%	(8.8-12.1)	1.58	(1.22-2.04)		2624, 2477	25.6%	(23.7-27.6)	1.64	(1.43-1.90)		
34 than women	sex unve						<0.0001						<0.0001
B5 Else	2788, 3441	10.2%	(8.9-11.5)	1	_		3351, 2830	15.9%	(14.4-17.4)	1	_		10.0001
Strongly agree/agree	ŕ	5.5%		0.52	(0.39-0.68)		3317, 2925	25.5%	(23.8-27.4)	1.81	(1.56-2.09)		
Too much sev in the media	20-5, 2550	3.570	(-1.4 0.5)	0.52	(0.55 0.00)	0.3477	5511, 2525	25.570	(23.0 27.4)	1.01	(1.50 2.05)	0.0693	0.8856
Elco	1986, 2296	7.5%	(6.3-9.0)	1	_	0.5477	2091, 1618	18.8%	(16.8-20.9)	1	_	0.0093	0.0050
39	ŕ	8.6%	` ,	1.13	(0.88-1.46)		4577, 4137	21.6%	(20.2-23.0)	1.16	(0.99-1.36)		
Strongly agree/agree	2001, 00/0	0.070	(1.5 5.5)	1.10	(0.00-I.40)		7011,4101	21.0/0	(20.2-23.0)	1.10	(0.55-1.50)		

Denominator is those aged 16-74 years with at least one partner in the past year. Unwt, unweighted; wt, weighted

<sup>&</sup>lt;sup>a</sup> P-value for interaction to determine whether the magnitude of association between each variable and lack of interest in sex differs between men and women

- <sup>b</sup> IMD is a multidimensional measure of area (neighbourhood)-level deprivation based on the participant's postcode. IMD scores for England, Scotland and Wales were adjusted before being combined and assigned to quintiles, using a method by Payne and Abel (50).
- <sup>c</sup> Participants aged ≥17 years.
- 9 Includes arthritis, heart attack, coronary heart disease, angina, other forms of heart disease, hypertension, stroke, diabetes, broken hip or pelvis, bone or hip replacement ever, backache lasting longer than 3 months, any other muscle or bone disease lasting longer than 3 months, depression, cancer and any thyroid condition treated in the past year.
- 11 e Participants were asked whether they had often been bothered by feeling down, depressed, or hopeless in the past 2 weeks, and whether they had often been bothered by little interest or pleasure in doing things in the past 2 weeks, using a validated two-question patient health questionnaire (PHQ-2).
- 13 <sup>†</sup> Opposite and/or same-sex partners
- 14 g Other means easy with a husband or wife or regular partner, but difficult with a new partner; easy with a new partner, but difficult with a husband or wife or regular partner; difficult with any partner, it depends, sometimes easy, and sometimes difficult.
  - h Participants were asked to rate how happy they were in their relationship from 1 (very happy) to 7 (very unhappy); responses of 1 or 2 were regarded as denoting participants who were happy with their relationship.
  - A constructed variable to measure readiness, combining consensuality, autonomy of decision making, timing and use of effective contraception
  - Sexual response problems (for at least 3 months in past year): lacked enjoyment in sex, felt anxious during sex, felt physical pain as a result of sex, felt no excitement or arousal during sex, difficulty in reaching climax, reached a climax more quickly than you would like, trouble getting or keep an erection (men), uncomfortably dry vagina (women)

45 46

Table 3: Associations between reporting lack of interest in having sex for at least 3 months in the past year and other sexual response problems lasting 3 months or 6 more in the past year, by sex

7					Men							Women			
8 9			ot report a terest in sex	-	ed a lack of est in sex		(95%CI)	p-value		report a lack rest in sex	-	ed a lack of rest in sex		(95%CI)	p-value
10 enominators (unwt, wt)		412	26, 5077	71	3, 897	<b>AOR</b> <sup>a</sup>			454	0, 3790	212	29, 1965	<b>AOR</b> <sup>a</sup>		
11 Lacked enjoyment in havir	ng sex							<0.0001							<0.0001
13	No	97.7%	(97.1-98.1)	81.5%	(78.2-84.4)	1	-		95.9%	(95.1-96.5)	72.5%	(70.2-74.7)	1	-	
14	Yes	2.3%	(1.9-2.9)	18.5%	(15.6-21.8)	9.78	(7.11-13.46)		4.1%	(3.5-4.9)	27.5%	(25.3-29.8)	8.95	(7.28-11.01)	
15elt anxious during sex								<0.0001							<0.0001
16	No	96.1%	(95.5-96.7)	85.8%	(82.6-88.5)	1	-		97.3%	(96.7-97.7)	89.9%	(88.4-91.3)	1	-	
17	Yes	3.9%	(3.3-4.5)	14.2%	(11.5-17.4)	4.16	(3.08-5.62)		2.7%	(2.3-3.3)	10.1%	(8.7-11.6)	4.4	(3.43-5.65)	
18 15elt physical pain as a resu	ılt of s	ex	,		,		,	0.0213		,		,		,	<0.0001
20	No		(97.9-98.8)	97.1%	(95.6-98.1)	1	-		95.7%	(95.0-96.3)	86.5%	(84.6-88.1)	1	-	
21	Yes	1.6%	(1.2-2.1)	2.9%	(1.9-4.4)	1.87	(1.10-3.19)		4.3%	(3.7-5.0)	13.5%	(11.9-15.4)	3.55	(2.83-4.45)	
<sup>2</sup> felt no excitement or arou	ısal du	ıring sex	,		,			<0.0001		,		,		,	<0.0001
23		98.5%	(98.0-98.9)	87.7%	(85.0-90.0)	1	_		97.5%	(96.9-97.9)	80.9%	(79.0-82.7)	1	_	
24	Yes	1.5%	(1.1-2.0)	12.3%	(10.0-15.0)	9.21	(6.33-13.40)		2.5%	(2.1-3.1)	19.1%	(17.3-21.0)	9.16	(7.16-11.70)	
25 2©ifficulty in reaching clima	ıx		- /		( ,		(	<0.0001		, - ,		( /		,	<0.0001
27	No	92.7%	(91.7-93.5)	80.5%	(76.6-83.8)	1	-		88.3%	(87.2-89.3)	74.9%	(72.7-76.9)	1	_	
28	Yes	7.3%	(6.5-8.3)	19.5%	(16.2-23.4)		(2.37-3.99)		11.7%	(10.7-12.8)	25.1%	(23.1-27.3)	2.6	(2.23-3.03)	
Reached climax more quic	kly th	an vou w	ould like	23.070	(10.1 10.1)	3.00	(2.07 0.00)	0.0198	(111776	(2017 2210)	2012/0	(2012 2710)		(=:====;	0.3658
	No		(84.3-86.9)	82.0%	(78.7-85.0)	1	_		97.8%	(97.2-98.2)	97.5%	(96.7-98.1)	1	_	
31 32	Yes	14.4%	(13.1-15.7)	18.0%	(15.0-21.3)		(1.05-1.68)		2.2%	(1.8-2.8)	2.5%	(1.9-3.3)	1.18	(0.82-1.69)	
3वेrouble getting or keeping			(13.1 13.7)	10.070	(13.0 21.3)	1.52	(1.03 1.00)	<0.0001	2.270	(1.0 2.0)	2.370	(1.5 5.5)	1.10	(0.02 1.03)	
34	No	88.5%	(87.3-89.6)	79.4%	(75.9-82.6)	1		<b>\0.0001</b>							
35	_		,		` ,										
36	Yes	11.5%	(10.4-12.7)	20.6%	(17.4-24.1)	1.97	(1.55-2.51)								40.0001
3 ncomfortably dry vagina									00.704	(00 F 04 T)	00.464	(77.0.02.1)			<0.0001
38	No								90.7%	(89.5-91.7)	80.1%	(77.9-82.1)	1		
39	Yes								9.3%	(8.3-10.5)	19.9%	(17.9-22.1)	2.28	(1.89-2.76)	

46 enominator is those aged 16-74 years with at least one partner in the past year. Unwt, unweighted; wt, weighted

41 AOR comparing those reporting lacking interest to those who did not.

STROBE Statement—checklist of items that should be included in reports of observational studies

	Item No.	Recommendation	Page No.	Relevant text from manuscript
Title and abstract	1	(a) Indicate the study's design with a commonly used term in the title or the abstract	Title, Abstract	Survey; cross-sectional probability sample survey
		(b) Provide in the abstract an informative and balanced summary of what was done and what was found	Abstract	Complex survey analyses of data collected for a cross-sectional probability sample survey, undertaken 2010-12, specifically logistic regression to calculate age-adjusted odds ratios (AOR) to identify associated factors
Introduction				
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	4-5	In summary, the evidence on the factors associated with men's and women's reports of low sexual desire is drawn largely from non-representative samples, is somewhat equivocal and, in men, sparse.  Understanding the correlates of lacking interest in sex would be useful to identify individuals most at risk of sexual problems and could also inform what types of therapeutic options for this group should be provided.
Objectives	3	State specific objectives, including any prespecified hypotheses	5	The research questions
				addressed in this paper are: (1)

Mathada				What sociodemographic, relationship, sexual behaviour, and sexual attitudinal factors are associated with lacking interest in sex in sexually active men and women?; (2) To what extent do these factors vary by gender?; (3) What are the associations between reporting lacking interest in sex and other sexual function problems?
Methods Study design	4	Present key elements of study design early in the paper	6	A multi-stage, clustered, and stratified probability sample design was used and participants were interviewed using a combination of computer-assisted personal interviews (CAPI), and computer-assisted self-interviews (CASI).
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	6	Natsal-3 is a probability sample survey of 15,162 men and women aged 16-74 years in Britain, interviewed between September 2010 and August 2012.
Participants	6	(a) Cohort study—Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up  Case-control study—Give the eligibility criteria, and the sources and methods of case	6	For the current analyses, only respondents who reported >=1 sexual partner (opposite-sex or

		ascertainment and control selection. Give the rationale for the choice of cases and controls Cross-sectional study—Give the eligibility criteria, and the sources and methods of selection of participants		same-sex) in the past year were included (4,839 men and 6,669 women).
		(b) Cohort study—For matched studies, give matching criteria and number of exposed and unexposed  Case-control study—For matched studies, give matching criteria and the number of controls per case		
Variables	7		7-7	We used selected items from the Natsal-SF, a newly developed and validated measure of sexual function comprising questions about problems with sexual response, relational aspects of sexual function, and selfappraisal of sex life
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	-7	In the CASI, participants who reported at least one sexual partner in the past year (hereon 'sexually active participants') were asked: 'In the last year, have you experienced any of the following for a period of 3 months or longer?' and were given a list of difficulties and asked to indicate which they had experienced. The list included 'Lacked interest in having sex'. Those indicating this difficulty were defined as lacking interest in having sex for a period of

			three months or more in the past year (the outcome for this analysis). Individuals reporting lacking interest in sex for at
			least 3 months were then asked 'And how do you feel about
			this?' with response options: not
			at all distressed, a little
			distressed, fairly distressed;
			very distressed. Those
			answering a little, fairly or very
			distressed were defined as
			lacking interest in sex and
			having distress about this
			symptom (outcome for
			sensitivity analysis, see below).
Bias	9	Describe any efforts to address potential sources of bias	-
Study size	10	Explain how the study size was arrived at	-
Continued on next page			

Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	7	All analyses were done using the complex survey functions of STATA (version 14; StataCorp LP, College Station, Texas) to account
				for the weighting, clustering, and stratification of the data.
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding  (b) Describe any methods used to examine subgroups and interactions	7	We used multivariable logistic regression to calculate age-adjusted odds ratios (AOR) to examine the associations between reports of lacking interest in sex lasting three months or longer in the past year, and sociodemographic, health, relationship, sexual behaviour, and sexual attitude variables. For each variable, we also tested the interaction between gender, to see if the magnitude of the associations between the above factors and reports of lacking interest in sex was the same for men and women.
		(c) Explain how missing data were addressed		_
		(d) Cohort study—If applicable, explain how loss to follow-up was addressed  Case-control study—If applicable, explain how matching of cases and controls was addressed  Cross-sectional study—If applicable, describe analytical methods taking account of sampling strategy	1	
		(e) Describe any sensitivity analyses	7	We conducted a sensitivity analysis for the outcome variable reporting lack of interest in sex lasting three months or longer <i>and</i> distress about

				this symptom to assess whether similar associations were found.
Results				
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	6	For the current analyses, only respondents who reported >=1 sexual partner (opposite-sex or same-sex) in the past year were included (4,839 men and 6,669 women).
		(b) Give reasons for non-participation at each stage	-	
		(c) Consider use of a flow diagram	-	
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	6	More extensive details of the survey methodology and sample characteristics are published elsewhere (21,22) and for demographic characteristics of the sample, see (22).
		(b) Indicate number of participants with missing data for each variable of interest	-	
		(c) Cohort study—Summarise follow-up time (eg, average and total amount)		
Outcome data	15*	Cohort study—Report numbers of outcome events or summary measures over time  Case-control study—Report numbers in each exposure category, or summary measures of exposure  Cross-sectional study—Report numbers of outcome events or summary measures	Tables 1-2	
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision	Tables 1-2	
Wain results	10	(eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	140103 1-2	
		(b) Report category boundaries when continuous variables were categorized	-	
		(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	-	

Continued on next page

Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	11	Table 2 presents the associations between lacking interest in sex and being distressed about this (as a measure/marker of severity), and the above sociodemographic, health, and sexual relationship/behaviour variables.
Discussion				
Key results	18	Summarise key results with reference to study objectives	11-12	We identified a broad range of factors, including some that have not been explored in previous large-scale surveys, that were associated with men's and women's reports of lacking interest in sex in a representative British population-based survey. Our findings, discussed below, revealed some gender similarities as well as some interesting gender differences. The strongest evidence for gender differences was for the relationship context variables, where associations with lacking interest in sex were much stronger for women than for men.
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	s 15	Limitations include the cross- sectional nature of the data, which mean that we are unable to infer temporality and causality. We only used a single item to assess lacking

				interest in sex, although we
				additionally took account of
				whether those who reported this
				also reported that it caused them
				distress, as a way of trying to
				capture more problematic lack of
				interest. It is important to
				acknowledge, however, that these
				data do not necessarily correspond
				to clinical diagnoses. This
				sensitivity analysis enabled us to
				demonstrate that for most variables,
				similar associations exist regardless
				of whether or not distress was
				reported. Finally, we have tested
				many associations within this study
				and some will have been significant
				by chance.
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of	16-17	The findings indicate that reporting
		analyses, results from similar studies, and other relevant evidence		lack of interest in sex is associated
				with a broad range of predictors
				across sociodemographic,
				relationship, sexual behaviour, and
				sexual attitudinal domains.
Generalisability	21	Discuss the generalisability (external validity) of the study results	15	Strengths of our study include the
				use of national probability sample
				survey data involving both men and
				women across a wide age range (21,
				22).
Other informati	on			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the	18	Natsal-3 was supported by grants

original study on which the present article is based

from the U.K. Medical Research Council (G0701757) and the Wellcome Trust (084840), with support from the Economic and Social Research Council and the Department of Health.

