Social Media, Men who have sex with men, Sexual and Holistic Health Study (SMMASH3)

The 3rd longitudinal, triennial study of the sexual and wider health behaviours of gay, bisexual and other men who have sex with men living in Scotland, UK.

A report commissioned by NHS Lothian and NHS Greater Glasgow and Clyde Health Boards

July 2020

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Electronic copies of this report,

are available from www.smmash2020.org.uk or from the 2nd author at j.frankis@gcu.ac.uk

Acknowledgements: Our thanks go to all of the men who took the time to complete our questionnaire, without whom this research study would not be possible. We would like to thank Ross Kincaid and Eseoghene Johnson for proofreading the SMMASH3 reports. We would like to thank the wider team who helped develop and refine the SMMASH3 survey questions.

Funding: Funding for the SMMASH3 study was provided by NHS Lothian, NHS Greater Glasgow and Clyde, NHS Tayside, Waverley Care, HIV Scotland and Public Health Scotland. Dr Frankis and Dr Strongylou were supported as part of the Sexual Health and Blood Bourne Virus' Research Group, School of Health and Life Sciences, Glasgow Caledonian University.

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Suggested citation:

Strongylou, D. and Frankis, J. (2020) Social Media, Men who have sex with men, Sexual and Holistic Health Study (SMMASH3): The 3rd longitudinal, triennial study of the sexual and wider health behaviours of gay, bisexual and other men who have sex with men living in Scotland, UK A report commissioned by NHS Lothian and NHS Greater Glasgow and Clyde Health Boards. School of Health and Life Sciences: GCU,Glasgow. ISBN: 9781914188022. https://www.smmash2020.org/

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Chapter 1 - Introduction And Methodology

1.1 Overview

This report examines quantitative data collected within the Social Media, Men who have sex with men, Sexual and Holistic Health study (SMMASH3), which was developed in collaboration with NHS Greater Glasgow and Clyde and NHS Lothian and the Sexual Health and BBV Team based at Glasgow Caledonian University. The aim of this report is to present the findings relating to those survey participants who live in Greater Glasgow and Clyde Health Board, Lothian Health Board and the rest of Scotland. To these ends, we present a summary of the data for all 'gay, bisexual, and other men who have sex with men' (GBMSM) in Scotland and then a comparative analysis of men who live in Greater Glasgow and Clyde Health Board (GGC), Lothian Health Board (Lothian) and the 'Rest of Scotland' (RoS).

Specifically, we address the following research aims in relation to each of these populations:

- To describe participants' sociodemographic characteristics.
- To describe their sexual and sexual health behaviours.
- To explore their reasons for not using condoms.
- To explore their HIV and other sexually transmitted infection testing behaviours.
- To explore their PrEP use, current and future intentions.
- To explore their use of online sexual health and other health services.
- To examine their experiences of sexual pleasure and sexual abuse.
- To describe their mental health.
- To explore their smoking, alcohol, and recreational drug use.
- To describe their gay social media and other social media use.
- To examine their blood donation and attitudes towards blood donation policies.
- To examine their experiences of stigma and psychological functioning.
- To examine their Body Mass Index (BMI) and exercise levels.

This initial chapter provides a background to the overall report. It describes the methodology underpinning the SMMASH3 survey and the measures used therein. After this initial context setting, subsequent chapters address each of the research aims listed above in turn.

1.2 SMMASH3 Methodology

1.2.1 Funding

SMMASH3 was funded by Health Protection Scotland, NHS Greater Glasgow and Clyde, NHS Lothian, NHS Tayside, HIV Scotland, Waverley Care and GCU. Grindr advertised the survey at no cost whilst Squirt, Gaydar, Growlr, and Recon provided survey advertising at a reduced cost due to the community health focus and 'not-for-profit' nature of the work.

1.2.2 Ethical Approval

Ethical approval was obtained from the Nursing and Community Health Sciences ethics committee, Glasgow Caledonian University: HLS/NCH/19/019.

1.2.3 Questionnaire Development

A cross sectional survey was developed using a series of measures (see Appendix 1), largely drawn from previously published work. This was developed in consultation with practitioners in both commissioning organisations and their partner organisations working on GBMSMs Sexual Health. Detailed information was sought regarding participant sociodemographics (age, ethnicity, sexual orientation, partnership status, living situation, disabilities, employment, financial worries, 'outness' and commercial gay scene use). Men were asked about their sexual behaviours with men and with women, HIV and STI testing history. PrEP use and attitudes towards blood donation were measured by adapting existing validated scales. Existing measures were employed to survey participants' sexual wellbeing, sexual confidence, and experiences of sexual abuse. We also asked about diagnosed mental health, levels of anxiety and depression, experiences of gay stigma and psychological wellbeing (including emotional competency and sense of coherence). Finally, a range

of measures were used to assess their alcohol and recreational drug use (including 'chemsex' behaviours) and use of social and 'sociosexual' media. Questionnaire items were derived from our own previous work in the field (see Frankis et al., 2013, Frankis et al., 2016b) or other previously published survey items (as described above). An international steering committee, made up of academics, policymakers, statutory and NGO service providers, clinicians and community members reviewed the questions for clarity, appropriateness and comprehensiveness. The final version of the survey is available in Appendix 1.

1.2.4 Pilot Work

The methods used in this study were broadly similar to those used in our previous work, the SMMASH and SMMASH2 study (Social Media, Men who have sex with men and Sexual Health survey), which focused on the sexual health and social media use of men who have sex with men in Scotland (see Frankis et al., 2013; Frankis et al., 2016a; Frankis et al., 2016b). This meant that the methods used in this study had effectively already been previously piloted in the earlier work and were successfully redeployed herein. Regarding the new measures which were firstly introduced in the SMMASH3 survey (e.g. blood donation and attitudes towards PrEP), these were adapted by the research group and further piloted in a group of GBMSM experts (see relevant chapters for a detailed description).

1.2.5 Participant Recruitment and Survey Completion Procedures

The SMMASH3 survey collected anonymous, online self-complete questionnaires with GBMSM in Scotland, Wales, England, Northern Ireland, and the Republic of Ireland. It should be noted here that SMMASH3 survey focused on Scotland, Wales, Northern Ireland and Republic of Ireland only, but a sampling error introduced by some of the social media companies meant that some GBMSM in England were also targeted via some apps. The survey was administered online via REDCap between December 2019 and mid-March 2020. Thus, data collection completed before the COVID-19 pandemic and subsequent lockdown in the UK which started on 23rd March 2020. GBMSM using gay

specific social media websites and apps (specifically Grindr, Gaydar, Recon, Squirt, Growlr, Planet Romeo, Scruff, and Hornet) were invited to participate when their profile location, IP address or smartphone GPS co-ordinates were located in one of the four target countries. Over a 3-week period (between 15th December 2019 and 7th January 2020) the users of all but one website (Romeo) were sent either a pop-up message or an inbox message asking them to participate in the survey. Banner advertisements were employed to advertise the survey only by Planet Romeo through a one-month period (from 15th December 2019 to 15th January 2020). The SMMASH3 survey was also advertised through Facebook and Twitter. Paid advertising was used to send a clickable advert to Facebook users, who were men aged 18+ located in one of the four Celtic countries who *liked* a range of gay and HIV related social issues and media personalities. A recruitment request was tweeted on the SMMASH3 twitter account, targeting various social and relevant health twitter accounts (e.g. 8 gay bars in Scotland, HIV Scotland, Waverley Care etc.), and requesting them to retweet this to advertise the survey; a link was also provided under each tweet publicised by the SMMASH3 Twitter account, which provided the option of survey completion. Due to a lower recruitment rate than expected, a second recruitment wave took place through the gay social media websites and apps, which was completed by the end of February 2020, whilst the Facebook and Twitter recruitment was extended until mid-March 2019. Clicking on the message, banner advert or on the relevant "tweet" publicised by the SMMASH3 Twitter account took participants to the survey landing page on REDCap (see https://www.project-redcap.org) which provided full details of the research, explained the nature of the questions involved and the organisation behind the survey. It also emphasised the anonymous, confidential and voluntary nature of participation and confirmed the study's ethical approval. Participants were then able to make an informed decision whether to proceed with the survey or decline participation, by clicking the relevant option. When participants agreed to participate in the study, they were asked to complete questionnaires covering socio-demographics, social media use, sexual behaviour, physical, and mental health information. After survey completion, participants

were taken to an exit page which provided links to local GBMSM specific sexual and mental health services, should they wish to follow up on any of the issues raised within the survey.

The sampling methods adopted within the study mean that it is impossible to generate an accurate response rate. This is because most social media did not have the ability to ascertain how many messages were read, or adverts were seen, by unique users. A final sample size of n=1110 participants were recruited in Scotland, slightly lower than the previous SMMASH2 study (n=1547) (Frankis et al., 2016). As participants were sampled from gay specific sociosexual media and social media like Facebook and Twitter, the results of this study are only generalizable to GBMSM in Scotland who use these websites/apps. This is an important limitation of this study and should be borne in mind when interpreting all of the results presented herein.

1.3 Statistical Analyses

Data were analysed using SPSS 25.0. Missing data occurred for many of the variables in this study; within this report we provide the sample size for each sub-analysis in the text or relevant table, but do not separately specify the missing data in each case. Parametric analyses were employed, given that our data was normally distributed. Variables with two levels were assessed with either Chi2 or Independent Samples T-Tests. Variables with three levels were assessed with Chi^2 or ANOVA (using Welch's test where homogeneity of variance was absent) with significant differences further explored with Hochberg' GT2 test (since sample sizes were almost invariably very different). This report was funded by NHS GGC and NHS Lothian Health Boards so the analytical focus of this report was to compare men living in NHS GGC, with men living in NHS Lothian and the RoS. Sibling reports, focusing on HIV+ GBMSM, GBMSM living in NHS Tayside, NHS Forth Valley and NHS Highlands and Islands (funded by HIV Scotland, NHS Tayside and Waverley Care, respectively) have also been produced. All reports will be made available on the www.smmash2020.org website, following each funders' approval.

1.4 Summary

The SMMASH3 survey recruited 1110 GBMSM aged 16 and over in Scotland from online sociosexual media and wider social media between December 2019 and mid-March 2020. Participants were asked a range of questions around their sexual, mental and wider health behaviours as well as sociodemographic information. The rest of this report provides a detailed analysis of these results, comparing men who live in NHS GGC, NHS Lothian, and the RoS.

Chapter 2-Sample demographics

2.1 Introduction

This chapter describes the demographic characteristics of GBMSM within the SMMASH3 study. Herein we examine the whole of the dataset recruited within Scotland and compare the sub-populations living within three National Health Service (NHS) Scotland Health Board regions: NHS Greater Glasgow and Clyde (GGC), NHS Lothian and NHS Board areas comprising the Rest of Scotland (RoS).

2.2 Sample Size

Participants recruited to this study were GBMSM aged 16 years and over, using gay sociosexual and social media in Scotland. Of the 1110 participants who completed the online survey, responses from men living within NHS GGC accounted for 32% (n=352/1110), NHS Lothian 25% (n=274/1110) and the NHS Board areas comprising the RoS, 44% (n=484/1110) (see Figure 2.1).

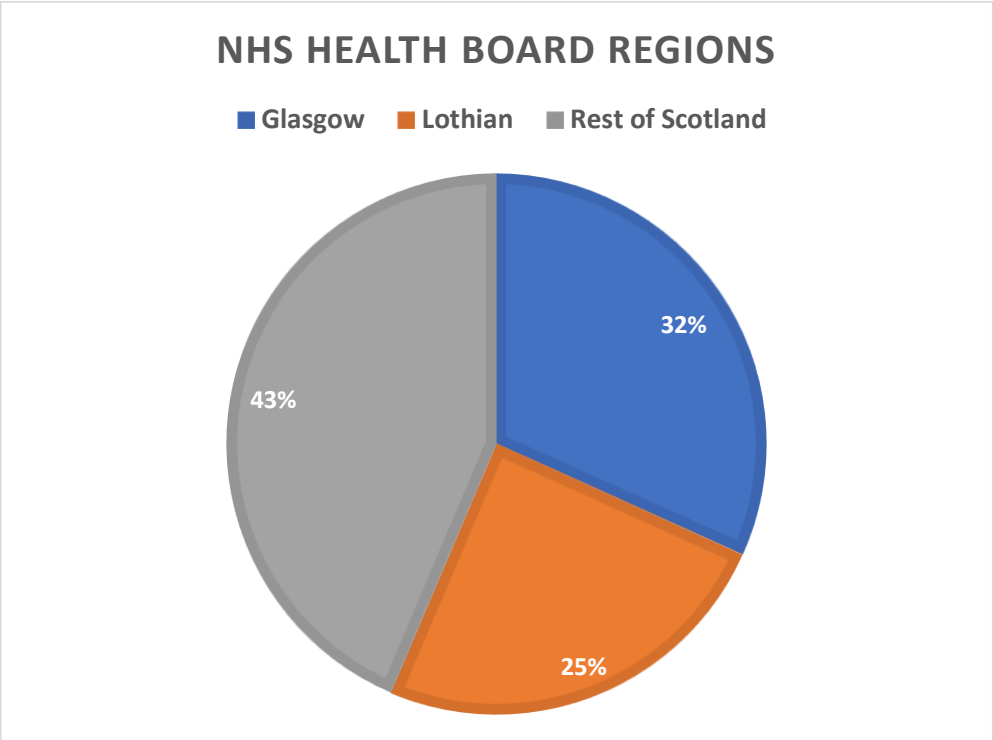


Figure 2.1. Participants recruitment per NHS Health Board region

2.3 Recruitment Via Sociosexual and Social Media Networks

Figure 2.2 outlines the pattern of recruitment via the sociosexual media. The most prevalent group of participants were those recruited from Scruff (24%, n=263/1110), followed by Grindr (16%, n=179/1110), Recon (16%, n=174/1110), and Facebook (14%, n=153/1110). Proportionally fewer participants were recruited from Hornet (3%, n=12/1110) and Romeo (0.2%, n=2/1110).

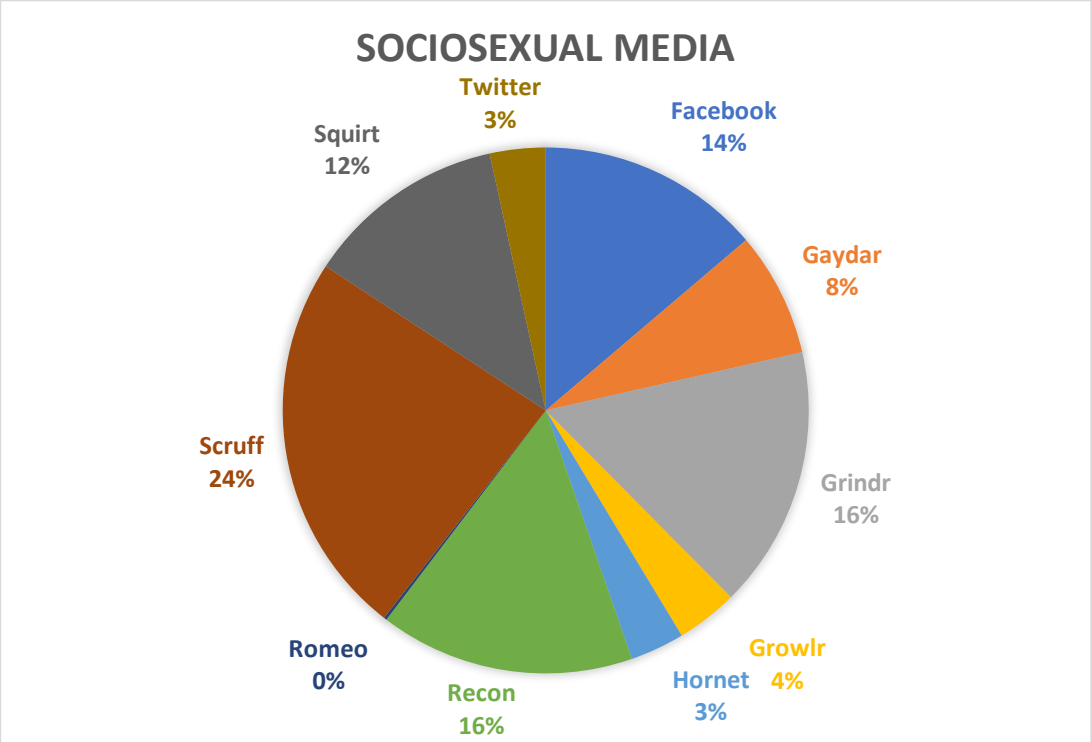


Figure 2.2. Recruitment by sociosexual and social media

2.4 Participants' Age Groups

Participants in Scotland were asked to provide their age, which was then translated into one of four age groups (see Table 2.1; Figure 2.3). The majority of participants were aged 46 years or older (37%, n=408/1110). By contrast, those in the youngest age group, 16-25 years, represented the smallest proportion of participants (16%, n=175/1110). Those in the 26-35 age range represented the 27% (n=299/1110) of all respondents whilst those aged 36-45 represented another 21% (n=228/1110) of all participants.