\*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

**Note:** An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.

# **BMJ Open**

What factors are associated with reporting lacking interest in sex and how do these vary by gender?: Findings from the third British National Survey of Sexual Attitudes and Lifestyles

Journal:	BMJ Open
Manuscript ID	bmjopen-2017-016942.R2
Article Type:	Research
Date Submitted by the Author:	19-Jul-2017
Complete List of Authors:	Graham, Cynthia; University of Southampton, Psychology Mercer, Catherine; University College London, Research Department of Infection and Population Health Tanton, Clare; University College London, Research Department of Infection & Population Health Jones, Kyle; University College London, Research Department of Infection and Population Health Johnson, Anne; University College London, Research Department of Infection and Population Health Wellings, Kaye; London School of Hygiene and Tropical Medicine, Mitchell, Kirstin; London School of Hygiene and Tropical Medicine
<b>Primary Subject Heading</b> :	Sexual health
Secondary Subject Heading:	Epidemiology
Keywords:	SEXUAL MEDICINE, EPIDEMIOLOGY, Sexual and gender disorders < PSYCHIATRY

SCHOLARONE™ Manuscripts What factors are associated with reporting lacking interest in sex and how do these vary by gender?: Findings from the third British National Survey of Sexual Attitudes and Lifestyles

Graham, C. A., Mercer, C. H., Tanton, C. Jones, K. G., Johnson, A. M., Wellings, K., Mitchell, K. R.

<sup>1</sup>Centre for Sexual Health Research, Department of Psychology, University of Southampton, Southampton, U.K.

<sup>2</sup>Centre for Sexual Health and HIV Research, Research Department of Infection & Population Health, University College London, London, U.K.

<sup>3</sup>Centre for Sexual and Reproductive Health Research, Department of Social and Environmental Health Research, London School of Hygiene and Tropical Medicine, London, U.K.

<sup>4</sup>MRC/CSO Social and Public Health Sciences Unit, University of Glasgow, 200 Renfield Street, Glasgow G2 3QB, U.K.

Corresponding author:
Cynthia A. Graham
Department of Psychology
Faculty of Social, Human, and Mathematical Sciences
Shackleton Building (B44)
University of Southampton
Highfield, Southampton
SO17 1BJ UK

tel: 023 8059 3091

e-mail: C.A.Graham@soton.ac.uk

Word count: 3,900

#### **ABSTRACT**

**Objectives:** To investigate factors associated with reporting lacking interest in sex, and how these vary by gender.

**Setting**: British general population.

**Design:** Complex survey analyses of data collected for a cross-sectional probability sample survey, undertaken 2010-12, specifically logistic regression to calculate ageadjusted odds ratios (AOR) to identify associated factors.

**Participants:** 4,839 men and 6,669 women aged 16-74 years who reported >=1 sexual partner (opposite-sex or same-sex) in the past year for the third National Survey of Sexual Attitudes and Lifestyles [Natsal-3].

Main outcome measure: Lacking interest in sex for >= 3 months in the past year.

Results: Overall, 15.0% (13.9-16.2) of men and 34.2% (32.8-35.5) of women reported lacking interest in sex. This was associated with age and physical and mental health for both men and women, including self-reported general health and current depression. Lacking interest in sex was more prevalent among men and women reporting STI diagnoses (ever), non-volitional sex (ever), and holding sexual attitudes related to normative expectations about sex. Some gender similarities in associated relationship and family-related factors were evident, including partner having had sexual difficulties in the last year (M: AOR:1.41 [1.07-1.86]; W: AOR:1.60 [1.32-1.94]), not feeling emotionally close to partner during sex (M: 3.74 [1.76-7.93]; W: 4.80 [2.99-7.69], and ease of talking about sex (M: 1.53 [1.23-1.90] W: 2.06 [1.77-2.39]). Among women only, lack of interest in sex was higher among those in a relationship of >1 year in duration and those not sharing the same level of interest (4.57 [3.87-5.38]) or preferences (2.91 [2.22-3.83]) with a partner.

**Conclusions**: Both gender similarities and differences were found in factors associated with lacking interest in sex, with the most marked differences in relation to some relationship variables. Findings highlight the need to assess, and if appropriate, treat lacking interest in sex in a holistic and relationship-specific way.

#### **ARTICLE SUMMARY**

# Strengths and limitations of this study

- This study used nationally representative data to investigate factors associated with reporting lacking interest in sex, and how these vary by gender, in the British population.
- Few previous population-based studies have obtained data on low sexual interest from men and women and made direct comparisons between them.
- The study included detailed assessment of a range of relationship context and attitudinal variables seldom included in previous population-based surveys.
- Information about lacking interest in sex was assessed with a single item, asking participants whether they had lacked interest in having sex for a period of three months or more in the past year. Those who reported this were also asked whether they experienced associated distress.
- The cross-sectional data do not allow us to establish the causal direction of associations between lacking interest in sex and variables of interest.



In Britain's third National Survey of Sexual Attitudes and Lifestyles (Natsal-3) lacking interest in sex was the most common sexual difficulty reported by both men and women (1). Lacking interest in sex for 3 months or more in the past year was twice as common in women compared to men. When duration and symptom severity criteria are considered (i.e., that symptoms last six months or more and occur "very often" or "always") these prevalence estimates are much lower (2), but the gender difference is maintained.

Researchers have paid more attention to problems of low sexual interest in women than in men (3-5). Among men the predominant focus has been on erectile functioning and on physiological causes of lacking interest in sex such as hormonal status, rather than on psychosocial determinants. This lack of attention to male problems is reflected in recent revisions to the Diagnostic and Statistical Manual (DSM-5) classification of sexual disorders (6) which involved major changes to sexual arousal and desire disorder categories in women, but no substantive changes for male disorders.

Most but not all studies involving men have reported an association between low sexual interest and increasing age (for review, see 7). However, there are conflicting findings on the association with physical and mental health (8,9). Limited research suggests that psychosocial and relationship factors may also be associated with low sexual desire in men (8, 10-12).

Among women, factors that have been consistently associated with lacking interest in sex are relationship problems, relationship quality, and partner's sexual functioning (13-17), poor physical health (18), and negative mood states/depression (13, 18,19). There are inconsistent findings on the association between low sexual

examined possible links between lacking interest in sex and either sexual attitudes or sexual behaviour. In the second wave of the British National Survey of Sexual Attitudes and Lifestyles (Natsal-2), among women, lacking interest in sex was associated with lower frequency of sex and attitudes according sex low priority (20).

Studies have, for the most part, used small, clinical samples of patients seeking treatment for low sexual desire problems. The potential for bias in such studies is revealed in previously reported findings from Natsal-3 that only around a third of men and women with one or more sexual function problems meeting DSM 5 morbidity criteria had sought professional help in the last year. (2). The few large-scale probability-based surveys involving both men and women have focused on associations between low sexual desire and sociodemographic factors.

In summary, the evidence on the factors associated with men's and women's reports of low sexual desire is drawn largely from non-representative samples, is somewhat equivocal and, in men, sparse. Given that most previous research has involved non-representative samples, it is important to explore how correlates might differ in a population-based sample. Understanding the correlates of lacking interest in sex is key to informing therapeutic options for this group.

The research questions addressed in this paper are: (1) What sociodemographic, relationship, sexual behaviour, and sexual attitudinal factors are associated with lacking interest in sex in sexually active men and women?; (2) To what extent do these factors vary by gender?; (3) To what extent does lacking interest in sex co-exist with other sexual function problems?

## **METHOD**

## **Participants and Procedure**

Natsal-3 is a probability sample survey of 15,162 men and women aged 16-74 years in Britain, interviewed between September 2010 and August 2012. A multistage, clustered, and stratified probability sample design was used and participants were interviewed in their homes by professional interviewers using a combination of computer-assisted personal interviews (CAPI), and computer-assisted self-interviews (CASI) for the more sensitive questions (including, of relevance to this paper, those on sexual function), Interviewers were present in the room while participants completed the CASI, but did not view responses (20). After weighting to adjust for unequal probabilities of selection and to match the British population in terms of age, gender and geographical region, the Natsal-3 sample was broadly representative, on key variables, of the British population as described by the 2011 Census (21).

The estimated response rate was 57.7%, and the estimated cooperation rate (the number of interviews completed from eligible addresses for which contact was made) was 65.8% (of all eligible addressed contacted) (22). More extensive details of the survey methodology and sample characteristics are published elsewhere (21,22) and for demographic characteristics of the sample, see (22). Participants provided oral informed consent for interviews and the survey was approved by the NRES Committee South-Central – Oxford A (Ref.: 10/H0604/27).

Only respondents who reported >=1 sexual partner (opposite-sex or same-sex) in the past year (4,839 men and 6,669 women) were asked whether they had lacked interest in sex for a period of three month or longer in the past year (see below).

These participants were the focus of the current analyses.

## **Outcome Measures**

Items were drawn from the Natsal-SF, a measure of sexual function, designed and validated for population surveys. The measure comprises items on problems with sexual response, relational aspects of sexual function, and self-appraisal of sex life (23,24). Participants who reported at least one sexual partner in the past year (hereon 'sexually active participants') were asked: 'In the last year, have you experienced any of the following for a period of 3 months or longer?' and were given a list of difficulties and asked to indicate which they had experienced. The list included 'Lacked interest in having sex'. Those indicating this difficulty were defined as lacking interest in having sex for a period of three months or more in the past year (the outcome for this analysis). Individuals reporting lacking interest in sex for at least 3 months were then asked 'And how do you feel about this?' with response options: not at all distressed, a little distressed, fairly distressed; very distressed. Those answering a little, fairly or very distressed were defined as lacking interest in sex and having distress about this symptom (outcome for sensitivity analysis, see below).

## **Statistical Analysis**

All analyses were done using the complex survey functions of STATA (version 14; StataCorp LP, College Station, Texas) to account for the weighting, clustering, and stratification of the data. We used multivariable logistic regression to calculate age-adjusted odds ratios (AOR) to examine the associations between reports of lacking interest in sex lasting three months or longer in the past year, and sociodemographic, health, relationship, sexual behaviour, and sexual attitude variables. For each variable, we also tested the interaction with gender, to see if the magnitude of the associations between the above factors and reports of lacking interest in sex was the same for men and women. We conducted a sensitivity analysis for the outcome variable reporting

lack of interest in sex lasting three months or longer *and* distress about this symptom to assess whether similar associations were found. We also examined the association between reporting lacking interest in sex and the other sexual function problems asked about in Natsal-3, using AORs.

#### **RESULTS**

Overall, 15.0 (95% CI 13.9-16.2) of sexually active men and 34.2% (95% CI 32.8-35.5) of sexually active women reported lacking interest in sex for three months or longer in the year prior to interview. Table 1 presents the associations between lacking interest in sex and sociodemographic, health, relationship, sexual behaviour, and sexual attitudinal variables for men and women.

Age was significantly associated with lacking interest in sex. Prevalence increased with age, being lowest among younger participants (16-24 years; M: 11.5%; W: 24.8%) and peaking in men aged 35-44 years (17.2%) and in women aged 55-64 years (38.8%). Regarding demographic variables, after adjusting for age, lack of interest was associated with leaving school at 16 (men only; AORS: 1.31), being unemployed (men only AORs: M: 1.44), and less frequent religious practice (women only; AOR: 0.79). In women, after adjusting for age, those who were students or retired were less likely to lack desire.

After adjusting for age, there were associations between all physical and mental health variables assessed and lacking interest in sex. Individuals in poorer health (AORs: M: 3.29; W: 1.93), those who had much difficulty walking upstairs (AORs: M: 2.68; W: 1.55), those with a longstanding medical condition (AORs: M 1.76; W: 1.35), and those who had screened positive for current depression (AORs: M: 2.95; W: 2.79) or who had been treated for depression in the past year (AORs: M: 2.82; W:

2.32) were more likely to report lacking interest in sex. The magnitude of these associations was similar for men and women. A greater number of comorbid health conditions was significantly associated with lacking interest in sex among both men and women. Menopausal status in women and circumcision in men were not associated with the likelihood of lacking sexual interest.