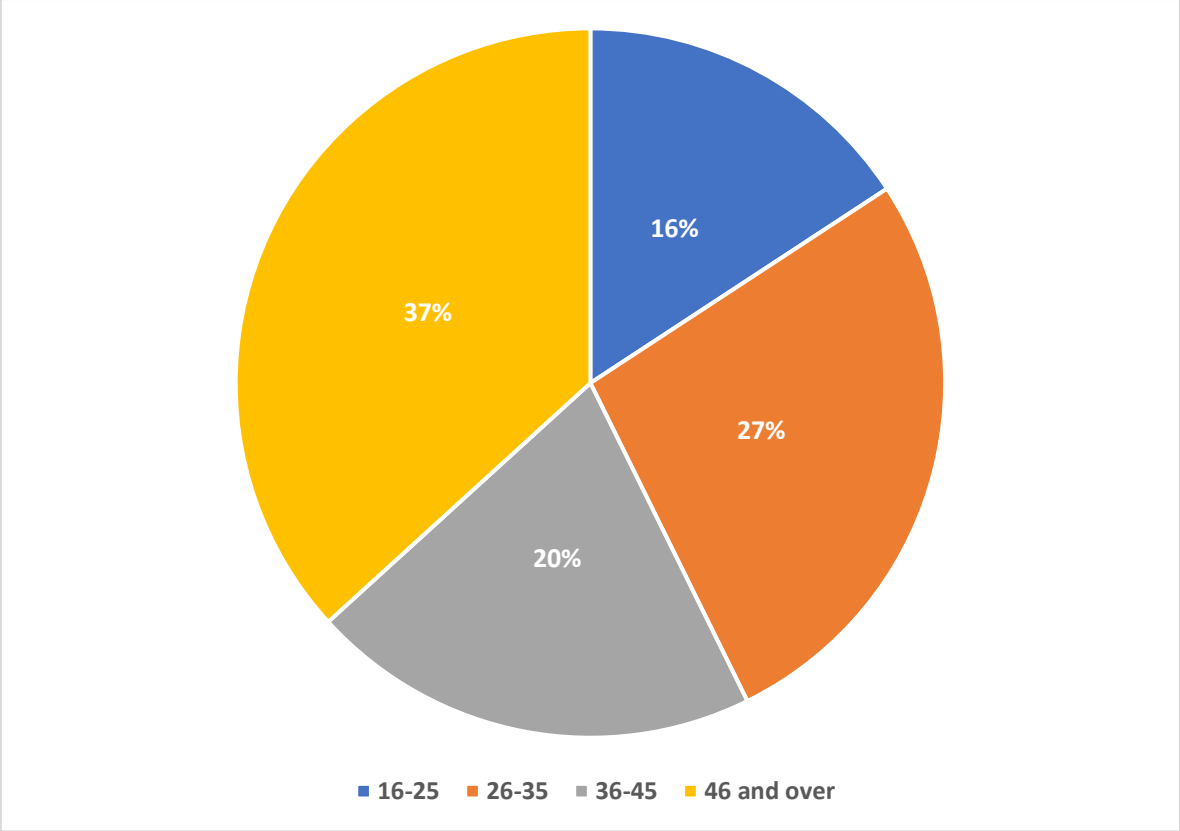


Figure 2.3. Age groups of all SMMASH3 participants

Table 2.1. Age Ranges: Whole Sample and By NHS Health Board Region

Age Range	Whole Sample		NHS GGC		NHS Lothian		RoS	
	n	%	n	%	n	%	n	%
16-25 years	175	15.8	47	13.4	47	17.2	81	16.7
26-35 years	299	26.9	119	33.8	69	25.2	111	22.9
36-45 years	228	20.5	83	23.6	48	17.5	97	20.0
46 and over	408	36.8	103	29.3	110	40.1	195	40.3
Total	**1110**		**352**		**274**		**484**	

Table 2.1 offers a detailed comparison by NHS Health Boards regions, however further analysis showed there was a significant difference in age related responses between the three NHS regions (x^2=22.06, df=6, p<0.005). In particular, as Table 2.1 shows, in NHS GGC most of the SMMASH3 participants were aged between 26-35 years (33.8%, n=119) whilst in NHS Lothian (40.1%, n=110) and RoS (40.3%, n=195) most men were aged 46 years or older.

2.5 Highest Educational Qualification

Respondents in our study were highly educated (see Table 2.2), with 6 out of 10 (60%, n=656/1086) holding a degree, 17% (n=183/1086) a postgraduate qualification, 21% (n=230/1086) educated up to SQA Highers level and only 2% (n=17/1086) having no academic qualifications. This was a more highly educated sample than the Frankis et al. (2018) SMMASH2 survey, where almost half of the cohort (51%, n=769/1504) held a degree and 14% (n=211/1504) a postgraduate qualification, but nevertheless replicates the same overall pattern in terms of highly educated respondents.

Table 2.2. Highest Educational Qualification: Whole Sample and By NHS Region

Highest Qualification	Whole Sample		NHS GGC		NHS Lothian		RoS	
	n	%	n	%	n	%	n	%
None	17	1.6	4	1.2	2	0.7	11	2.3
Up to Highers	230	21.2	63	18.2	50	18.5	117	24.9
Degree	656	60.4	212	61.3	166	61.5	278	59.1
Postgrad. Qualification	183	16.9	67	19.4	52	19.3	64	13.6
Total	**1086**		**346**		**270**		**470**	

There was a significant association between participants' educational profile and NHS health board (x^2=14.11, df=6, p< 0.05), replicating the finding from the SMMASH2 project. Men in the RoS were more likely to have no educational qualifications or to be educated only up to Highers level than those living in GGC and Lothian. By contrast, men in GGC and Lothian were more likely to hold a degree or a postgraduate qualification compared to men in RoS (see Figure 2.4). Given that Glasgow and Edinburgh have a concentration of universities and are the location for several other degree awarding institutions, these findings regarding academic attainment are unsurprising.

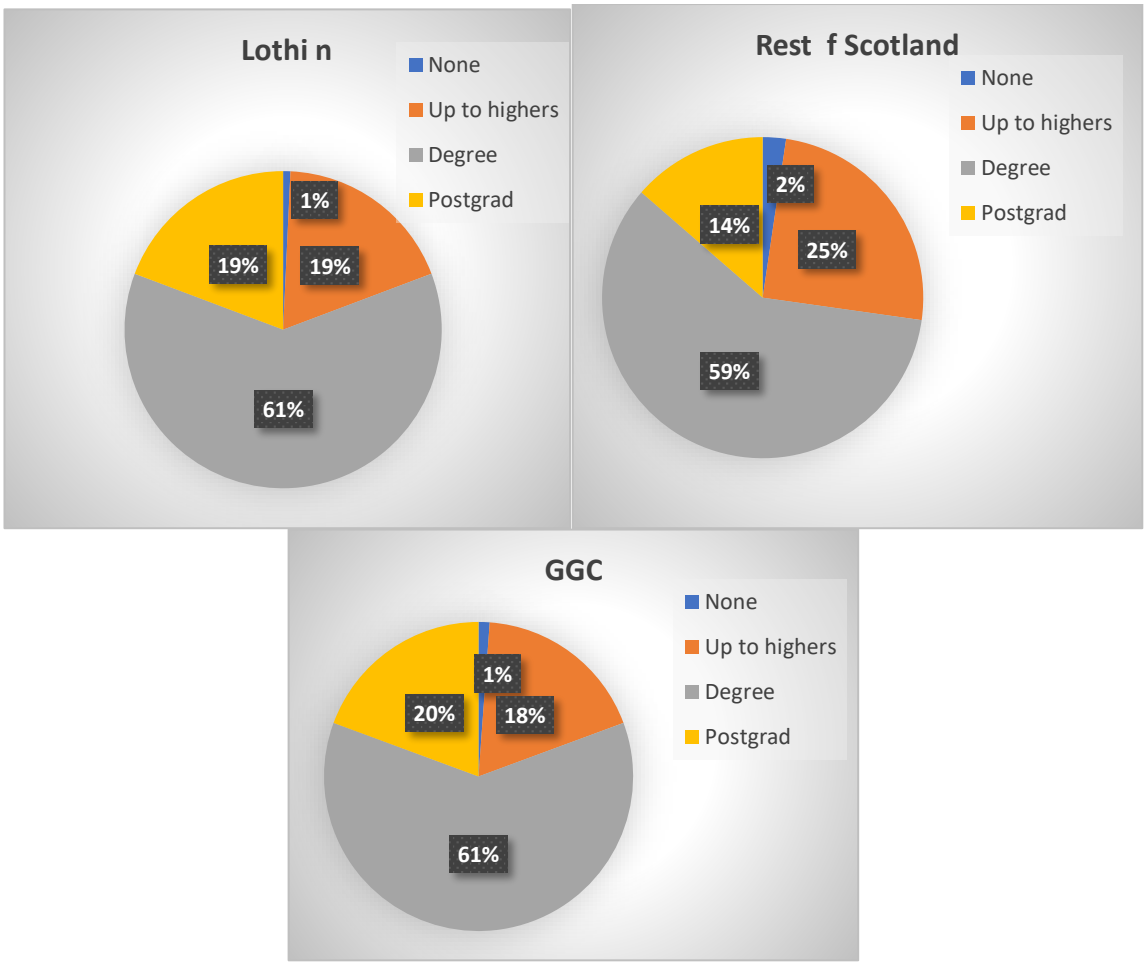


Figure 2.4. Education by NHS region

2.7 Ethnicity

As noted in Table 2.3, the vast majority of respondents identified themselves as White; specifically, White Scottish (70%, n=771/1100), White British Non-Scottish (21%, n=232/1100) and White Other (6%, n=62/1110). Only 3% (n=35/1100) of participants reported Black, Asian, Mixed and other ethnicities.

Participants' ethnicity was not found to be significantly different by NHS Health Board region (x^2= 31.24, df=22, p=0.9).

Table 2.3. Ethnicity: Whole Sample and By NHS Health Board Region

Ethnicity	Whole Sample		NHS GGC		NHS Lothian		RoS	
	n	%	n	%	n	%	n	%
White Scottish	771	70	249	70.7	171	63.1	351	73.6
White Welsh	12	1.1	4	1.1	3	1.1	5	1.0
White British	193	17.5	54	15.3	55	20.3	84	17.6
White Irish	27	2.5	8	2.3	11	4.1	8	1.7
White Other	62	5.6	26	7.4	20	7.4	16	3.4
Other	10	3.2	11	3.1	11	4.1	13	2.7
Total	**1100**		**352**		**271**		**477**	

2.8 Sexual Orientation

Participants were asked to describe their sexual orientation as gay, bisexual, straight or other. As noted below in Figure 2.5, most identified themselves as gay (81%, n=898/1107), a substantial cohort of men identified as bisexual (16%, n=177/1107), and few identified as straight (1%, n=13/1107) or other (1.7%, n=19/1107) including "queer" (n=3), "pansexual" (n=4) and asexual (n=1). Sexual orientation (gay versus bisexual/straight) was statistically different by region (x^2=6.30, df=2, $p<0.05$), with more men identifying themselves as gay in NHS GGC region (85.4%, n=293) and Lothian (84.6%, n=226) compared to the RoS (79.3%, n=379) (see Table 2.4).