Regarding sexual behaviour, among both men and women, lack of interest was associated with frequency of sexual activity (defined as vaginal, oral or anal intercourse) in the four weeks prior to interview; 12.4% of men, and 33.8% of women who reported having engaged in 3-4 sexual acts reported lack of interest, vs. 20.7% of men and 42.9% of women who reported no sexual activity. Associations with recent masturbation differed by gender; lack of interest in sex was slightly *more* common among men who reported having recently masturbated but *less* common among women who did so. Women with three or more partners in the past year were less likely to report low sexual interest than those with only one partner (AOR: 0.70) but there was no association between partner numbers and lacking interest in sex in men. Among men only, those who reported ever having taken drugs to assist sexual performance were more likely to report lacking interest in sex (AOR: 1.36). A similar magnitude association was seen for women (AOR: 1.39) however, fewer women reported ever having taken drugs and the 95%CI therefore crosses 1.

Associations were found between lacking interest in sex and several relationship contextual variables and for many of these variables associations were stronger for women than for men. For both men and women, lack of interest was associated with relationship status; women living with a partner were more likely to lack interest in sex than those in other relationship categories (see Table 1). For

women, all relationship categories had lower AORs than living with partner. Duration of most recent sexual relationship was significantly associated with lacking interest in sex only among women, being more common among those in longer relationships.

Among both men and women, there was an association between ease of communication and lacking interest in sex. Those who found it "always easy to talk about sex" with their partner were less likely to report low interest. Lack of interest was more likely among those whose partner had sexual difficulties in the last year, and those who reported a lower assessment of happiness with the relationship, and not feeling emotionally close to partner during sex. Among women but not men, not sharing the same level of sexual interest with a partner, and not sharing the same sexual likes and dislikes, were also associated.

Having been pregnant in the last year was associated with lacking sexual interest as was having one or more young child(ren) (women only). Lack of interest in sex was significantly associated with sexual health indicators, including previous STI diagnosis and ever having experienced non-volitional sex. The strength and direction of associations was similar for men and women, except for reporting another sexual function problem, which was significant for two or more problems in men, but one or more problems in women. Sexual competence at first sex was significantly associated with lack of interest in sex only among women.

Regarding attitudinal variables, both men and women who endorsed statements that "people are under pressure to have sex" and "people want less sex as they age" were more likely to report lacking interest in sex over the past year. The only attitudinal variable that showed a significant interaction with gender was that which related to men having a "naturally higher sex drive than women." Men who

agreed with this statement were *less* likely than those who disagreed to lack interest in sex, while the reverse was true among women.

Table 2 presents the associations between lacking interest in sex and being distressed about this (as a measure/marker of severity), and the above sociodemographic, health, and sexual relationship/behaviour variables. While prevalence was lower, the associations and the interactions with gender were generally similar; however, some of the previous gender-specific associations with variables (e.g., masturbation, and pregnancy in women, and education in men) were no longer significant when the outcome variable was reported low sexual interest and associated distress. In addition, some associations became stronger when considering only those who reported a distressing lack of interest in sex (vs. lack of interest without any reported distress). For example, the association between depressive symptoms and having been treated for depression in the past year, was stronger in men than in women.

Regarding the association between reporting lacking interest in sex and the other sexual function problems asked about in Natsal-3, the strongest (positive) associations were for lacking enjoyment in sex (AORs=9.78 and 8.95 for men and women, respectively), followed by feeling no excitement or arousal during sex (AORs=9.21 and 9.16 for men and women, respectively) (see Table 3).

#### **DISCUSSION**

We identified a broad range of factors, including some that have not been explored in previous large-scale surveys, that were associated with men's and women's reports of lacking interest in sex in a representative British population-based survey. Our findings, discussed below, revealed some gender similarities as well as

some interesting gender differences. The strongest evidence for gender differences was for the relationship context variables, where associations with lacking interest in sex were much stronger for women than for men.

# Interpretation of findings in context of previous research

Our finding relating to differences by age is consistent with some, but not all, results from previous research which has yielded generally inconsistent findings. Some studies have, like ours, shown a higher prevalence of sexual interest problems in older than in younger women (25-27). Others have found no association between age and low sexual interest complaints (14, 28) and yet more have shown lack of sexual interest to be more common among younger women (18). Whereas we found a marginal relationship with age in men, some studies (though not all e.g., 29) have found a stronger relationship (12, 30). It is possible that the varied findings might in part be a result of varied definitions of low sexual interest or differences in sampling.

The finding in this analysis that having young children appears to increase the likelihood of reporting lack of sexual interest for women, but not for men, remains unchanged since the previous Natsal-2 survey (31). This may be due to fatigue associated with a primary caring role (32), the fact that daily stress appears to affect sexual functioning in women more than men (33), or possibly a shift in focus of attention attendant on bringing up small children.

The finding of a link between lacking interest in sex and lacking enjoyment in sex and/or feeling no excitement or arousal during sex is not surprising and has been shown in previous studies (3). The strong associations between lack of interest in sex and physical and mental health indicators, which we observed for both men and women, is not entirely consistent with findings from other studies. While this link has

been persuasively shown for women (13, 18, 19), in men, the evidence is more equivocal. In a study of men attending an outpatient clinic for sexual problems, psychological symptoms such as anxiety and depression were more predictive of low sexual desire than hormonal or other physical markers (11). In contrast, DeRogatis et al. (9), in their study of men with erectile dysfunction, observed no differences in depressive symptoms, concurrent illness, or medication use between men with and without symptoms of low sexual desire.

The gender differences in associations between masturbation and a lack of sexual interest are interesting and have been explored in few previous population-based studies. Our observation that lack of interest was *more* commonly reported by men who had recently masturbated, but *less* commonly reported by women who had done so may reflect a tendency among women for self-pleasuring to be, not a substitute for partnered sex but instead a part of a broader repertoire of sexual fulfilment; this possibility is worthy of further exploration. In contrast, for men frequency of masturbation reflects reduced frequency of partnered sex (34). However, it is worth noting that in the U.S. National Health and Social Life Survey, lifetime number of sexual partners and masturbation practices were unrelated to the likelihood of sexual desire difficulties for either men or women (35).

Our observation that duration of most recent sexual relationship showed a strong association with lacking interest in sex in women is consistent with previous studies (15, 17). There has been little comparable research on men with which to corroborate the absence of such an association among men in our analysis.

Our data confirm the importance of the relational context in individuals' level of sexual interest. The strong associations between relationship and partner factors

and sexual interest are consistent with those shown in many previous studies relating to women (13-17) and with a much smaller literature in men (36,37). In particular, sexual dysfunction in a male partner has previously been associated with women's levels of sexual desire (15, 38, 39), and sexual desire discrepancy in couples has been linked to lower reported relationship satisfaction and more couple conflict (40).

The strong links found between several key sexual health outcomes and lack of interest in sex are interesting; among both men and women, reporting an STI diagnosis and non-volitional sex were associated with reporting lack of interest in sex.

Our finding that lacking "sexual competence" at first sexual intercourse was linked with subsequent lack of interest in sex among women but not men, may reflect a greater salience of contextual aspects of first sex for women. More women than men report being pressured by a partner on the first occasion of heterosexual intercourse, and to have subsequently experienced regret about first sexual experiences (41).

These findings suggest that for women, early sexual experiences may shape future sexual encounters/relationships to a greater extent than for men.

To our knowledge no previous studies have assessed the association between attitudes toward sexual matters and lack of interest in sex. Endorsing the assumption that "people want less sex as they age" was associated with lack of interest in both genders. It might be that this belief contributes to a decline in interest, or – equally plausible – that those who lack interest adopt this attitude to avoid viewing their experience as problematic. Interestingly, men who endorsed the view that "men have a higher sex drive than women" were significantly *less* likely to report lacking interest in sex, whereas women who agreed with this statement were *more* likely to do so. If people responded to this statement with reference to their own relationship, these

findings may be seen as making intuitive sense. The results suggest that endorsing stereotypical gender-norms related to sex may adversely affect women more than men.

## **Strengths and Limitations**

Strengths of our study include the use of national probability sample survey data involving both men and women across a wide age range (21, 22). With a few exceptions (e.g., 12, 14, 29, 42), most surveys on sexual desire problems have sampled either men *or* women, precluding direct comparisons within the same sample. Another strength was the detailed and holistic examination of relationship context and attitudinal variables, which few previous studies have reported. Response rates for Natsal-3 were also similar to those of other major social surveys in Britain (43) and higher than many previous surveys of sexual problems (35, 44).

Limitations include the cross-sectional nature of the data, which mean that we are unable to infer temporality and causality. The sample is representative of those resident in private households in Britain i.e., not those living in institutions. We included only respondents who reported >=1 sexual partner (opposite-sex or samesex) in the past year, excluding those who had not had sex because of lack of interest. We only used a single item to assess lacking interest in sex, although we additionally took account of whether those who reported this also reported that it caused them distress, as a way of trying to capture more problematic lack of interest. This sensitivity analysis enabled us to demonstrate that for most variables, similar associations exist regardless of whether or not distress was reported. It is important to acknowledge, however, that these data do not necessarily correspond to clinical diagnoses. Finally, we have tested many associations within this study and some will

have been significant by chance. These were exploratory and descriptive analyses of zero-order relationships and therefore some of the smaller effect sizes may not replicate and may not hold in multivariable analyses.

# Implications for Research and Practice

The findings indicate that lack of interest in sex is associated with a broad range of factors across sociodemographic, relationship, sexual behaviour, and sexual attitudinal domains. There are both research and clinical applications of our results.

Firstly, our findings underscore the importance of the relational context in understanding low sexual interest in both men and women. For women in particular, the experience of sexual interest appears strongly linked with their perceptions of the quality of their relationships, their communication with partners, and their expectations/attitudes about sex. Our findings support the view that transient (and often adaptive) reductions in sexual desire are not evidence of "dysfunction" (45). In the context of the recent FDA approval of flibanserin, the first drug to treat low sexual desire in women (46), these findings are relevant to the current debate about whether striving for a pharmaceutical solution to women's sexual desire problems is an appropriate and feasible goal (45, 47). Some authors have suggested that women with complaints of low sexual interest might benefit most from integrative approaches that accord with a biopsychosocial model (48).

Secondly, our findings on the strong association between open sexual communication (i.e., "finding it always easy to talk about sex") and a reduced likelihood of reporting lack of interest in sex, particularly for women, emphasise the importance of providing a broad sexual and relationships education, rather than limiting attention only to adverse consequences of sex and how to prevent them.

Similarly, the important role of early sexual experiences, and sexual "competence," especially for women, in shaping later experiences of sexual desire supports the need for comprehensive sex education.

In a clinical context, our findings emphasise the importance of health care professionals assessing psychological and interpersonal variables in individuals presenting with complaints of low sexual interest (49). In couple therapy, it is important that therapists have an awareness of the differences between men and women in the factors associated with low sexual interest. For example, among the subgroup of participants reporting both lack of interest in sex and related distress, we found a stronger association between depressive symptoms and treatment for depression in the last year among men compared with women. Lastly, our findings support previous research on the critical role of physical and mental health in understanding low sexual interest problems experienced by men and women (11, 18).

## **Conclusions**

This study extends our understanding of the factors associated with lack of interest in sex in men and women, the gender similarities and differences, and highlights the need to assess and – if necessary – treat sexual desire problems in a holistic and relationship- as well as gender-specific way.

# Contribution to authorship

The paper was conceived by CAG, CHM, AMJ, KW, and KRM. CAG wrote the first draft, with further contributions from all authors. Statistical analyses were undertaken by CHM, CT, and KGJ. CHM, AMJ (Principal Investigator) and KW, initial applicants on Natsal-3, wrote the study protocol and obtained funding. Natsal-3 questionnaire design, ethics applications, and piloting were undertaken by CHM, CT, AMJ, KW, and KRM. Data management was undertaken by NatCen Social Research, UCL and LSHTM. All authors contributed to data interpretation, reviewed successive drafts and approved the final version of the manuscript.

# **Competing interests statement**

AMJ has been a Governor of the Wellcome Trust since 2011. The remaining authors have nothing to disclose. Completed disclosure of interests form available to view online as supporting information.

# **Funding Statement**

Natsal-3 was supported by grants from the U.K. Medical Research Council (G0701757) and the Wellcome Trust (084840), with support from the Economic and Social Research Council and the Department of Health. Since September 2015, Kirstin Mitchell has been supported by the United Kingdom Medical Research Council grant MC\_UU\_12017/11, and Scottish Government Chief Scientist Office grant SPHSU11.

# **Details of ethics approval**

Natsal-3 was approved by the NRES Committee South Central-Oxford A (Ref: 10/H0604/27) on 12 July 2010. Participants provided oral informed consent for interviews.

## Data sharing statement

The Natsal-3 dataset is publicly available from the UK Data Service: <a href="https://discover.ukdataservice.ac.uk/">https://discover.ukdataservice.ac.uk/</a>; SN: 7799; persistent identifier: 10.5255/UKDA-SN-77991-1.



## **REFERENCES**

- Mitchell KR, Mercer CH, Ploubidis GB, et al. Sexual function in Britain: Findings from the third National Survey of Sexual Attitudes and Lifestyles (Natsal-3). *Lancet* 2013;382:1817-1829.
- 2. Mitchell KR, Jones KG, Wellings K, et al. Estimating the prevalence of sexual function problems: The impact of morbidity criteria. *J Sex Res* 2016;53:55-967.
- 3. Brotto LA. The DSM diagnostic criteria for hypoactive sexual desire disorder in women. *Arch Sex Behav* 2010a; 39:221-239.
- 4. Carvalho J, Nobre P. Biopsychosocial determinants of men's sexual desire: testing an integrative model. *J Sex Med* 2011;8:754-763.
- 5. Štulhofer A, Carvalheira AA, Træen B. Is responsive sexual desire for partnered sex problematic among men? Insights from a two-country study. *Sex Relation Ther* 2013;28:246-258.
- 6. American Psychiatric Association. *Diagnostic and statistical manual of mental disorders*, 5th. ed. Arlington, VA: Author 2013.
- 7. Brotto LA. The DSM diagnostic criteria for hypoactive sexual desire disorder in men. *J Sex Med* 2010b;7:2015-2030.
- 8. Corona G, Lee DM, Forti G, et al. Age-related changes in general and sexual health in middle-aged and older men: Results from the European Male Ageing Study (EMAS). *J Sex Med* 2010;7:1362-1380.
- DeRogatis L, Rosen RC, Goldstein I, et al. Characterization of hypoactive sexual desire disorder (HSDD) in men. J Sex Med 2012;9:812-820.
- 10. Carvalheira A, Træen B, Štulhofer A. Correlates of men's sexual interest: a cross-cultural study. *J Sex Med* 2014;11:154-164.

- 11. Corona G, Petrone L, Mannucci E, et al. The impotent couple: low desire. *Int J*Androl 2005;28:46-52.
- 12. DeLamater JD, Sill M. Sexual desire in later life. J Sex Res 2005;42:138-149.
- 13. Dennerstein L, Koochaki P, Barton I, et al. Hypoactive sexual desire disorder in menopausal women: a survey of Western European women. *J Sex Med* 2006;3:212-222.
- 14. Hayes RD, Dennerstein L, Bennett CM, et al. Risk factors for female sexual dysfunction in the general population: Exploring factors associated with low sexual function and sexual distress. *J Sex Med* 2008;5:1681-1693.
- 15. McCabe MP, Goldhammer DL. Demographic and psychological factors related to sexual desire among heterosexual women in a relationship. *J Sex Res* 2012;49:78-87.
- 16. Öberg K, Sjögren Fugl-Meyer K. On Swedish women's distressing sexual dysfunctions: some concomitant conditions and life satisfaction. *J Sex Med* 2005;2:169-180.
- 17. Witting K, Santtila P, Varjonen M, et al. Female sexual dysfunction, sexual distress, and compatibility with partner. *J Sex Med* 2008;5:2587-2599.
- 18. Shifren JL, Monz BU, Russo PA, et al. Sexual problems and distress in United States women. *Obstet Gynecol* 2008;112:970-978.
- 19. Johannes CB, Clayton AH, Odom DM, et al. Distressing sexual problems in United States women revisited: prevalence after accounting for depression. *J Clin Psychiatry* 2009;70:1698-1706.

- 20. Mitchell KR, Mercer CH, Wellings K, Johnson AM. Prevalence of low sexual desire among women in Britain: Associated factors. *J Sex Med*. 2009; 1;6(9):2434-2444.
- 21. Erens B, Phelps A, Clifton S, et al. Methodology of the third British National Survey of Sexual Attitudes and Lifestyles (Natsal-3). *Sex Transm Infect* 2014;90:84-89.
- 22. Mercer CH, Tanton C, Prah P, et al. Changes in sexual attitudes and lifestyles in

  Britain through the life course and over time: findings from the National

  Surveys of Sexual Attitudes and Lifestyles (Natsal). *Lancet* 2013;382:1781-1794.
- 23. Jones KG, Mitchell KR, Ploubidis GB, et al. The Natsal-SF measure of sexual function: Comparison of three scoring methods. *J Sex Res* 2015;52:640-646.
- 24. Mitchell KR, Ploubidis GB, Datta J, et al. The Natsal-SF: a validated measure of sexual function for use in community surveys. *Eur J Epidemiol* 2012;27:409-18.
- 25. Abdo CHN, Oliveira WM, Moreira ED, et al. Prevalence of sexual dysfunctions and correlated conditions in a sample of Brazilian women—results of the Brazilian study on sexual behavior (BSSB). *Int J Impot Res* 2004;16:160-166.
- 26. Hayes RD, Dennerstein L, Bennett CM, et al. Relationship between hypoactive sexual desire disorder and aging. *Fertil Steril* 2007;87:107-112.
- 27. Peixoto MM, Nobre P. Prevalence and sociodemographic predictors of sexual problems in Portugal: A population-based study with women aged 18 to 79 years. *J Sex Marital Ther* 2015;41:169-180.
- 28. Rosen RC, Shifren JL, Monz BU, et al. Correlates of sexually-related personal distress in women with low sexual desire. *J Sex Med* 2009;6:1549-1560.
- 29. Laumann EO, Glasser DB, Neves RCS, et al. A population-based survey of sexual activity, sexual problems and associated help-seeking behavior patterns in

- mature adults in the United States of America. *Int J Impot Res* 2009;21:171-178.
- 30. Eplov L, Giraldi A, Davidsen M, et al. Sexual desire in a nationally representative Danish population. *J Sex Med* 2007;4:47-56.
- 31. Mercer CH, Fenton KA, Johnson AM, et al. Who reports sexual function problems?

  Empirical evidence from Britain's 2000 National Survey of Sexual Attitudes and

  Lifestyles. Sex Transm Infect 2005;81:394-399.
- 32. Park A, Bryson C, Clery E, et al. British social attitudes 30. London: NatCen 2013.
- 33. Bodenmann G, Ledermann T, Blattner D, et al. Associations among everyday stress, critical life events, and sexual problems. *J of Nerv Ment Dis* 2006;194:494-501.
- 34. Gerressu M, Mercer CH, Graham CA, et al. Prevalence of masturbation of associated factors in a British national probability survey. *Arch Sex Behav* 2008;37:266-278.
- 35. Laumann EO, Paik A, Rosen RC. Sexual dysfunctions in the United States:

  Prevalence and predictors. *JAMA* 1999;281:537-544.
- 36. Janssen E, McBride KR, Yarber W, et al. Factors that influence sexual arousal in men: A focus group study. *Arch Sex Behav* 2008;37:252-265.
- 37. Murray S, Milhausen RR, Graham CA, et al. A qualitative exploration of factors that affect sexual desire among men aged 30 to 65 in long-term relationships. *J Sex*Res 2016;doi 10.1080/00224499.2016.1168352
- 38. Çayan S, Bozlu M, Canpolat B, et al. The assessment of sexual functions in women with male partners complaining of erectile dysfunction: does treatment of

- male sexual dysfunction improve female partner's sexual functions? *J Sex Marital Ther* 2004;30:333-341.
- 39. Fisher WA, Rosen RC, Eardley I, et al. Experience of female partners of men with erectile dysfunction: The female experience of men's attitudes to life events and sexuality (FEMALES) study. *J Sex Med* 2005;2:675-668.
- 40. Willoughby BJ, Farero AM, Busby DM. Exploring the effects of sexual desire discrepancy among married couples. *Arch Sex Behav* 2014;43:551-562.
- 41. Hawes ZC, Wellings K, Stephenson J. First heterosexual intercourse in the United Kingdom: A review of the literature. *J Sex Res* 2010;47:137-152.
- 42. Laumann EO, Nicolosi A, Glasser DB, et al. Sexual problems among women and men aged 40–80 years: Prevalence and correlates identified in the Global Study of Sexual Attitudes and Behaviors. *Int J Impot Res* 2005;17:39-57.
- 43. Park A, Clery E, Curtice J, et al. *British social attitudes: The 28th report*. London, England: NatCen 2012.
- 44. Christensen BS, Grønbæk M, Osler M, et al. Sexual dysfunctions and difficulties in Denmark: Prevalence and associated sociodemographic factors. *Arch Sex Behav* 2011;40:121-132.
- 45. Graham CA, Boynton PM, Gould K. Women's sexual desire: Challenging narratives of dysfunction. *Eur Psychol*, in press.
- 46. Woloshin S, Schwartz LM. US Food and Drug Administration approval of flibanserin: Even the Score does not add up. *JAMA Intern Med* 2016; doi: 10.1001/jamainternmed.2016.0073
- 47. Hart G, Wellings K. Sexual behaviour and its medicalisation: In sickness and in health. BMJ 2002;324:896-900.

- 48. Frühauf S, Gerger H, Schmidt HM, et al. Efficacy of psychological interventions for sexual dysfunction: a systematic review and meta-analysis. Arch Sex Behav 2013;42:915-933.
- 49. Brotto LA, Atallah CS, Johnson-Agbakwu C, et al. Psychological and interpersonal
- Agba

  .unction and dy

  JK indices of multiple dk

  .utuent countries easier. Health 2 50. Payne RA, Abel GA. UK indices of multiple deprivation-a way to make comparisons

Table 1: Factors associated with lacking interest in having sex for at least 3 months in the past year in sexually active men and women

			M	en					Wo	men			_
) 1	Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	p-value for interaction with sex <sup>a</sup>
2 All	4839, 5973	15.0%	(13.9-16.2)		· · · · ·	•	6669, 5755	34.2%	(32.8-35.5)			•	
Socio-demographics													
Age group						0.0471						< 0.0001	0.6733
16-24	1279, 936	11.5%	(9.4-14.0)	1	-		1662, 923	24.8%	(22.5-27.1)	1	-		
7 25-34	1376, 1238	14.6%	(12.7-16.6)	1.32	(1.00-1.73)		2236, 1246	31.9%	(29.8-34.1)	1.42	(1.22-1.66)		
35-44	719, 1298	17.2%	(14.5-20.4)	1.61	(1.19-2.18)		1050, 1290	36.8%	(33.7-40.1)	1.77	(1.48-2.13)		
9 45-54	630, 1186	15.3%	(12.5-18.7)	1.40	(1.01-1.95)		871, 1186	37.9%	(34.5-41.5)	1.86	(1.53-2.25)		
55-64	512, 849	16.5%	(13.4-20.2)	1.53	(1.10-2.13)		569, 755	38.8%	(34.5-43.2)	1.92	(1.55-2.39)		
1 65-74	323, 467	13.9%	(10.4-18.3)	1.22	(0.81-1.82)		281, 355	34.2%	(28.4-40.5)	1.58	(1.18-2.12)		
Index of Multiple Deprivation (quintiles) <sup>b</sup>						0.003						0.0316	0.0111
1	077 4270	42.00/	(44.5.45.5)	4		0.093	1240 1200	25.70/	(22.6.20.0)	4		0.0316	0.0111
(least deprived)	977, 1279	13.9%	(11.6-16.6)	1	-		1248, 1208	35.7%	(32.6-38.9)	1	- (0.75.4.40)		
S 2	962, 1264	13.0%	(10.8-15.6)	0.93	(0.69-1.25)		1290, 1208	33.6%	(30.6-36.7)	0.92	(0.76-1.13)		
7 3	942, 1169	18.0%	(15.2-21.2)	1.38	(1.04-1.85)		1299, 1116	30.1%	(27.2-33.2)	0.81	(0.66-0.99)		
3 - 4	967, 1184	15.3%	(12.8-18.3)	1.15	(0.86-1.55)		1384, 1137	35.9%	(33.0-39.0)	1.08	(0.89-1.30)		
5 (most deprived)	991, 1077	15.1%	(12.7-17.8)	1.14	(0.85-1.52)		1448, 1086	35.3%	(32.4-38.3)	1.06	(0.87-1.28)		
Education level <sup>c</sup>						0.0083						0.2453	0.2914
Left school aged 17+	2862, 3464	13.5%	(12.1-15.1)	1	-		4150, 3406	32.7%	(31.0-34.5)	1	-		
R Left School at 10	1873, 2437	17.2%	(15.3-19.4)	1.31	(1.07-1.60)		2409, 2287	36.6%	(34.4-38.9)	1.08	(0.95-1.23)		
Employment status						0.0086						0.0003	0.0766
Employed	3211, 4254	14.7%	(13.3-16.1)	1	-		3871, 3517	34.6%	(32.9-36.4)	1	-		
Full-time education	542, 431	12.6%	(8.8-17.5)	0.98	(0.64-1.51)		693, 423	22.5%	(19.0-26.4)	0.70	(0.55-0.89)		
7 Unemployed	707, 723	19.6%	(16.3-23.4)	1.44	(1.12-1.86)		1681, 1282	36.1%	(33.4-39.0)	1.11	(0.96-1.28)		
Retired	375, 562	13.6%	(10.4-17.7)	0.75	(0.52-1.09)		415, 524	35.8%	(31.0-40.9)	0.75	(0.57-0.99)		
Practises religion at least						0.460=						0.000	0.0055
once a month			/			0.1687			/aa a aa = '	_		0.0082	0.9966
No No	4283, 5179	15.3%	(14.1-16.6)	1	-		5659, 4754	34.8%	(33.3-36.3)	1	-		
Yes	521, 748	12.9%	(10.0-16.4)	0.81	(0.60-1.09)		956, 945	30.7%	(27.5-34.2)	0.79	(0.67-0.94)		

 Table 1 cont.