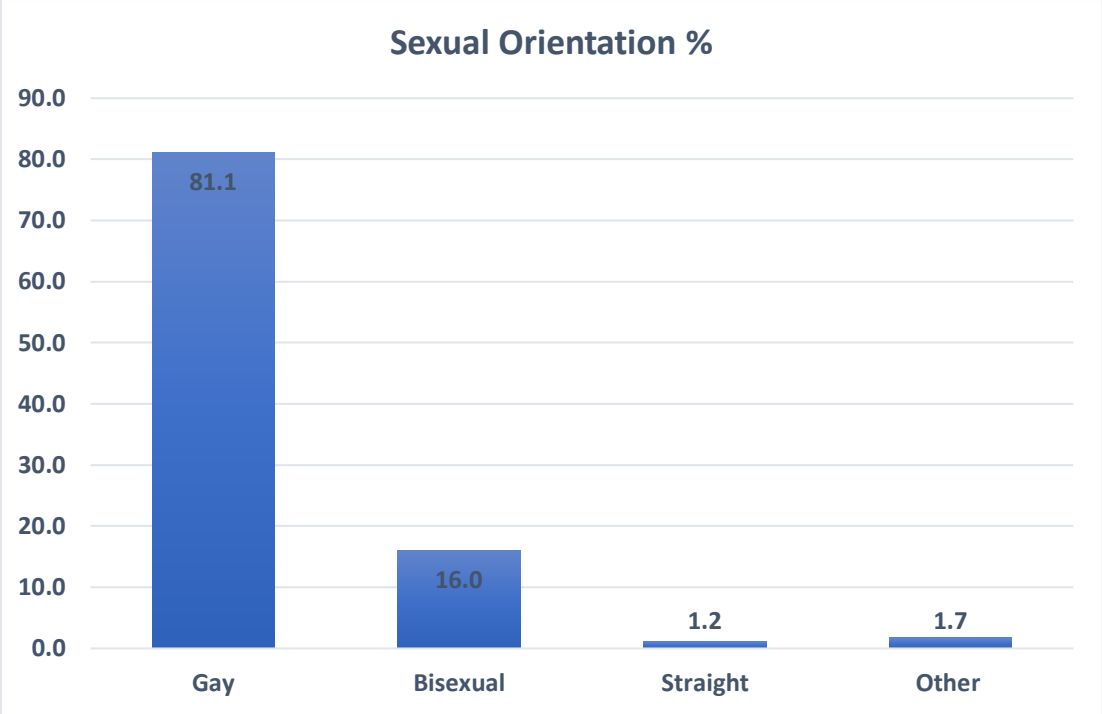


Figure 2.5. Sexual orientation for all SMMASH3 participants

Table 2.4. Sexual Orientation: Whole Sample and By NHS Region

Sexual Orientation	Whole Sample		NHS GGC		NHS Lothian		RoS	
	n	%	n	%	n	%	n	%
Gay	898	82.5	293	85.4	226	84.6	379	79.3
Bisexual/Straight	190	17.5	50	14.6	41	15.4	99	20.7
Total	**1088**		**343**		**267**		**478**	

2.9 Gender

Participants were asked about the gender that best described them. The vast majority identified themselves as male (98%, n=1084/1108), 0.9% (n=10/1108) considered themselves as non-binary and 0.6% (n=7/1108) as transmen (see Figure 2.6). None identified as transwomen or female. Gender was not patterned by NHS region (x^2=9.70, df=10, p=0.46). However, it is important to note that recruiting from GBMSM sociosexual apps, as well as surveys that focusing on penis-oriented sexual behaviours, such as SMMASH3, risks erasing trans and non-binary folk's experiences.

Therefore, these data should not be used as evidence of the lack of trans/non-binary folk in Scotland, but rather, highlight that such populations need their own targeted research studies.

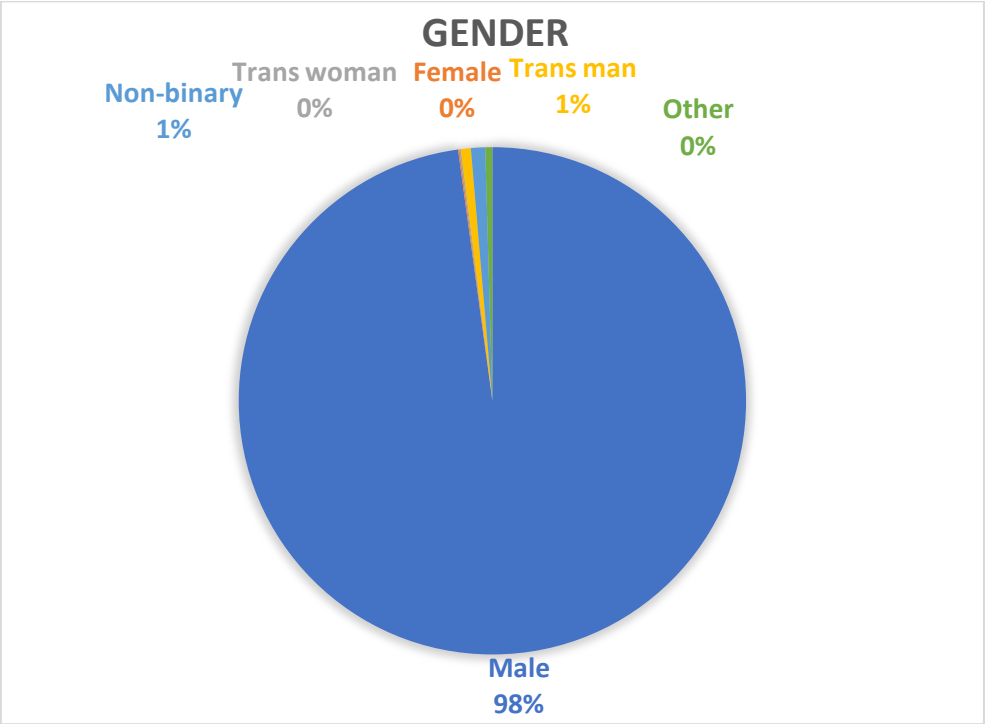


Figure 2.6. Gender that best described SMMASH3 participants

2.10 Relationship Status

Participants were asked to describe their relationship status. Although multiple relationship types were reported (including polyamory, being widowed, and open relationships), most participants (n=1092/1110) could be categorised as either being single, having a regular male, or a regular female partner. Most men (54%, n=591/1092) were single, 37% (n=408/1092) had a regular male partner (of whom 36% (n=147/408) were married to/in a civil partnership with a man) and 8.5% (n=93/1092) reported a regular female partner (see Figure 2.7). Relationship status was not patterned by region (x^2=7.84, df=4, p=0.97) (see Table 2.5).

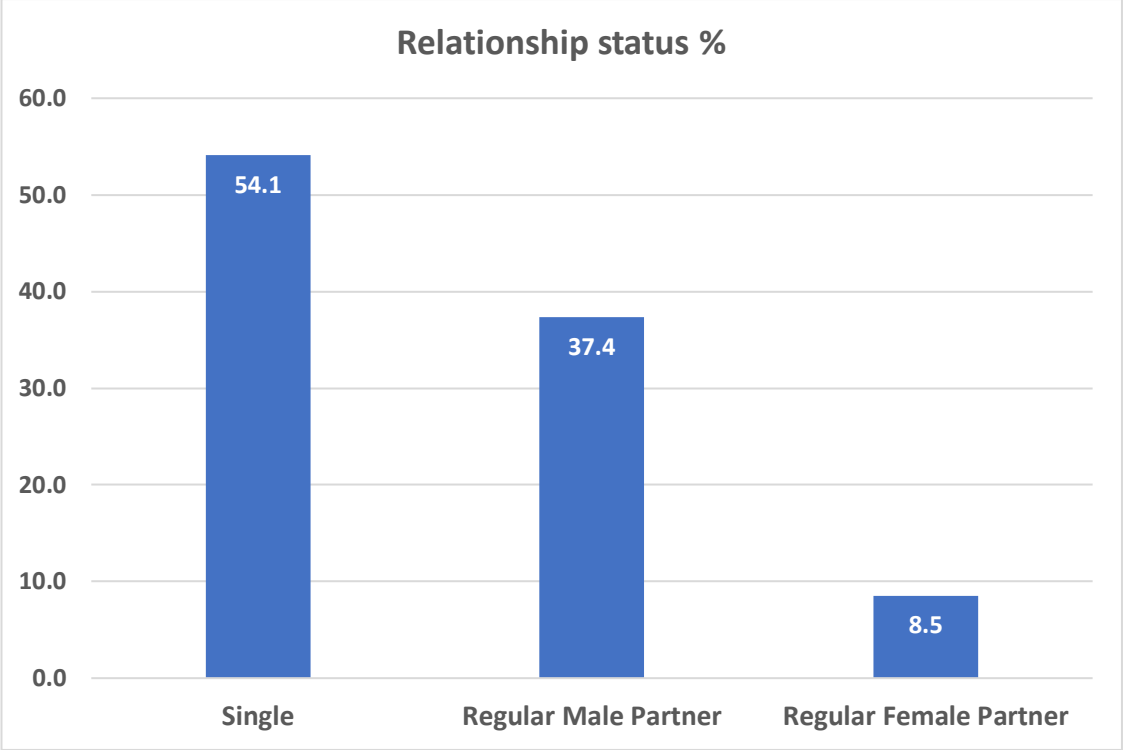


Figure 2.7. Relationship status of all SMMASH3 participants

Table 2.5. Relationship Status: Whole Sample and By NHS Region

Relationship status	Whole Sample		NHS GGC		NHS Lothian		RoS	
	n	%	n	%	n	%	n	%
Single	591	54.1	185	54.1	137	50.4	269	56.3
Regular male partner	408	37.4	136	39.8	111	40.8	161	33.7
Regular female partner	93	8.5	21	6.1	24	8.8	48	10.0
Total	**1092**		**342**		**272**		**478**	

2.11 Declared Disability

The Equality Act (2010) defines being disabled on the basis of a physical or mental impairment that has a 'substantial' and 'long-term' negative effect on someone's ability to undertake normal daily activities. Participants were asked 'Do you have any of the following conditions which have lasted, or are expected to last, more than 12 months?', and given a range of options relating to physical, mental and learning disabilities (see Table 2.6), taken from the UK census. Herein, it is important to

note that the term 'disability' is used to refer to the presence of any of the conditions reported in Table 2.6; we did not ask participants whether they considered themselves to be disabled, nor whether they considered this issue to be a disability. Overall, about two thirds of participants indicated they had no disabilities (61%, n=653/1064), however, about one third reported one or more disability (39%, n=411/1064) (see Figure 2.8). The most common disability reported was a mental health condition, which affected 14% (n=146/1064) of the cohort, followed by those suffering from a long-term condition (non-HIV) (11.5%, n=122/1064).