j 			N	1en					Wo	men			_
3	Denom.	~	(0.50/.01)	Age- adjusted	(050/01)		Denom.	0/	(0.50/.01)	Age- adjusted	(050/01)		p-value for interaction
0	(unwt, wt)	%	(95%CI)	OR	(95%CI)	p-value	(unwt, wt)	%	(95%CI)	OR	(95%CI)	p-value	with sex <sup>a</sup>
1 Health													
2 Self-reported general health 3 Very good/Good						<0.0001						<0.0001	0.1890
very good/Good	4123, 5055	13.4%	(12.2-14.6)	1	-		5683, 4851	32.3%	(30.9-33.8)	1	-		
5 Fair	580, 745	21.9%	(18.3-25.8)	1.8	(1.41-2.30)		780, 709	42.2%	(38.2-46.3)	1.45	(1.21-1.75)		
Bad/very bad	135, 171	33.9%	(25.3-43.6)	3.29	(2.14-5.06)		206, 195	49.9%	(42.2-57.7)	1.93	(1.40-2.67)		
7 Difficulty walking up stairs													
because of a health problem						<0.0001						0.0497	0.1179
9 No difficulty	4475, 5460	14.1%	(12.9-15.3)	1			6062, 5107	33.3%	(31.8-34.7)	1	-		
20 Some difficulty	278, 393	23.0%	(18.1-28.8)	1.8	(1.30-2.49)		450, 482	39.2%	(34.4-44.2)	1.15	(0.92-1.43)		
Much difficulty/unable to do													
this	86, 120	30.9%	(20.9-43.0)	2.68	(1.57-4.57)		157, 166	47.0%	(38.0-56.1)	1.55	(1.06-2.25)		
23 Longstanding illness or						0.0004						0.0004	0.4040
disability						<0.0001			,,			<0.0001	0.1348
No No	3585, 4259	12.8%	(11.6-14.2)	1	-		4843, 4026	31.6%	(30.0-33.2)	1	-		
26 Yes	1253, 1713	20.5%	(18.1-23.1)	1.76	(1.44-2.16)		1825, 1729	40.1%	(37.5-42.8)	1.35	(1.17-1.55)		
7 Number of comorbid													
8 conditions <sup>d</sup>						<0.0001						<0.0001	0.7951
29 0	3453, 3994	12.8%	(11.5-14.1)	1	-		4357, 3536	29.9%	(28.2-31.5)	1	-		
1	939, 1329	18.9%	(16.2-21.9)	1.64	(1.30-2.06)		1555, 1416	38.6%	(35.9-41.5)	1.42	(1.23-1.64)		
>=2	446, 650	21.0%	(17.0-25.6)	1.91	(1.41-2.60)		755, 802	45.1%	(41.2-49.1)	1.75	(1.45-2.13)		
Depressive symptoms <sup>e</sup>						< 0.0001						< 0.0001	0.6249
No No	4383, 5471	13.5%	(12.4-14.8)	1	-		5885, 5149	31.7%	(30.2-33.1)	1	-		
yes	449, 495	31.3%	(26.4-36.7)	2.95	(2.26-3.85)		780, 602	55.2%	(51.0-59.5)	2.79	(2.32-3.37)		
6 Treated for depression, past y	,		( ,		(======================================	<0.0001	,	2 · ·	(======================================		( 2.37)	<0.0001	0.2447
87 No		14.0%	(12.9-15.2)	1	_	.0.0001	5770, 5040	31.7%	(30.2-33.2)	1	_	.0.0001	0.2 , , ,
88 Yes	313, 342	31.5%	(25.7-38.0)	2.82	(2.08-3.83)		897, 713	51.4%	(47.6-55.2)	2.32	(1.96-2.75)		
39	313, 342	31.3/0	(23.7-36.0)	2.02	(2.00-3.03)		037,713	J1.4/0	(47.0-33.2)	۷.۵۷	(1.30-2.73)		

Table 1 cont.

3 - 7 -				N	⁄len					Wo	men			_
, 3 9 10		Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	p-value for interaction with sex <sup>a</sup>
_	Menopausal status	(0.11010)		(00/00.)	<u> </u>	(00,00.)	P	(0.11000)	,-	(55755.)		(00/00.)	0.9326	
12	Not menopausal							5485, 4187	32.3%	(30.9-33.8)	1	_	0.5520	
13	Menopausal							1167, 1548	38.9%	(36.0-41.9)	0.99	(0.79-1.24)		
14	Circumcised						0.5951	1107, 1370	30.370	(30.0 11.3)	0.55	(0.73 1.2 1)		
15	No	3909, 4728	15.1%	(13.8-16.4)	1	_	0.5551							
16	Yes	857, 1166	14.5%	(12.0-17.4)	0.94	(0.73-1.20)								
17_ 1Ω	Sexual behaviour	037, 1100	14.570	(12.0 17.4)	0.54	(0.73 1.20)								
_	Number of occasions of sex,													
-	past 4 weeks						<0.0001						< 0.0001	0.4778
21	0	1013, 1163	20.7%	(17.8-23.8)	1	_		1408, 1245	42.9%	(39.9-45.9)	1	-		
22	1-2	1160, 1566	18.7%	(16.2-21.5)	0.89	(0.69-1.14)		1481, 1373	39.6%	(36.7-42.5)	0.89	(0.75-1.05)		
23	3-4	870, 1168	12.4%	(10.1-15.1)	0.54	(0.41-0.73)		1240, 1130	33.8%	(30.7-37.0)	0.7	(0.58-0.85)		
24	5+	1617, 1869	9.2%	(7.8-11.0)	0.39	(0.30-0.51)		2078, 1655	22.6%	(20.5-24.8)	0.41	(0.34-0.49)		
25	Masturbation, past 4 weeks					,	0.0458						0.0038	0.0005
26 27	No	1297, 1828	13.7%	(11.8-15.8)	1	-		4032, 3612	36.0%	(34.3-37.7)	1	-		
2 <i>1</i> 28	Yes	3531, 4132	15.6%	(14.2-17.0)	1.24	(1.00-1.52)		2615, 2114	30.8%	(28.7-33.0)	0.83	(0.73-0.94)		
20	No. of sexual partners, past	,		,		,				,		,		
	year <sup>f</sup>						0.5348						0.0038	0.0183
31	1	3573, 4824	15.0%	(13.7-16.3)	1	-		5440, 5012	35.3%	(33.8-36.8)	1	-		
32	2	539, 513	16.2%	(12.9-20.3)	1.14	(0.86-1.52)		570, 364	28.2%	(23.9-32.8)	0.80	(0.63-1.01)		
33	3+	718, 627	13.6%	(11.1-16.6)	0.94	(0.72-1.22)		642, 366	24.8%	(21.0-29.0)	0.70	(0.56-0.88)		
34	Paid for sex, past year						0.7167							
35	No	4774, 5896	15.0%	(13.9-16.2)	1	-								
36	Yes	64, 75	13.4%	(6.8-24.7)	0.87	(0.41-1.84)								
~×	Ever taken drugs to assist													
39	sexual performance						0.0175						0.0666	0.8967
40	No	4188, 5180	14.4%	(13.2-15.7)	1	-		6478, 5624	34.0%	(32.6-35.4)	1	-		
10 41_	Yes	636, 776	19.0%	(15.7-22.8)	1.36	(1.06-1.76)		184, 124	40.0%	(32.0-48.5)	1.39	(0.98-1.96)		

 Table 1 cont.

			N	len					Wo	men			
3	Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	p-value for interaction with sex <sup>a</sup>
1 Relationship context	(		<b>V</b> = 2 · · · · · · · · · · · · · · · · · ·		(		1. 7 7	-	(		<b>( )</b>		
2 Relationship status						0.0383						<0.0001	0.0001
3 Living with partner	2708, 4266	15.5%	(14.1-17.1)	1	-		3967, 4168	37.9%	(36.3-39.7)	1	_		
4 In a steady relationship, not	ŕ						,		,				
5 living together	947, 760	12.0%	(9.6-14.8)	0.76	(0.57-1.00)		1360, 790	22.6%	(20.2-25.2)	0.51	(0.43-0.60)		
Not in a steady relationship,													
but previously cohabited	446, 388	18.2%	(14.6-22.5)	1.22	(0.91-1.62)		752, 462	28.9%	(25.4-32.8)	0.68	(0.56-0.83)		
Not in a steady relationship,													
never cohabited	727, 551	12.4%	(9.9-15.5)	0.8	(0.58-1.09)		580, 330	21.3%	(17.6-25.5)	0.49	(0.38-0.63)		
Duration of most recent						0.404						10.0001	-0.0001
sexual relationship	1160 1060	40.00/	(44.0.45.0)	4		0.494	4505.000	24 50/	(40.4.04.4)	_		<0.0001	<0.0001
23 '	1462, 1260	13.0%	(11.0-15.3)	1	-		1597, 998	21.5%	(19.1-24.1)	1	-		
<b>.</b> 4	1247, 1227	15.3%	(13.2-17.7)	1.21	(0.94-1.55)		1758, 1148	28.5%	(26.1-31.0)	1.45	(1.20-1.76)		
.0	1065, 1484	14.9%	(12.6-17.5)	1.14	(0.86-1.50)		1774, 1458	39.8%	(37.2-42.4)	2.37	(1.96-2.86)		
26 Over 15 years	1004, 1904	16.1%	(13.9-18.7)	1.19	(0.87-1.63)		1445, 2036	40.0%	(37.3-42.7)	2.31	(1.84-2.91)		
27 Always easy to talk about						0.0001						10.0001	0.0403
8 sex with partners <sup>g</sup>	4605 4000	44 50/	(0.7.42.5)	4		0.0001	1746 1451	22.60/	(20.4.25.4)	4		<0.0001	0.0182
Yes	1695, 1899	11.5%	(9.7-13.5)	1	-		1746, 1451	22.6%	(20.4-25.1)	1	-		
No/other	3122, 4048	16.7%	(15.3-18.2)	1.53	(1.23-1.90)		4907, 4289	38.0%	(36.4-39.6)	2.06	(1.77-2.39)		
Happy with relationship <sup>h</sup>						<0.0001						<0.0001	0.8679
Yes	1951, 2791	12.6%	(11.0-14.4)	1	-		2736, 2601	31.5%	(29.5-33.6)	1	-		
34 Other	995, 1430	21.0%	(18.4-23.9)	1.85	(1.47-2.32)		1640, 1617	45.4%	(42.7-48.1)	1.79	(1.55-2.08)		
Participant does not share san	ne level of												
interest in sex as partner						0.2339						<0.0001	<0.0001
No/other	2270, 3233	15.0%	(13.4-16.7)	1	-		3211, 3064	27.2%	(25.4-29.0)	1	-		
38	676 000	47.46/	(4.4.2.20.4)	4 47	(0.00.4.54)		1166 1155	C2 F0/	/EO 2 CE 7\	4.57	(2.07.5.20)		
Yes	676, 988	17.1%	(14.2-20.4)	1.17	(0.90-1.51)		1166, 1155	62.5%	(59.2-65.7)	4.57	(3.87-5.38)		

Table 1 cont.

7 8				M	en					Wo	men			_
9 10		Denom.		(0.50(.01)	Age- adjusted	(050(51)		Denom.	04	(0.50/.01)	Age- adjusted	(050(51)		p-value for interaction
11		(unwt, wt)	%	(95%CI)	OR	(95%CI)	p-value	(unwt, wt)	%	(95%CI)	OR	(95%CI)	p-value	with sex <sup>a</sup>
	Participant does not share san	ne sexual					0.4100						<0.0001	<0.0001
	likes & dislikes as partner	2650 2002	45.20/	(42.0.45.0)	4		0.4188	4070 2000	24.00/	(22.2.26.6)	4		<0.0001	<0.0001
14 15	•	2650, 3803	15.3%	(13.8-16.9)	1	-		4079, 3908	34.9%	(33.3-36.6)	1	-		
		296, 418	17.3%	(13.0-22.5)	1.16	(0.81-1.66)		297, 310	61.0%	(54.6-67.2)	2.91	(2.22-3.83)		
17	Partner experienced sexual di	fficulties in					0.0136						<b>20.0001</b>	0.4140
18	• •			(			0.0136			(22 4 22 2)			<0.0001	0.4140
19	140/Other	2431, 3454	14.6%	(13.1-16.2)	1			3726, 3498	34.8%	(33.1-36.6)	1	<del>-</del>		
20	165	513, 763	19.4%	(15.8-23.6)	1.41	(1.07-1.86)		649, 719	46.8%	(42.5-51.1)	1.60	(1.32-1.94)		
21	bocs not reer emotionally clos	se to partner					2 2225						0.0004	0.5050
22	when have sex						0.0006						<0.0001	0.5972
23	No/otner	2904, 4165	15.1%	(13.7-16.6)	1	-		4263, 4108	35.9%	(34.3-37.6)	1	-		
24	Yes	42, 56	39.9%	(23.6-58.8)	3.74	(1.76-7.93)		112, 109	73.0%	(62.8-81.3)	4.80	(2.99-7.69)		
	<u>Lifestyle</u>													
26	1+ child(ren) aged <5 in													
27	household						0.9088						<0.0001	0.0216
28		4100, 5015	15.2%	(13.9-16.5)	1	-		4997, 4671	33.1%	(31.6-34.6)	1	-		
29		727, 941	14.5%	(11.9-17.6)	0.98	(0.76-1.28)		1664, 1074	38.6%	(36.0-41.4)	1.55	(1.34-1.79)		
30													0.0114	
31								4227, 4122	36.2%	(34.6-37.9)	1	-		
32								437, 273	41.7%	(36.6-47.1)	1.36	(1.07-1.72)		
33								ŕ				,		
34													0.05	
35								3759, 3838	34.8%	(33.1-36.5)	1	-		
36	Voc							2806, 1831	33.0%	(30.9-35.1)	1.15	(1.00-1.33)		
37										(0010 0012)		(=:===		
38 39		v												
39 40		•					<0.0001						0.0004	0.0651
40		4147, 5127	14.0%	(12.8-15.3)	1	-		5455, 4861	33.4%	(31.9-34.9)	1	-	-	
42	, , ,	677, 830	21.4%	(18.1-25.0)	1.67	(1.33-2.10)		1206, 888	38.2%	(35.1-41.5)	1.32	(1.13-1.54)		
43	, ,	077, 030	21.4/0	(10.1-23.0)	1.07	(1.55-2.10)		1200, 000	30.2/0	(33.1-41.3)	1.52	(1.15-1.54)		
44														

46

47

Table 1 cont.