Reporting any disability was not patterned by NHS region (x^2=17.01, df=18, p=0.522). Table 2.6 presents declared disability by each NHS Health Board. Additional Chi^2 analyses showed that none of the nine conditions listed in Table 2.6 was patterned by NHS region.

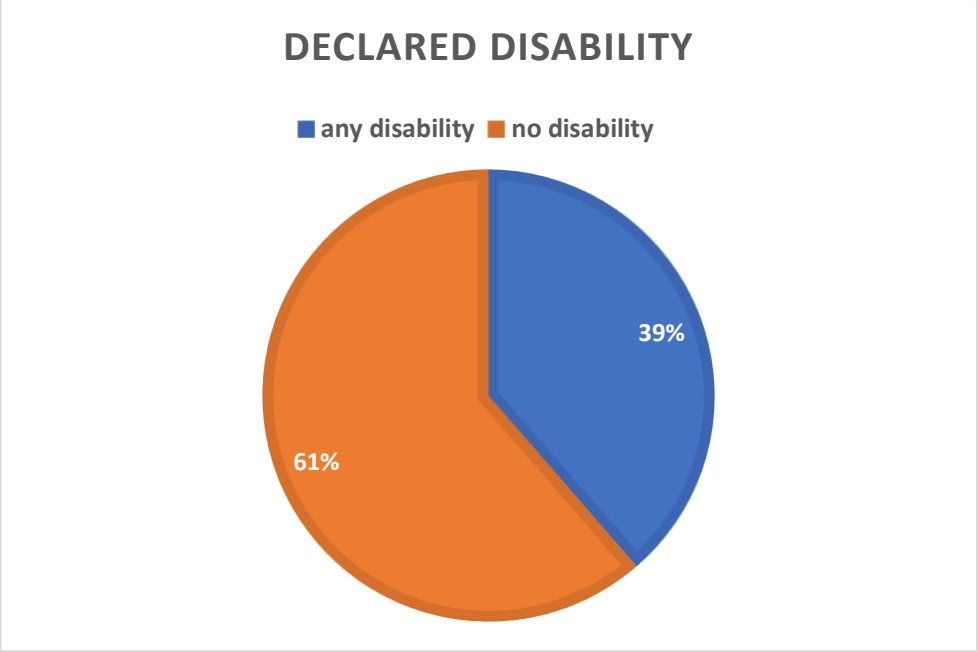


Figure 2.8. Disability as declared from all SMMASH3 participants

Table 2.6. Declared Disability: Whole Sample and By NHS Health Board

Declared Disability	Whole Sample		NHS GGC		NHS Lothian		RoS	
	n	%	n	%	n	%	n	%
Developmental disorder	19	1.8	5	1.5	6	2.3	8	1.7
Learning difficulty	28	2.6	13	3.9	5	1.9	10	2.1
Learning disability	1	0.1	1	0.3	0	0	0	0
Blindness	5	0.5	1	0.3	1	.4	3	0.6
Deafness	20	1.9	5	1.5	4	1.5	11	2.3
Mental health condition	146	13.7	45	13.6	29	11.1	72	15.3
Physical disability	21	2.0	9	2.7	3	1.1	9	1.9
Chronic disease	122	11.5	45	13.6	25	9.5	52	11.1
Other	49	4.6	18	5.4	11	4.2	20	4.3
No Disability	653	61.4	190	57.2	178	67.9	285	60.6
Total	**1064**		**332**		**262**		**470**	

2.12 Employment Status

Participants' employment status was categorised as either a student, unemployed, employed, self-employed or retired (Figure 2.9). The vast majority of the sample were in current employment (76.5%, n=847/1107), slightly above the Scottish rate of 75% in 2019 (Scottish Government, 2019). Only 4% (n=43/1107) were unemployed whilst about 1 in 10 participants were students (11%, n=117/1107) and 6% (n=63/1107) were retirees. These results are similar to those identified in the previous iteration of the SMMASH project. Table 2.7 provides a detailed description of employment status by NHS Health Boards. However, Chi^2 analysis suggested there were no significant differences in employment status across the three regions (X^2=20.02, df=14, p=0.78).

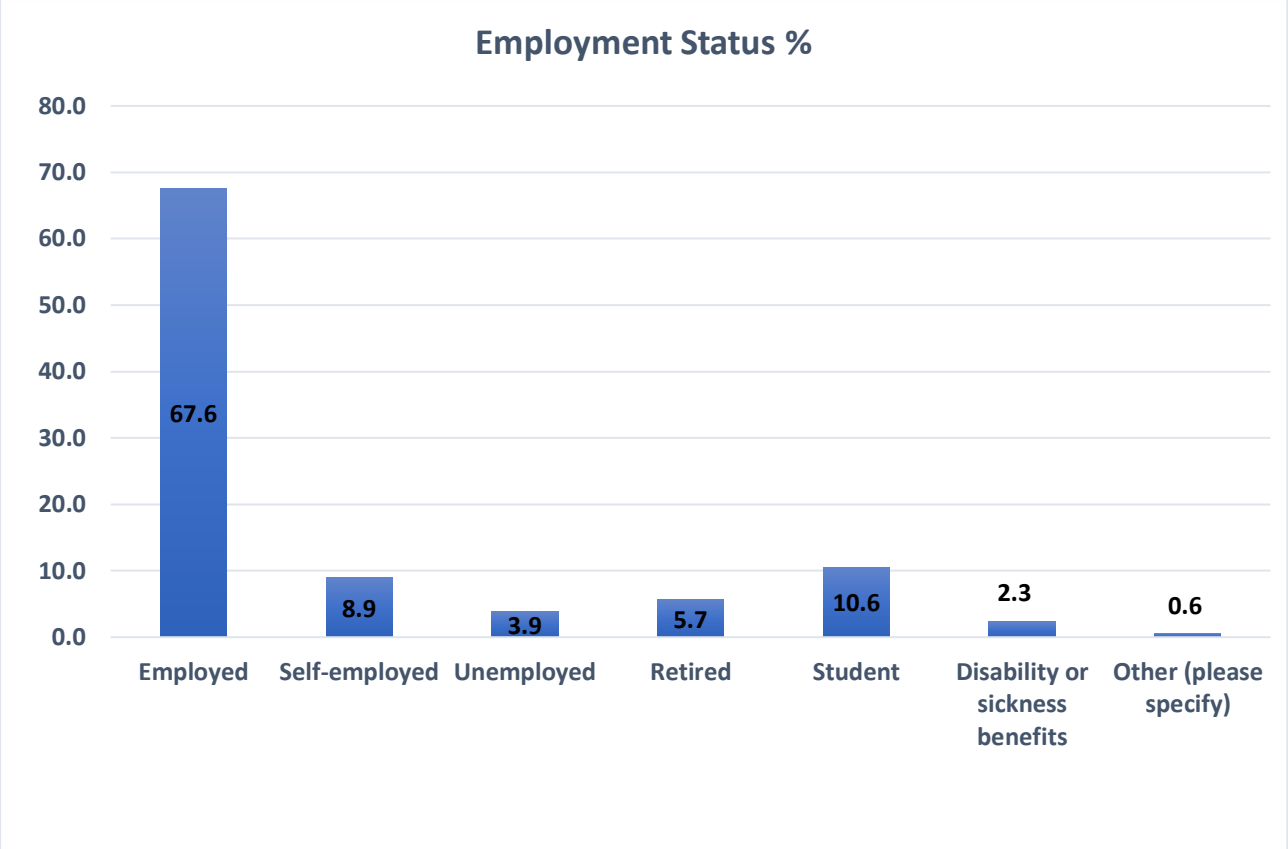


Figure 2.9. Employment status for all SMMASH3 participants

Table 2.7. Employment: Whole Sample and By NHS Health Board Region

Employment Status	Whole Sample		NHS GGC		NHS Lothian		RoS	
	n	%	n	%	n	%	n	%
Employed	748	67.6	250	71.2	180	65.9	318	65.8
Self Employed	99	8.9	26	7.4	23	8.4	50	10.4
Unemployed	43	3.9	14	4.0	7	2.6	22	4.6
Retired	63	5.7	10	2.8	25	9.2	28	5.8
Student	117	10.6	37	10.5	34	12.5	46	9.5
Total	**1107**		**351**		**273**		**483**	

2.13 Financial Worries

Participants were asked, 'Do you currently have any financial worries?', answering on a 5-point Likert scale. As Figure 2.10 illustrates, the majority of all Scottish participants (58%, n=634/1097) said that they never or occasionally had financial worries in the past year and 42% (n=463/1097) of all men reported that they had financial worries sometimes or all of the time in the past year. As the

Chi^2 analysis showed, financial worries were not patterned by NHS Health board (x^2=466, df=2, p=0.79).

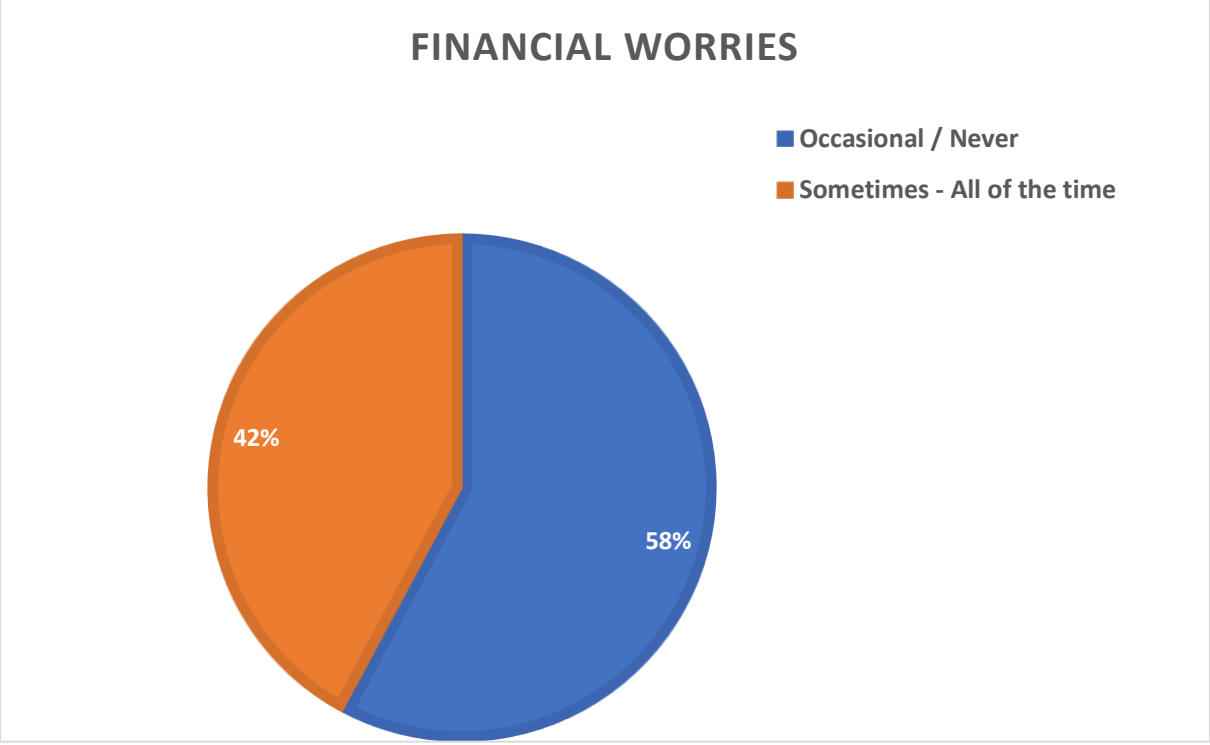


Figure 2.10. Financial worries for all SMMASH3 participants

2.14 Gay Scene Use

Participants were asked about their use of the commercial gay scene, on a scale ranging from 1 (3 or more times a week) to 5 (Never). Just over half of participants (51%, n=565/1109) reported that they never accessed the commercial gay scene and almost one third did so once a month or less (30%, n=335/1109) (see Figure 2.11). About 17% (n=192/1109) reported around weekly use and a small proportion of the sample stated more frequent usage (1.5%, n=17). In concert, the majority of men in this study (81%, n=900/1109) use the commercial gay scene once a month or never, similar to the SMMASH2 study (Frankis et al., 2018). This is important because prior to the SMMASH studies, our population-level knowledge of the sexual health and behaviours of gay and other GBMSM in Scotland was based on the Scottish Gay Men's Sexual Health Surveys (see McDaid et al., 2012),

which recruited participants exclusively on the commercial gay scene in Glasgow and Edinburgh and whose participants reported higher usage of the commercial gay scene. Therefore, the SMMASH studies provide unique information about a distinct population of GBMSM in Scotland who do *not* use the commercial gay scene. Together the surveys provide a fuller picture of a larger and more varied population of GBMSM in Scotland.

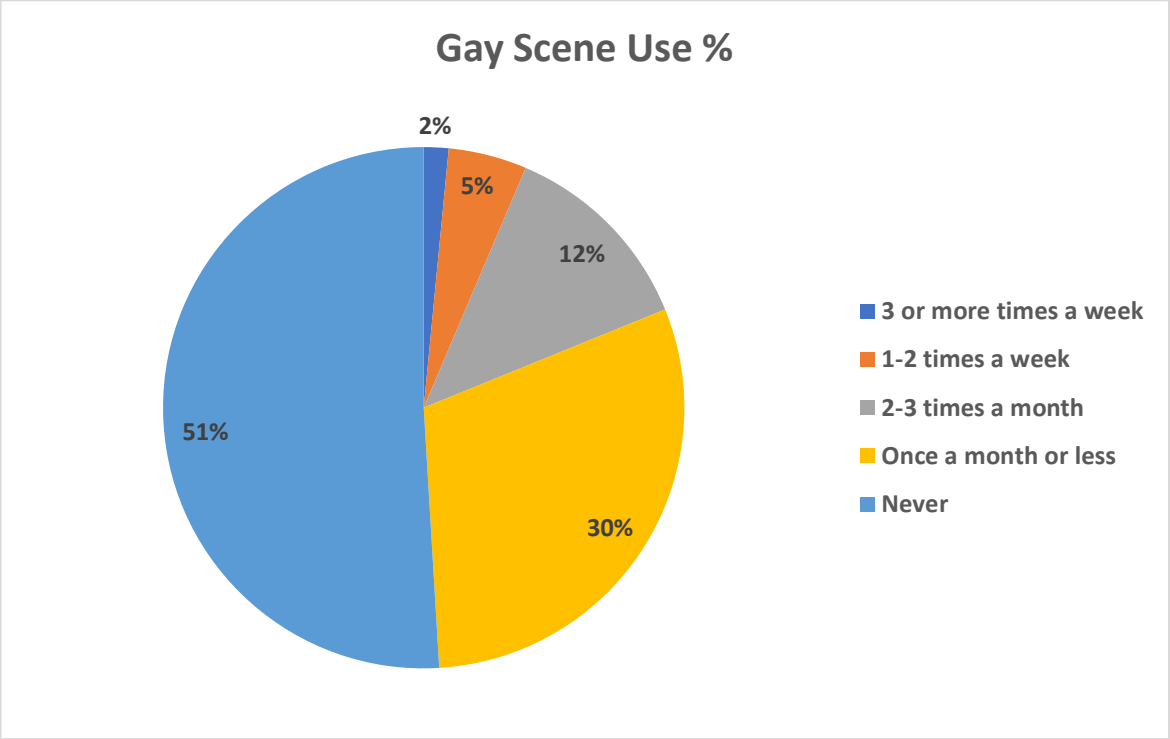


Figure 2.11. Gay scene use for all SMMASH3 participants

One-way ANOVA suggested that frequency of use of the commercial gay scene (see Table 2.8) was significantly different by NHS region (Welch=8.83, df (2, 610), p<0.001). Specifically, men in NHS Lothian reported significantly more frequent use of the commercial gay scene than men in the RoS (p<0.001). However, in all SMMASH3 groups, the mean level of commercial gay scene use was between 'never' (score of 5) and 'once a month or less' (score of 4), demonstrating that SMMASH3 participants are primarily a non-scene-going population overall.

Table 2.8. Gay Scene Use Frequency: Mean Scores By NHS Health Board Region

Region	N	Mean	SD[1]
NHS GGC	352	4.22	0.97
NHS Lothian	273	4.05	1.09
RoS	484	4.36	0.84
Total	**1109**	**4.24**	**0.95**

[1] Standard Deviation

2.15 Outness - How 'Out' Are You?

We asked participants about how open or 'out' they were regarding their sexual attraction to men, defined as follows; 'Being 'out' means that you have told people about your sexual orientation and don't try to hide it.' Participants responded on scale of 1-5, where 1 = *'out to everyone'* and 5 = *'not out to anyone'*. Overall, as shown in Figure 2.12, most men were out to everyone (score = 1; 49%, n=539/1095) or almost everyone (score = 2; 20%, n=216/1095) and notably fewer were out to some (score = 3; 11%, n=117/1095), a few people (score = 4; 10%, n=115/1095) or no-one (score = 5; 10%, n=108/1095). These findings suggest higher levels of community level 'outness' than in SMMASH2 (Frankis et al., 2018), where the vast majority of men (63%) were out to 'all or almost all those who knew them' and far more men (25%) were out to a 'few people or no-one'.

Mean levels of 'outness' (see Table 2.9) were significantly different (Welch=9.19, df(2, 654), $p<0.001$) between NHS regions. Specifically, men in NHS GGC reported significantly higher levels of 'outness' than men in the RoS ($p<0.005$), and there was a trend towards significance, men in NHS Lothian reporting higher levels of 'outness' than men in the RoS ($p=0.054$). This is an unsurprising result, given that same-sex attracted men are known to move to large cities.