7			M	len					Wo	men			_
9 10 11	Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	p-value for interaction with sex <sup>a</sup>
12 Ever experienced non-					-				-				
13 volitional sex						0.0010						<0.0001	0.3164
14 No	4705, 5824	14.7%	(13.6-16.0)	1	-		5815, 5055	32.8%	(31.4-34.2)	1	-		
15 Yes/Don't know	133, 148	26.1%	(18.9-34.9)	2.07	(1.34-3.18)		848, 695	44.3%	(40.5-48.3)	1.66	(1.40-1.97)		
16 Sexual competence at first													
17 sex <sup>i</sup> 18 Not competent						0.0706						<0.0001	0.1797
10		16.2%	(14.6-17.9)	1			3438, 2927	37.6%	(35.7-39.5)	1	-		
Competent	2302, 2784	13.7%	(12.1-15.4)	0.84	(0.69-1.01)		3097, 2716	30.3%	(28.4-32.3)	0.73	(0.65-0.83)		
24 Number of other sexual respe	onse					.0.0004						.0.0004	0.0045
22 problems experienced	2222 2245	44 70/	(40 5 40 4)			<0.0001	4077 0750	25 22/	(22.2.2.2)	_		<0.0001	0.0015
23	3208, 3945	11.7%	(10.5-13.1)	1	-		4377, 3759	25.3%	(23.8-26.9)	1	-		
24	1061, 1350	10.9%	(9.0-13.2)	0.91	(0.71-1.17)		1217, 1087	34.8%	(31.7-38.0)	1.55	(1.32-1.82)		
252+	570, 678	42.5%	(37.9-47.2)	5.58	(4.41-7.04)		1075, 909	69.8%	(66.5-72.9)	6.91	(5.82-8.21)		
26 Attitudes													
27 People are under pressure						0.0115						0.0004	0.7070
28 to have sex	4700 0064	10.40/	(44.4.45.0)	_		0.0115	1051 1550	20.004	(25.0.24.0)	_		0.0001	0.7970
29 Else	1799, 2264	13.1%	(11.4-15.0)	1	-		1851, 1570	29.3%	(26.8-31.9)	1	-		
30 Strongly agree/agree	3038, 3707	16.2%	(14.7-17.8)	1.29	(1.06-1.57)		4817, 4185	36.0%	(34.4-37.6)	1.34	(1.16-1.54)		
31 People want less sex as they 32 age						<0.0001						<0.0001	0.9443
00	2012 2172	11.4%	(10 2 12 9)	1		<0.0001	4044, 3278	27.8%	(26.2.20.4)	1		<0.0001	0.3443
24	2943, 3472		(10.2-12.8)	1	- (1 (1 2 22)		,		(26.2-29.4)	1	- (1 (2 2 10)		
35 Strongly agree/agree 35 Men have a naturally higher s		20.0%	(18.0-22.2)	1.93	(1.61-2.32)		2624, 2477	42.6%	(40.4-44.8)	1.85	(1.63-2.10)		
than women	ex unve					<0.0001						<0.0001	<0.0001
37 Else	2788, 3441	18.0%	(16.4-19.7)	1	_	<b>\0.0001</b>	3351, 2830	26.0%	(24.3-27.8)	1	_	10.0001	\0.0001
38 Strangly agree /agree	2049, 2530	10.9%	(9.4-12.6)	0.56	(0.46-0.68)		3317, 2925	42.0%	(40.0-44.1)	2.04	(1.80-2.31)		
39	2043, 2330	10.5%	(3.4-12.0)	0.30	(0.40-0.08)	0.7069	3311, 2323	42.0%	(40.0-44.1)	2.04	(1.00-2.51)	0.1807	0.4835
Too much sex in the media	1000 2200	14.00/	(12.0.10.0)	1		0.7069	2004 1649	24 70/	(20.2.24.2)	1		0.1007	0.4835
41 Else	1986, 2296	14.6%	(12.8-16.6)	1	- (0.05.4.36)		2091, 1618	31.7%	(29.3-34.2)	1	- (0.06.4.36)		
42 Strongly agree/agree	2851, 3675	15.3%	(13.8-16.9)	1.04	(0.85-1.26)		4577, 4137	35.1%	(33.5-36.8)	1.10	(0.96-1.26)		

Denominator is those aged 16-74 years with at least one partner in the past year. Unwt, unweighted; wt, weighted

By value for interaction to determine whether the magnitude of association between each variable and lack of interaction.

- <sup>a</sup> P-value for interaction to determine whether the magnitude of association between each variable and lack of interest in sex differs between men and women
- b IMD is a multidimensional measure of area (neighbourhood)-level deprivation based on the participant's postcode. IMD scores for England, Scotland and Wales were adjusted before being combined and assigned to quintiles, using a method by Payne and Abel (50).
- <sup>c</sup> Participants aged ≥17 years.
- 11 d Includes arthritis, heart attack, coronary heart disease, angina, other forms of heart disease, hypertension, stroke, diabetes, broken hip or pelvis, bone or hip replacement ever, backache lasting longer than 3 months, any other muscle or bone disease lasting longer than 3 months, depression, cancer and any thyroid condition treated in the past year.
- Participants were asked whether they had often been bothered by feeling down, depressed, or hopeless in the past 2 weeks, and whether they had often been bothered by little interest or pleasure in doing things in the past 2 weeks, using a validated two-question patient health questionnaire (PHQ-2).
  - <sup>f</sup> Opposite and/or same-sex partners
  - gother means easy with a husband or wife or regular partner, but difficult with a new partner; easy with a new partner, but difficult with a husband or wife or regular partner; difficult with any partner, it depends, sometimes easy, and sometimes difficult.
  - h Participants were asked to rate how happy they were in their relationship from 1 (very happy) to 7 (very unhappy); responses of 1 or 2 were regarded as denoting participants who were happy with their relationship.
  - A constructed variable to measure readiness, combining consensuality, autonomy of decision making, timing and use of effective contraception
- 22 Sexual response problems (for at least 3 months in past year): lacked enjoyment in sex, felt anxious during sex, felt physical pain as a result of sex, felt no excitement or arousal during sex, 23 difficulty in reaching climax, reached a climax more quickly than you would like, trouble getting or keep an erection (men), uncomfortably dry vagina (women)

Table 2: Factors associated with lacking interest in having sex for at least 3 months in the past year and being distressed about it in sexually active men and women

			M	en					Wor	nen			_
	Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	p-value fo interactio with sex
All	4839, 5973	8.2%	(7.4-9.1)				6669, 5755	20.8%	(19.6-22.0)				
Socio-demographics													
Age group						0.0011						< 0.0001	0.8971
16-24	1279, 936	4.8%	(3.7-6.4)	1	-		1662, 923	15.2%	(13.4-17.3)	1	-		
25-34	1376, 1238	8.0%	(6.7-9.5)	1.7	(1.19-2.41)		2236, 1246	20.9%	(19.0-22.8)	1.47	(1.22-1.76)		
35-44	719, 1298	9.6%	(7.5-12.3)	2.09	(1.40-3.13)		1050, 1290	22.9%	(20.3-25.7)	1.65	(1.34-2.04)		
45-54	630, 1186	9.7%	(7.4-12.6)	2.11	(1.38-3.22)		871, 1186	23.3%	(20.4-26.6)	1.69	(1.35-2.13)		
55-64	512, 849	9.4%	(7.0-12.6)	2.04	(1.30-3.21)		569, 755	21.8%	(18.3-25.8)	1.55	(1.20-2.01)		
65-74	323, 467	5.5%	(3.4-8.6)	1.13	(0.65-1.99)		281, 355	16.5%	(12.4-21.7)	1.10	(0.76-1.59)		
Index of Multiple Deprivation (quintiles) <sup>b</sup>						0.8339						0.0938	0.4592
1 (least deprived)	977, 1279	8.1%	(6.2-10.4)	1	-		1248, 1208	23.3%	(20.7-26.1)	1	-		
2	962, 1264	7.4%	(5.7-9.6)	0.92	(0.62-1.36)		1290, 1208	20.8%	(18.2-23.5)	0.87	(0.69-1.09)		
3	942, 1169	8.3%	(6.4-10.6)	1.05	(0.71-1.55)		1299, 1116	19.6%	(17.1-22.4)	0.82	(0.65-1.03)		
4	967, 1184	8.8%	(6.9-11.1)	1.14	(0.78-1.66)		1384, 1137	21.9%	(19.3-24.7)	0.95	(0.76-1.18)		
5 (most deprived)	991, 1077	8.6%	(6.7-10.9)	1.12	(0.75-1.65)		1448, 1086	18.2%	(15.9-20.6)	0.75	(0.60-0.94)		
Education level <sup>c</sup>						0.4958						0.7324	0.4496
Left school aged 17+	2862, 3464	7.9%	(6.8-9.2)	1	-		4150, 3406	20.8%	(19.4-22.4)	1	-		
Left school at 16	1873, 2437	8.8%	(7.5-10.4)	1.09	(0.85-1.41)		2409, 2287	21.1%	(19.3-23.1)	0.97	(0.83-1.14)		
Employment status						0.0001						0.0003	0.1244
Employed	3211, 4254	8.3%	(7.3-9.5)	1	-		3871, 3517	21.6%	(20.1-23.2)	1	-		
Full-time education	542, 431	4.9%	(2.8-8.6)	0.74	(0.38-1.44)		693, 423	14.8%	(11.8-18.4)	0.75	(0.56-1.01)		
Unemployed	707, 723	12.1%	(9.5-15.3)	1.56	(1.14-2.13)		1681, 1282	22.3%	(19.9-24.9)	1.07	(0.90-1.27)		
Retired	375, 562	4.9%	(3.1-7.6)	0.41	(0.23-0.71)		415, 524	16.8%	(13.4-20.8)	0.57	(0.41-0.79)		
Practises religion at least					,								
once a month						0.1638						0.0167	0.8143
No	4283, 5179	8.5%	(7.5-9.5)	1	-		5659, 4754	21.5%	(20.2-22.9)	1	-		
Yes	521, 748	6.4%	(4.4-9.4)	0.73	(0.48-1.13)		956, 945	18.0%	(15.3-20.9)	0.78	(0.63-0.96)		
}													

Table 2 cont.

			N	1en					Wo	men			_
	Denom.	0/	(050/01)	Age- adjusted OR	(050/61)		Denom.	0/	(050/01)	Age- adjusted OR	(050/01)		p-value for interaction with sex <sup>a</sup>
<u> </u>	(unwt, wt)	%	(95%CI)	UK	(95%CI)	p-value	(unwt, wt)	%	(95%CI)	UK	(95%CI)	p-value	with sex
1 <u>Health</u> 2 Self-reported general health						-0.0001						10.0001	0.0000
^	4422 5055	7.00/	(6.1.7.0)	4		<0.0001	EC02 40E4	40.20/	(40.0.20.5)	4		<0.0001	0.0969
1	4123, 5055	7.0%	(6.1-7.9)	1	-		5683, 4851	19.2%	(18.0-20.5)	1	-		
5	580, 745	13.3%	(10.5-16.8)	2.04	(1.50-2.78)		780, 709	27.9%	(24.3-31.9)	1.60	(1.30-1.97)		
	135, 171	22.6%	(15.3-32.1)	3.85	(2.31-6.40)		206, 195	33.4%	(26.3-41.4)	2.05	(1.45-2.91)		
7 Difficulty walking up stairs						0.0004						0.000=	0.4550
8 because of a health problem						0.0001						0.0085	0.1553
9 '	1475, 5460	7.6%	(6.7-8.6)	1			6062, 5107	20.1%	(18.9-21.4)	1	-		
.0	278, 393	12.3%	(8.8-17.0)	1.67	(1.11-2.52)		450, 482	24.1%	(20.0-28.7)	1.21	(0.93-1.59)		
1 Much difficulty/unable to do													
2 this	86, 120	22.2%	(13.5-34.2)	3.36	(1.79-6.32)		157, 166	32.3%	(24.3-41.5)	1.81	(1.21-2.70)		
3 Longstanding illness or						0.0004						0.0004	0.0045
4 disability			,			<0.0001						<0.0001	0.0345
.0	3585, 4259	6.5%	(5.6-7.5)	1	-		4843, 4026	18.7%	(17.4-20.0)	1	-		
. •	1253, 1713	12.5%	(10.6-14.8)	2.09	(1.60-2.74)		1825, 1729	25.7%	(23.4-28.2)	1.48	(1.27-1.74)		
7 Number of comorbid													
8 conditions <sup>d</sup>						<0.0001						<0.0001	0.5779
	3453, 3994	6.4%	(5.5-7.5)	1	-		4357, 3536	17.3%	(15.9-18.7)	1	-		
1	939, 1329	11.0%	(9.0-13.4)	1.88	(1.37-2.57)		1555, 1416	24.1%	(21.7-26.7)	1.54	(1.30-1.83)		
>=2	446, 650	13.3%	(10.1-17.4)	2.40	(1.61-3.59)		755, 802	30.5%	(26.8-34.4)	2.16	(1.74-2.69)		
3 Depressive symptoms <sup>e</sup>						< 0.0001						< 0.0001	0.0370
3	4383, 5471	6.8%	(6.0-7.7)	1	-		5885, 5149	18.6%	(17.4-19.8)	1	-		
4	449, 495	23.7%	(19.3-28.9)	4.36	(3.20-5.94)		780, 602	39.6%	(35.4-44.0)	2.94	(2.41-3.59)		
5 Yes 6 Treated for depression, past yea	- /	23.770	(13.3 20.3)	7.50	(3.20 3.34)	<0.0001	700,002	33.070	(33.4 44.0)	2.57	(2.71 3.33)	<0.0001	0.0371
		7 20/	(6 F 9 3)	1		\0.000I	E770 E040	10 50/	(17 2 10 0)	1		\U.UUUI	0.0371
0	4524, 5630	7.3%	(6.5-8.2)	1	- (2.74.5.25)		5770, 5040	18.5%	(17.3-19.8)	1	-		
9 Yes	313, 342	23.0%	(17.9-29.1)	3.81	(2.71-5.36)		897, 713	36.4%	(32.9-40.2)	2.54	(2.12-3.03)		