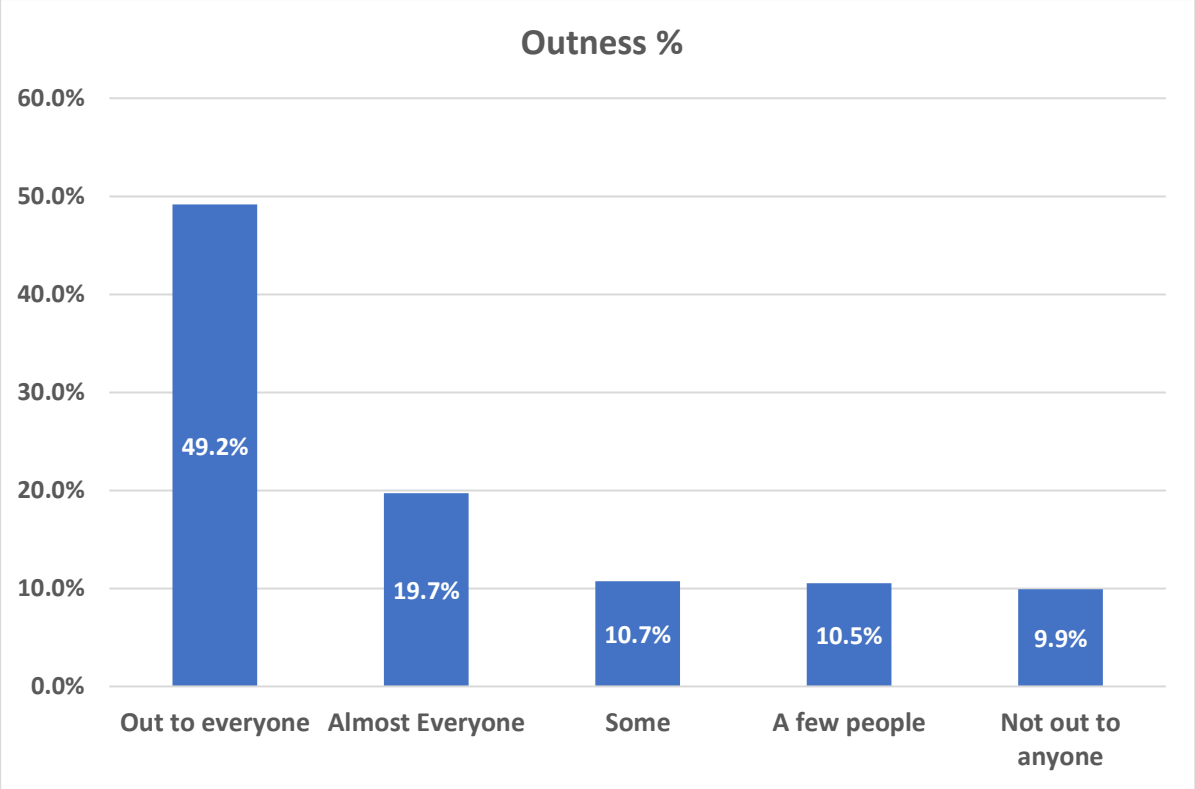


Figure 2.12. Level of outness for SMMASH3 participants

Table 2.9. "Being out": Mean Scores By NHS Health Board Region

Region	N	Mean	SD[1]
NHS GGC	347	1.90	1.272
NHS Lothian	270	2.07	1.370
RoS	478	2.31	1.429
Total	**1095**	**2.12**	**1.376**

[1] Standard Deviation

2.16 Summary

- Overall, 1110 GBMSM in Scotland completed the SMMASH3 survey, recruited across social media and gay sociosexual media websites and apps, distributed across NHS Lothian (25%), NHS GGC (32%) and the RoS (44%).
- Most of these men were recruited from Scruff (24%), followed by Grindr (16%,), Recon (16%), and Facebook (14%).

- Men were somewhat differently represented across different age categories of 16-25 (16%), 26-35 (27%), 36-45 (21.0%) and 46+ years (37.0%), with the predominant age group of participants aged 46+ years, suggesting that we have an older cohort of men.
- Participants were highly educated with 77% possessing a university degree level qualification (undergraduate/postgraduate) and only 2% indicating they did not possess any academic qualifications. Men in the RoS reported significantly lower education levels than men in NHS GGC and NHS Lothian.
- Most participants across the three NHS regions identified themselves as either White Scottish or White British Non-Scottish (97%), with very few Black, Asian, Mixed and other ethnicities (3%).
- Most participants identified as gay (81%) with a substantial cohort of men identified as bisexual (16%), and few identified as straight (1%, n=13/1107); a greater proportion of men in NHS GGC and Lothian identified as gay compared to the RoS.
- Most men identified themselves as male (98%), 0.9% considered themselves as non-binary and 0.6% as transmen.
- Most men across the three NHS regions (54%) were single, 37% had a regular male partner and 8.5% reported a regular female partner.
- 4 in 10 (39%) men in Scotland reported a condition listed as a disability in the census, whilst 61% said that they did not suffer from any condition.
- The vast majority of the sample were in current employment (76.5%); only 4% were unemployed whilst about 1 in 10 (11%) participants were students and 6% were retirees.
- Most men across the three NHS regions (58%) said that they never or occasionally had financial worries in the past year. 42% of all men reported that they had financial worries sometimes or all of the time in the past year.

- 7 in 10 men were ‘out’ about their sexual orientation to most other people (68.9%), but 3 in 10 men (31.1%) were out to few people or no-one. Men in NHS GGC and NHS Lothian reported significantly higher levels of ‘outness’ compared to men in the RoS.

Chapter 3 – Sexual behaviours

3.1 Introduction

This chapter describes the sexual behaviours of GBMSM in the SMMASH3 study. A total of 1110 men completed the questions about sexual behaviours. We present the basic descriptive statistics for each of these variables and subsequently use inferential statistics to determine if significant differences were observed for each of the following variables;

1. Across the 3 NHS regions of NHS Greater Glasgow and Clyde (GGC), NHS Lothian and the Rest of Scotland (RoS).

2. By age category, grouped as aged 16-25 years, 26-35 years, 36-45 years and 46 years and over.

3. By sexual orientation, either gay or bisexual/straight.

4. By relationship status, either single, regular male partner or regular female partner.

5. By financial status, reporting financial worries either 'occasionally/never' or 'sometimes/all of the time'.

3.2 Number of regular male sex partners

Men were asked to report the number of regular male partners with whom they had i) any sexual contact, ii) anal sex and iii) anal sex without a condom (henceforth defined as *condomless anal intercourse* or CAI) in the last 12 months. On average, participants reported multiple regular male sexual partners (M=2.9), multiple regular male anal sex partners (M=2.2), and multiple regular male CAI partners (M=1.7) in the last 12 months (see Table 3.1).

Table 3.1. Number Of Regular Male Sex Partners In The Last 12 Months: Whole Sample And By NHS Region

	Total			NHS GGC		NHS Lothian		RoS	
	N	Mean (SD)	Mode	N	Mean (SD)	N	Mean (SD)	N	Mean (SD)
Any sexual contact	1105	2.9 (5.7)	1	351	3.0 (6.4)	271	3.0 (5.8)	483	2.7 (5.1)
Anal sex	1105	2.2 (4.7)	0	351	3.4 (4.8)	271	2.3 (5.0)	483	2.1 (4.5)
CAI	1105	1.7 (4.2)	0	351	3.0 (10.3)	271	1.8 (4.8)	483	1.6 (4.2)

3.2.1 Number of Regular Male Sex Partners by NHS Region

Number of sex partners by NHS region is shown in Table 3.1. One-way ANOVA suggested that there were no significant differences across the 3 NHS Health Board regions in the number of regular male sex partners ($F=0.56$, $df(2,1102)$, $p=0.57$), regular anal sex partners ($F=0.38$, $df(2,1102)$, $p=0.69$) and regular CAI partners ($F=0.16$, $df(2,1102)$, $p=0.85$) reported in the last 12 months.

3.2.2 Number of regular male sex partners by other demographics

One-way ANOVA and independent Samples T-tests suggested that there were no significant differences by age, sexual orientation, relationship status or financial worries in the number of regular male sex partners, regular anal sex partners and regular CAI partners reported in the last 12 months.

3.3 Number of casual male sex partners

Men were asked to report the number of casual male partners with whom they had i) any sexual contact, ii) anal sex and iii) CAI in the last 12 months. On average, participants reported multiple casual male sexual partners (M=11.3), multiple casual male anal sex partners (M=7) and multiple casual male CAI partners (M=4.7) in the last 12 months (see Table 3.2).

Table 3.2. Number Of Casual Male Sex Partners In The Last 12 Months: Whole Sample And By NHS Region

	Total			NHS GGC		NHS Lothian		RoS	
	n	Mean (SD)	Mode	N	Mean (SD)	N	Mean (SD)	n	Mean (SD)
Any sexual contact	1101	11.3 (22.4)	0	349	11.9 (21.2)	270	14 (24.5)	482	9.3 (21.7)
Anal sex	1101	7.0 (18.5)	0	349	7.7 (16.0)	270	8.4 (20.2)	482	5.8 (19.2)
CAI	1101	4.7 (16.7)	0	349	4.6 (12.4)	270	5.7 (18.3)	482	4.1 (18.4)

3.3.1 Number of Casual Male Sex Partners by NHS Region

Number of casual sex partners by NHS region is shown in Table 3.2. One-way ANOVA suggested that there was a significant difference in the number of casual partners men had any sexual contact with across the 3 NHS Health Board regions ($F=4.05$, $df(2, 1098)$, $p<0.05$), with men living in Lothian ($M=14$, $SD=24.5$) having a higher number of casual sex partners compared to men living in RoS ($M=9.3$, $SD=21.7$) . However, the number of casual anal sex partners ($F=1.98$, $df(2,1098)$, $p=0.13$) and casual CAI partners ($F=0.83$, $df(2,1098)$, $p=0.44$) reported in the last 12 months did not differ by NHS region (see Table 3.2).

3.3.2 Number of casual male sex partners by other demographics

One-way ANOVA and independent Samples T-tests suggested that there were no significant differences by age, sexual orientation, relationship status or financial worries in the number of casual male sex partners, casual anal sex partners, and casual CAI partners reported in the last 12 months.

3.4 High Risk Sex

Herein, HIV-/untested men not on PrEP who report condomless anal intercourse with i) HIV status-unknown partners, or ii) HIV+ partners with unknown/detectable viral load are considered to be at higher risk of HIV transmission and are defined as being at 'high sexual risk'. Therefore, men on PrEP

and HIV-/untested men who report i) no condomless anal intercourse, or ii) condomless anal intercourse with partners whose HIV status is known to be negative (i.e. *serosorting*) or positive but have an undetectable viral load (i.e. *treatment as prevention*), are defined as being at lower sexual risk. Overall, 62% (n=534/873) of all HIV negative/untested GBMSM taking part in the survey were classified as being at low sexual risk while 39% (n=339/873) as at high risk of HIV transmission.