Pa	g
1 2 3 4 5 6 7 8 9 10	
11 12 13	ſ
14 15 16 17	(
18 19 20 21 22 23	<u> </u>
25 26 27 28 29 30	ſ
28 29 30 31 32 33	}
34 35 36	F
37 38 39 40 41	S
42 43 44 45	
46	

6				N	⁄len					Wor	men			
7 8 9 10		Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	p-value for interaction with sex <sup>a</sup>
11													0.9656	
12								5485, 4187	20.2%	(18.9-21.5)	1	-		
13	IVICIIOpaasai							1167, 1548	22.5%	(20.0-25.2)	1.01	(0.76-1.32)		
14	Circumcisea						0.4097							
15	NO.	3909, 4728	8.3%	(7.4-9.4)	1	-								
16 17	Voc	857, 1166	7.5%	(5.7-9.9)	0.87	(0.62-1.22)								
18		,		, ,										
	Number of occasions of sex,						<0.000							
	past 4 weeks						1						< 0.0001	0.5496
21	0	1013, 1163	10.3%	(8.3-12.7)	1	-		1408, 1245	23.2%	(20.7-26.0)	1	-		
22	1-2	1160, 1566	10.5%	(8.6-12.8)	1.02	(0.74-1.42)		1481, 1373	24.2%	(21.8-26.9)	1.06	(0.87-1.30)		
23	3-4	870, 1168	7.4%	(5.6-9.8)	0.71	(0.48-1.04)		1240, 1130	21.3%	(18.7-24.2)	0.91	(0.73-1.13)		
24	5+	1617, 1869	5.0%	(3.9-6.4)	0.46	(0.33-0.66)		2078, 1655	14.7%	(12.9-16.7)	0.58	(0.47-0.72)		
25	Masturbation, past 4 weeks	,		,		,	0.0164			,		,	0.7265	0.0309
26	No	1297, 1828	6.9%	(5.5-8.6)	1	-		4032, 3612	21.1%	(19.6-22.6)	1	-		
27	Yes	3531, 4132	8.8%	(7.7-9.9)	1.42	(1.07-1.88)		2615, 2114	20.3%	(18.4-22.2)	0.97	(0.84-1.13)		
28 29		0001, 1101	0.070	(/// 3/3)		(2107 2100)			20.570	(10): 11:1	0.57	(0.0 : 2.20)		
30	f						0.2466						0.0016	0.4744
31	1	3573, 4824	8.5%	(7.5-9.6)	1	-		5440, 5012	21.6%	(20.3-22.9)	1	-		
32	2	539, 513	6.3%	(4.3-9.1)	0.75	(0.49-1.14)		570, 364	16.7%	(13.3-20.6)	0.75	(0.57-0.99)		
33		718, 627	6.8%	(5.1-9.0)	0.82	(0.59-1.15)		642, 366	14.1%	(11.0-17.7)	0.62	(0.46-0.83)		
34	Paid for sex, past year			,		,	0.4865	,						
35	No	4774, 5896	8.2%	(7.4-9.2)	1	-								
36	Yes	64, 75	5.6%	(1.8-16.4)	0.66	(0.20-2.15)								
37	Ever taken drugs to assist	,	/-	( =)		(3.25 2.20)								
38	sexual performance						0.0022						0.1055	0.5305
39	No	4188, 5180	7.6%	(6.7-8.6)	1	-		6478, 5624	20.6%	(19.5-21.8)	1	-		
40 41		636, 776	12.1%	(9.5-15.4)	1.63	(1.19-2.23)		184, 124	25.9%	(19.2-33.9)	1.38	(0.93-2.05)		

Table 2 cont.

			M	en					Woı	men			_
0.	Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	p-value for interaction with sex <sup>a</sup>
1 Relationship context													
2 Relationship status						0.03						<0.0001	0.0307
<ul><li>3 Living with partner</li><li>4 In a steady relationship, not</li></ul>	2708, 4266	8.8%	(7.7-10.1)	1	-		3967, 4168	23.4%	(21.9-24.9)	1	-		
5 living together	947, 760	6.9%	(5.3-9.0)	0.78	(0.56-1.09)		1360, 790	15.4%	(13.4-17.7)	0.59	(0.49-0.71)		
Not in a steady relationship, but previously cohabited	446, 388	8.8%	(6.2-12.2)	1.00	(0.67-1.48)		752, 462	13.6%	(11.1-16.6)	0.51	(0.40-0.66)		
Not in a steady relationship, never cohabited	727, 551	4.7%	(3.3-6.8)	0.52	(0.34-0.81)		580, 330	11.0%	(8.2-14.5)	0.39	(0.28-0.55)		
Duration of most recent sexual relationship						0.0143						<0.0001	0.0719
3 1 year or less	1462, 1260	5.5%	(4.3-7.1)	1	-		1597, 998	11.2%	(9.4-13.2)	1	-		
Between 1 and 5 years	1247, 1227	9.0%	(7.3-11.0)	1.67	(1.18-2.36)		1758, 1148	18.5%	(16.5-20.7)	1.81	(1.44-2.29)		
5 Between 5 and 15 years	1065, 1484	9.3%	(7.5-11.6)	1.68	(1.17-2.43)		1774, 1458	25.2%	(23.0-27.6)	2.81	(2.23-3.55)		
6 Over 15 years	1004, 1904	8.8%	(7.1-10.8)	1.47	(0.97-2.22)		1445, 2036	23.8%	(21.5-26.2)	2.83	(2.13-3.75)		
7 Always easy to talk about 8 sex with partners <sup>8</sup>						0						<0.0001	0.4854
9 Yes	1695, 1899	4.8%	(3.8-6.0)	1	-		1746, 1451	11.4%	(9.7-13.2)	1	-		
0 No/other	3122, 4048	9.8%	(8.7-11.1)	2.15	(1.62-2.87)		4907, 4289	23.9%	(22.5-25.3)	2.43	(2.02-2.93)		
.1	,		,		,	< 0.000	,				,		
2 Happy with relationship <sup>h</sup>						1						<0.0001	0.9717
3 Yes	1951, 2791	7.1%	(5.9-8.6)	1	-		2736, 2601	18.6%	(16.9-20.4)	1	-		
4 Other	995, 1430	13.3%	(11.2-15.8)	2.01	(1.51-2.66)		1640, 1617	31.4%	(28.8-34.0)	2.00	(1.69-2.37)		
5 Participant does not share sar	me level of												
6 interest in sex as partner							0.0311						<0.0001
No/other	2270, 3233	8.5%	(7.2-10.0)	1	-		3211, 3064	15.0%	(13.6-16.4)	1	-		
9 Yes	676, 988	11.6%	(9.2-14.4)	1.41	(1.03-1.92)		1166, 1155	46.2%	(42.9-49.6)	4.91	(4.13-5.83)		

5	Table 2 cont.													
6				N	1en					Wor	men			_
8 9 10		Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	Denom. (unwt, wt)	%	(95%CI)	Age- adjusted OR	(95%CI)	p-value	p-value for interaction with sex <sup>a</sup>
11	Participant does not share same s		70	(33700.)	<u> </u>	(33700.)	p value	(37777)	,,,	(33700.)	<u> </u>	(337361)	p raide	With Sex
12							0.0975						<0.0001	0.0212
13		2650, 3803	8.9%	(7.7-10.2)	1	-		4079, 3908	22.1%	(20.6-23.6)	1	-		
14		296, 418	12.2%	(8.6-17.0)	1.43	(0.94-2.18)		297, 310	41.9%	(35.6-48.6)	2.55	(1.93-3.37)		
15	Partner experienced sexual difficu	ulties in past												
16	year						0.0027						<0.0001	0.6889
17		2431, 3454	8.3%	(7.2-9.6)	1	-		3726, 3498	22.1%	(20.6-23.7)	1	-		
18		513, 763	13.2%	(10.2-17.0)	1.68	(1.20-2.35)		649, 719	30.4%	(26.5-34.6)	1.58	(1.27-1.95)		
19		partner					0.0335						-0.0001	0.0220
20		2004 4465	0.40/	(7.0.40.2)	4		0.0225	4262 4400	22.00/	(24 5 24 4)	4		<0.0001	0.8228
21		2904, 4165	9.1%	(7.9-10.3)	1			4263, 4108	22.9%	(21.5-24.4)	1	-		
22		42, 56	21.0%	(10.2-38.3)	2.69	(1.15-6.29)		112, 109	47.0%	(36.4-57.8)	2.98	(1.92-4.63)		
	<u>Lifestyle</u>													
	1+ child(ren) aged <5 in household						0.1047						0.0004	0.0043
26		4400 5045	0.60/	(7.6.0.6)	4		0.1047	4007 4674	20.20/	(40.0.24.5)	4		0.0004	0.0042
27	, 110, 110116	4100, 5015	8.6%	(7.6-9.6)	1	-		4997, 4671	20.2%	(18.9-21.5)	1	-		
28	165, 17	727, 941	6.3%	(4.6-8.5)	0.75	(0.52-1.06)		1664, 1074	23.5%	(21.2-25.9)	1.34	(1.14-1.58)		
29	Pregnant in the last year												0.5927	
30								4227, 4122	21.8%	(20.4-23.4)	1	-		
31	Yes							437, 273	20.7%	(16.6-25.6)	0.92	(0.69-1.24)		
32														
33													0.1141	
34								3759, 3838	20.7%	(19.2-22.3)	1	-		
35								2806, 1831	20.9%	(19.1-22.7)	1.14	(0.97-1.35)		
36														
	Ever diagnosed with a sexually tra	ansmitted					0.000							0.0004
	infection						<0.0001						0.0002	0.0291
39		4148, 5128	7.3%	(6.5-8.3)	1	-		5455, 4861	20.0%	(18.7-21.3)	1	-		
40	i co (choladii B ciii doii)	677, 830	13.7%	(11.0-17.0)	2.02	(1.51-2.70)		1206, 888	25.1%	(22.3-28.1)	1.39	(1.16-1.65)		
41														

Table 2 cont.

6	Men							Women						
8 9		Denom.	9/	(05%(51)	Age- adjusted	(050/01)		Denom.	0/	(050/CI)	Age- adjusted	(050/CI)		p-value for interaction
10	Ever experienced non-volitional	(unwt, wt)	%	(95%CI)	OR	(95%CI)	p-value	(unwt, wt)	%	(95%CI)	OR	(95%CI)	p-value	with sex <sup>a</sup>
11	sex						< 0.0001						<0.0001	0.1143
13	No	4706, 5825	7.9%	(7.1-8.9)	1	-		5815, 5055	19.4%	(18.2-20.7)	1	_		
14	Yes/Don't know	133, 148	19.4%	(13.1-27.7)	2.83	(1.74-4.59)		848, 695	30.9%	(27.3-34.6)	1.86	(1.55-2.25)		
15				(====,		(====	0.4876	,		(=:::: :::)		(====,	<0.0001	0.0787
16	Not competent	2408, 3039	8.7%	(7.5-10.0)	1	_	01.070	3438, 2927	23.6%	(21.9-25.3)	1	_	1010001	0.0707
17	•	2302, 2784	7.8%	(6.6-9.2)	0.91	(0.71-1.18)		3097, 2716	17.7%	(16.1-19.3)	0.70	(0.61-0.81)		
18	Number of other sexual response		7.070	(0.0-3.2)	0.51	(0.71-1.10)		3037, 2710	17.770	(10.1-15.5)	0.70	(0.01-0.01)		
19		•					<0.0001						<0.0001	0.0262
20	0	3209, 3947	5.3%	(4.4-6.3)	1	-		4377, 3759	12.9%	(11.7-14.1)	1	-		
21	1	1061, 1350	6.1%	(4.7-7.8)	1.14	(0.81-1.59)		1217, 1087	21.7%	(19.0-24.6)	1.86	(1.53-2.26)		
22	2+	570, 678	29.7%	(25.4-34.4)	7.57	(5.68-10.10)		1075, 909	52.4%	(48.9-56.0)	7.48	(6.25-8.94)		
23 24	Attitudes													
24 25	People are under pressure													
26	to have sex						0.1437						< 0.0001	0.2192
27	Else	1799, 2264	7.4%	(6.0-9.0)	1	-		1851, 1570	16.4%	(14.5-18.5)	1	-		
28	Strongly agree/agree	3038, 3707	8.7%	(7.6-9.9)	1.21	(0.94-1.57)		4817, 4185	22.4%	(21.0-23.9)	1.47	(1.24-1.74)		
29														
30	age						0.0005						<0.0001	0.8045
31	Else	2943, 3472	6.7%	(5.7-7.8)	1	-		4044, 3278	17.1%	(15.8-18.6)	1	-		
32	Strongly agree/agree	1894, 2499	10.3%	(8.8-12.1)	1.58	(1.22-2.04)		2624, 2477	25.6%	(23.7-27.6)	1.64	(1.43-1.90)		
	Men have a naturally higher s	ex drive												
	than women							<0.0001						<0.0001
35	Else	2788, 3441	10.2%	(8.9-11.5)	1	-		3351, 2830	15.9%	(14.4-17.4)	1	-		
36 37	Strongly agree/agree	2049, 2530	5.5%	(4.4-6.9)	0.52	(0.39-0.68)		3317, 2925	25.5%	(23.8-27.4)	1.81	(1.56-2.09)		
38	Too much sex in the media						0.3477						0.0693	0.8856
39	Else	1986, 2296	7.5%	(6.3-9.0)	1	-		2091, 1618	18.8%	(16.8-20.9)	1	-		
40	Strongly agree/agree	2851, 3675	8.6%	(7.5-9.9)	1.13	(0.88-1.46)		4577, 4137	21.6%	(20.2-23.0)	1.16	(0.99-1.36)		

Denominator is those aged 16-74 years with at least one partner in the past year. Unwt, unweighted; wt, weighted 

P-value for interaction to determine whether the magnitude of association between each variable and lack of interest in sex differs between men and women

- <sup>b</sup> IMD is a multidimensional measure of area (neighbourhood)-level deprivation based on the participant's postcode. IMD scores for England, Scotland and Wales were adjusted before being combined and assigned to quintiles, using a method by Payne and Abel (50).
- <sup>c</sup> Participants aged ≥17 years.
- 9 Includes arthritis, heart attack, coronary heart disease, angina, other forms of heart disease, hypertension, stroke, diabetes, broken hip or pelvis, bone or hip replacement ever, backache lasting longer than 3 months, any other muscle or bone disease lasting longer than 3 months, depression, cancer and any thyroid condition treated in the past year.
- 11 e Participants were asked whether they had often been bothered by feeling down, depressed, or hopeless in the past 2 weeks, and whether they had often been bothered by little interest or pleasure in doing things in the past 2 weeks, using a validated two-question patient health questionnaire (PHQ-2).
- 13 <sup>†</sup> Opposite and/or same-sex partners
- 14 g Other means easy with a husband or wife or regular partner, but difficult with a new partner; easy with a new partner, but difficult with a husband or wife or regular partner; difficult with any partner, it depends, sometimes easy, and sometimes difficult.
  - h Participants were asked to rate how happy they were in their relationship from 1 (very happy) to 7 (very unhappy); responses of 1 or 2 were regarded as denoting participants who were happy with their relationship.
  - A constructed variable to measure readiness, combining consensuality, autonomy of decision making, timing and use of effective contraception
  - <sup>1</sup> Sexual response problems (for at least 3 months in past year): lacked enjoyment in sex, felt anxious during sex, felt physical pain as a result of sex, felt no excitement or arousal during sex, difficulty in reaching climax, reached a climax more quickly than you would like, trouble getting or keep an erection (men), uncomfortably dry vagina (women)

34

35

38

39

47 48 40

3 Table 3: Associations between reporting lack of interest in having sex for at least 3 months in the past year and other sexual response problems lasting 3 months or 6 more in the past year, by sex 8

Men Women Reported a lack of Did not report a Reported a lack of Did not report a lack lack interest in sex interest in sex (95%CI) p-value of interest in sex interest in sex (95%CI) p-value 16 enominators (unwt, wt) **AOR**<sup>a</sup> **AOR**<sup>a</sup> 4126, 5077 713, 897 4540, 3790 2129, 1965 Lacked enjoyment in having sex < 0.0001 < 0.0001 No 97.7% (97.1-98.1)81.5% (78.2 - 84.4)1 95.9% (95.1-96.5) 72.5% (70.2-74.7)1 13 9.78 (7.11-13.46) Yes 2.3% (1.9-2.9)18.5% (15.6-21.8) 4.1% (3.5-4.9)27.5% (25.3-29.8)8.95 (7.28-11.01)14 15elt anxious during sex < 0.0001 < 0.0001 16 (95.5-96.7)(82.6-88.5)1 97.3% (96.7-97.7)89.9% (88.4-91.3)1 No 96.1% 85.8% 17 3.9% (3.3-4.5)14.2% (11.5-17.4)4.16 (3.08-5.62) (2.3-3.3)10.1% (8.7-11.6)4.4 (3.43-5.65)1 gelt physical pain as a result of sex 0.0213 < 0.0001 1 98.4% (97.9 - 98.8)(95.6-98.1) 95.7% (95.0-96.3) 86.5% (84.6-88.1)1 97.1% 20 21 1.6% (1.2-2.1)2.9% (1.9-4.4)1.87 (1.10-3.19) 4.3% (3.7-5.0)13.5% 3.55 (2.83-4.45)Yes (11.9-15.4)<sup>2</sup>felt no excitement or arousal during sex < 0.0001 < 0.0001 23 (98.0 - 98.9)(85.0-90.0)1 97.5% (96.9 - 97.9)80.9% (79.0-82.7)1 98.5% 87.7% 24 Yes 1.5% (1.1-2.0)12.3% (10.0-15.0)9.21 (6.33-13.40) 2.5% (2.1-3.1)19.1% (17.3-21.0)9.16 (7.16-11.70)25 2@ifficulty in reaching climax < 0.0001 < 0.0001 27 92.7% (91.7-93.5)80.5% (76.6-83.8)1 -88.3% (87.2-89.3)74.9% (72.7-76.9)1

3.08 (2.37-3.99)

1.32 (1.05-1.68)

1.97 (1.55-2.51)

1 -

1

(10.7-12.8)

(97.2 - 98.2)

(89.5-91.7)

(8.3-10.5)

(1.8-2.8)

11.7%

97.8%

2.2%

90.7%

9.3%

0.0198

< 0.0001

25.1%

97.5%

2.5%

80.1%

19.9%

(23.1-27.3)

(96.7 - 98.1)

(77.9-82.1)

(17.9-22.1)

(1.9-3.3)

2.6 (2.23-3.03)

(0.82-1.69)

(1.89-2.76)

1

1

2.28

1.18

0.3658

< 0.0001

46 enominator is those aged 16-74 years with at least one partner in the past year. Unwt, unweighted; wt, weighted 41AOR comparing those reporting lacking interest to those who did not.

7.3%

85.6%

14.4%

88.5%

11.5%

No

No

Yes

3₱rouble getting or keeping an erection

3<sup>₩</sup>ncomfortably dry vagina

(6.5-8.3)

(84.3-86.9)

(13.1-15.7)

(87.3-89.6)

(10.4-12.7)

19.5%

82.0%

18.0%

79.4%

20.6%

(16.2-23.4)

(78.7-85.0)

(15.0-21.3)

(75.9-82.6)

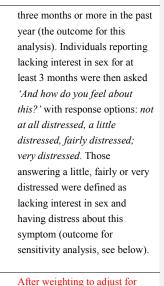
(17.4-24.1)

STROBE Statement—checklist of items that should be included in reports of observational studies

	Item No.	Recommendation	Page No.	Relevant text from manuscript
Title and abstract	1	(a) Indicate the study's design with a commonly used term in the title or the abstract	Title, Abstract	Survey; cross-sectional
				probability sample survey
		(b) Provide in the abstract an informative and balanced summary of what was done and what was	Abstract	Complex survey analyses of
		found		data collected for a cross-
				sectional probability sample
				survey, undertaken 2010-12,
				specifically logistic regression
				to calculate age-adjusted odds
				ratios (AOR) to identify
				associated factors
Introduction				
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	4-5	In summary, the evidence on the
				factors associated with men's
				and women's reports of low
				sexual desire is drawn largely
				from non-representative
				samples, is somewhat equivocal
				and, in men, sparse.
				Understanding the correlates of
				lacking interest in sex would be
				useful to identify individuals
				most at risk of sexual problems
				and could also inform what
				types of therapeutic options for
				this group should be provided.
Objectives	3	State specific objectives, including any prespecified hypotheses	5	The research questions
				addressed in this paper are: (1)

				What sociodemographic, relationship, sexual behaviour, and sexual attitudinal factors are associated with lacking interest in sex in sexually active men and women?; (2) To what extent do these factors vary by gender?; (3) What are the associations between reporting lacking interest in sex and other sexual function problems?
Methods				
Study design	4	Present key elements of study design early in the paper	6	A multi-stage, clustered, and stratified probability sample design was used and participants were interviewed using a combination of computer-assisted personal interviews (CAPI), and computer-assisted self-interviews (CASI).
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	6	Natsal-3 is a probability sample survey of 15,162 men and women aged 16-74 years in Britain, interviewed between September 2010 and August 2012.
Participants	6	(a) Cohort study—Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up  Case-control study—Give the eligibility criteria, and the sources and methods of case	6	For the current analyses, only respondents who reported >=1 sexual partner (opposite-sex or

		ascertainment and control selection. Give the rationale for the choice of cases and controls  *Cross-sectional study**—Give the eligibility criteria, and the sources and methods of selection of participants	same-sex) in the past year were included (4,839 men and 6,669 women).
		(b) Cohort study—For matched studies, give matching criteria and number of exposed and unexposed  Case-control study—For matched studies, give matching criteria and the number of controls per case	
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers.  6-7  Give diagnostic criteria, if applicable	We used selected items from the Natsal-SF, a newly developed and validated measure of sexual function comprising questions about problems with sexual response, relational aspects of sexual function, and selfappraisal of sex life
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	In the CASI, participants who reported at least one sexual partner in the past year (hereon 'sexually active participants') were asked: 'In the last year, have you experienced any of the following for a period of 3 months or longer?' and were given a list of difficulties and asked to indicate which they had experienced. The list included 'Lacked interest in having sex'. Those indicating this difficulty were defined as lacking interest in having sex for a period of



Bias 9 Describe any efforts to address potential sources of bias

Explain how the study size was arrived at

<u>6</u>

After weighting to adjust for unequal probabilities of selection and to match the British population in terms of age, gender and geographical region, the Natsal-3 sample was broadly representative, on key variables, of the British population as described by the 2011 Census.

Continued on next page

Study size

Quantitative	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which	7	All analyses were done using the
variables		groupings were chosen and why		complex survey functions of
				STATA (version 14; StataCorp LP,
				College Station, Texas) to account
				for the weighting, clustering, and
				stratification of the data.
Statistical	12	(a) Describe all statistical methods, including those used to control for confounding	7	We used multivariable logistic
methods				regression to calculate age-adjusted
				odds ratios (AOR) to examine the
				associations between reports of
				lacking interest in sex lasting three
				months or longer in the past year,
				and sociodemographic, health,
				relationship, sexual behaviour, and
				sexual attitude variables. For each
				variable, we also tested the
				interaction between gender, to see i
				the magnitude of the associations
				between the above factors and
				reports of lacking interest in sex
		(A) Description of the state of		was the same for men and women.
		(b) Describe any methods used to examine subgroups and interactions	7	
		(c) Explain how missing data were addressed	-	
		(d) Cohort study—If applicable, explain how loss to follow-up was addressed		
		Case-control study—If applicable, explain how matching of cases and controls was addressed		
		Cross-sectional study—If applicable, describe analytical methods taking account of sampling		
		strategy  (a) Pagariha any agariti vity analysas	7	We conducted a sensitivity analysi
		(e) Describe any sensitivity analyses	/	
				for the outcome variable reporting lack of interest in sex lasting three

				this symptom to assess whether
				similar associations were found.
Results				
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	6	For the current analyses, only respondents who reported >=1 sexual partner (opposite-sex or same-sex) in the past year were included (4,839 men and 6,669 women).
		(b) Give reasons for non-participation at each stage	-	
		(c) Consider use of a flow diagram	-	
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	6	More extensive details of the survey methodology and sample characteristics are published elsewhere (21,22) and for demographic characteristics of the sample, see (22).
		(b) Indicate number of participants with missing data for each variable of interest		
		(c) Cohort study—Summarise follow-up time (eg, average and total amount)		
Outcome data	15*	Cohort study—Report numbers of outcome events or summary measures over time		
		Case-control study—Report numbers in each exposure category, or summary measures of exposure		
		Cross-sectional study—Report numbers of outcome events or summary measures	Tables 1-2	
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	Tables 1-2	7//
		(b) Report category boundaries when continuous variables were categorized	-	
		(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time	-	

Formatted Table

Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	11	Table 2 presents the associations between lacking interest in sex and
				being distressed about this (as a
				measure/marker of severity), and
				the above sociodemographic,
				health, and sexual
				relationship/behaviour variables.
Discussion				
Key results	18	Summarise key results with reference to study objectives	11-12	We identified a broad range of
				factors, including some that have
				not been explored in previous large
				scale surveys, that were associated
				with men's and women's reports o
				lacking interest in sex in a
				representative British population-
				based survey. Our findings,
				discussed below, revealed some
				gender similarities as well as some
				interesting gender differences. The
				strongest evidence for gender
				differences was for the relationship
				context variables, where
				associations with lacking interest in
				sex were much stronger for women
				than for men.
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss	15	Limitations include the cross-
		both direction and magnitude of any potential bias		sectional nature of the data, which
				mean that we are unable to infer
				temporality and causality. We only
				used a single item to assess lacking

			interest in sex, although we additionally took account of whether those who reported this also reported that it caused them distress, as a way of trying to capture more problematic lack of interest. It is important to acknowledge, however, that these data do not necessarily correspond to clinical diagnoses. This sensitivity analysis enabled us to
			demonstrate that for most variables similar associations exist regardles of whether or not distress was reported. Finally, we have tested many associations within this stud and some will have been significantly chance.
Interpretation 20 Give a cautious overall interpretation analyses, results from similar stud	ion of results considering objectives, limitations, multiplicity of ies, and other relevant evidence	16-17	The findings indicate that reportin lack of interest in sex is associated with a broad range of predictors across sociodemographic, relationship, sexual behaviour, and sexual attitudinal domains.
Generalisability 21 Discuss the generalisability (exten	nal validity) of the study results	<del>15</del> <u>6</u>	After weighting to adjust for unequal probabilities of selection and to match the British populatio in terms of age, gender and geographical region, the Natsal-3 sample was broadly representative on key variables, of the British population as described by the 201

			Census.
	<u>1</u>	<u>.5</u>	The sample is representative of
			those resident in private households
			in Britain i.e., not those living in
			institutions. Strengths of our study
			include the use of national
			probability sample survey data
			involving both men and women
			across a wide age range (21, 22).
Other information			
Funding 22	Give the source of funding and the role of the funders for the present study and, if applicable, for the	. 8	Natsal-3 was supported by grants
	original study on which the present article is based		from the U.K. Medical Research
			Council (G0701757) and the
			Wellcome Trust (084840), with
			support from the Economic and
			Social Research Council and the
			Department of Health.

<sup>\*</sup>Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.