Table 3.3. High Risk Sex: Whole Sample and by NHS Region

	Whole Sample	NHS GGC	NHS Lothian	RoS
	N (%)	**N (%)**	**N (%)**	**N (%)**
High risk	339(39%)	103 (38%)	74 (34%)	162(42%)
Low Risk	534(61%)	175(62%)	141(66%)	322(58%)
Total	**873**	**278**	**215**	**484**

The relationship between high/low sexual risk and NHS region, age, sexual orientation, relationship status, and financial worries was examined as follows.

3.4.1 High risk sex - Age and relationship status

A significant relationship was detected between age and sexual risk (x^2=24.75, df=3, p< 0.001), with younger men (53%, 16-25 years; 43.3%, 26-35 years) more likely to report higher sex risk compared to older men (35.3%, 36-45 years; 30.4%, 46+ years) (see Table 3.4).

Table 3.4. Sexual Risk; by Age

Age Range		Low Risk		High Risk	
	Total	**n**	**%**	**n**	**%**
16-25 years	149	70	47.0	79	53.0
26-35 years	245	139	56.7	106	43.3
36-45 years	170	110	64.7	60	35.3
46+ years	309	215	69.6	94	30.4
Total	**873**	**534**	**61.2**	**339**	**38.8**

Similarly, a Chi-Square analysis showed a significant association between sexual risk and relationship status (x^2=6.60, df=2, p< 0.05), with men being in a relationship with a male partner (44.4%) being more likely to report high risk sex than those who were in a relationship with a regular female partner (37.1%) and those who were single (35.4%) (see Table 3.5).

Table 3.5. Sexual Risk; by Relationship Status

Relationship Status		**Low Risk**		**High Risk**	
	Total	**n**	**%**	**n**	**%**
Single	466	301	64.6	165	35.4
Regular Male Partner	322	179	55.6	143	44.4
Regular Female Partner	70	44	62.9	26	37.1
Total	**858**	**524**	**61.1**	**334**	**38.9**

3.4.2 High risk sex - Financial worries, NHS region, and sexual orientation

Chi-square analyses suggest that there was no significant association between sexual risk and financial worries (x^2=2.72, df=1, p=0.09), NHS region (x^2=3.92, df=2, p=0.14), or sexual orientation (x^2=0.24, df=1, p=0.88).

3.5 Fisting and Group sex

Men were asked about their experiences of fisting and group sex, and how recently these had occurred. Whilst only 15% (n=168/1106) of participants had ever engaged in fisting, 7.6% (n=84/1106) had done so in the past year. Group sex was relatively common, with over half (60%, n=666/1104) report lifetime group sex, and almost one third (32%, n=352/1104) had done this in the last 12 months.

3.5.1 Fisting And Group Sex: By Key Sociodemographic Variables

None of the five sociodemographic variables (age, relationship status, region, sexual orientation, and financial worries) were significantly related to reporting either fisting or group sex in the last 12 months.

3.6 Sex with Women

Participants in this study were asked when they had last had sex with a woman (see Table 3.6). Most participants (55.4%, n=610/1101) had never had sex with a woman although 11.5% (n=127/1101) reported sex with a woman within the last 12 months.

Table 3.6. When Did You Last Have Any Kind Of Sex With A Woman?

	n	%
Never	610	**55.4**
Within the last 24 hours	18	**1.6**
Within the last 7 days	44	**4.0**
Within the last 4 weeks	16	**1.5**
Within the last 6 months	18	**1.6**
Within the last 12 months	31	**2.8**
Within the last 5 years	78	**7.1**
More than 5 years ago	286	**26.0**
Total	**1101**	

3.6.1 Sex With Women In The Last 12 Months: By NHS Region

Chi-square analysis (x^2=2.67, df=2, p=0.26) suggested that there were no significant differences in the proportion of participants who report sex with women in the last 12 months across the 3 NHS regions.

3.6.2 Sex With Women In The Last 12 Months: By Age

Chi-square analysis (x^2=2.70, df=3, p=0.44) suggested that there were no significant differences in the proportion of participants who report sex with women in the last 12 months across the four different age groups.

3.6.3 Sex With Women In The Last 12 Months: By Sexual Orientation

Unsurprisingly, chi-square analysis (x^2=466.84, df=1, p< 0.001) suggested that gay identified men were significantly less likely (2.1%) to report sex with women in the last 12 months compared to bisexual/straight identified (57.9%) men (see Table 3.7).

Table 3.7. Sex With Women In The Last 12 Months: By Sexual Orientation

Sexual Orientation	Report sex with women in the last 12 months		Report no female sex partners in the last 12 months		Total
	n	%	n	%	n
Gay	19	2.1%	879	97.9	**898**
Bisexual/Straight	110	57.9%	80	42.1%	**190**
					1088

3.6.4 Sex With Women In The Last 12 Months: By Relationship Status

Unsurprisingly, chi-square analysis (x^2 =447.80, df=2, p< 0.001) suggested that single men (7.1%) and men with a regular male partner (3.9%) were significantly less likely to report sex with women in the last 12 months compared to men with a regular female partner (80.6%). However, these data also suggest that a fifth of men in Scotland (19%, n=18/93) who have a regular female partner were not sexually active with that partner in the last 12 months (see Table 3.8).

Table 3.8. Sex With Women In The Last 12 Months: By Relationship Status

Relationship Status	Report sex with women in the last 12 months		Report no female sex partners in the last 12 months		Total
	n	%	n	%	n
Single	42	7.1	549	92.9	**591**
Regular Male Partner	16	3.9	392	96.1	**408**
Regular Female Partner	75	80.6	18	19.4	**93**
					1092

3.6.5 Sex With Women In The Last 12 Months: By Financial Worries

Chi-square analysis (x^2=0.01, df=1, p=0.97) suggested that there was no significant association between financial worries and having sex with a woman in the last 12 months.

3.7 High risk sex with women in the last 12 months

We calculated a measure of high risk condomless vaginal of anal intercourse (CVAI) with women in the last 12 months, defined as:

- CVAI with at least 2 female partners

- or reporting CVAI with a casual female partner

- or at least 1 CVAI female partner whose HIV status was unknown or serodiscordant to themselves in the last 12 months. As such, seroconcordant CVAI with one regular partner in the last 12 months is defined as lower risk.

It is worth noting that none of the men taking part in the survey reported that they had sex with an HIV positive woman, and thus, none of our HIV-/untested men using *treatment as prevention* to reduce HIV risk with female partners.

Of those men who reported sex with women in the last 12 months, almost one third (32%, n=40/127) reported high risk CVAI and the rest of the men (68%, n=87/127) reported no high risk CVAI in the last 12 months (see Table 3.9).

Table 3.9. High Risk Sex With Women In The Last 12 Months: Whole sample and by NHS Region

	Total		NHS GGC		NHS Lothian		RoS	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Low risk CVAI	87	68.5	24	70.6	18	62.1	45	70.3
High risk CVAI	40	31.5	10	29.4	11	37.9	19	29.7
Total	**127**		**34**		**29**		**64**	

3.7.1 High Risk Sex With Women In The Last 12 Months: By NHS Region

Chi-square analysis (x^2=0.72, df=2, p=0.68) suggested that men in NHS GGC were not significantly more likely to report high risk sex with women in the last 12 months compared to men in both NHS Lothian and the RoS.

3.7.2 High Risk Sex With Women In The Last 12 Months: By Age

Chi-square analysis (x^2=1.84, df=3, p=0.60) suggested that there were no significant differences in the proportion of men who report high risk sex with women across the four age categories.

3.7.3 High Risk Sex With Women In The Last 12 Months: By Sexual Orientation

Chi-square analysis (x^2 = 3.80, df=1, p=0.06) suggested that gay identified men were no more likely to report high risk sex with women than and bisexual/straight identified men. However, it should be

noted that this subset of men only contains men who reported sex with women in the last 12 months, of whom the large majority identify as bisexual/straight.

3.7.4 High Risk Sex With Women In The Last 12 Months: By Relationship Status

Chi-square analysis (x^2=2.88, df=2, p=0.24) suggested that reporting high risk sex with women was not patterned by partnership status.

3.7.5 High Risk Sex With Women In The Last 12 Months: By Financial Worries

Chi-square analysis (x^2=0.001, df=1, p=0.97) suggested that men who had financial worries 'sometimes/all of the time' were no more likely to report high risk sex with women, than men who 'occasionally/never' had financial worries.

3.8 Selling Or Exchanging Sex

Men were asked three questions about their experiences of selling or exchanging sex and how recently these had occurred (see Table 3.10). Overall, between 3-5% of our sample reported exchanging sex for money (4.8%), a place to sleep (3.5%) or something else, like cigarettes, drugs, food etc. (3.3%).

Table 3.10. Experiences Of Sex Work: By Type Of Sexual Exchange

	Total	Never/more than 1 year ago		Yes, in the last year	
	n	n	%	n	%
Received money for sex	1110	1057	95.2	53	4.8
Had sex to make sure had a place to sleep	1110	1071	96.5	39	3.5
Sex in exchange for something else (cigarettes, drugs, food, etc.)	1110	1073	96.7	37	3.3

3.8.1 Selling Or Exchanging Sex: By NHS Region

Chi-square analyses suggested that there were no significant differences in the frequency of these 3 measures of selling or exchanging sex (received money for sex, x^2=1.12, df=2, p=0.57; had sex to make sure they had a place to sleep, x^2=1.01, df=2, p=0.59; sex in exchange for something else,

x^2=0.98, df=2, p=0.95) in the last 12 months across the 3 NHS regions. Therefore, these practices are equally common in each NHS region.

3.8.2 Selling Or Exchanging Sex: By Age

Chi-square analyses suggested that reporting sex in exchange for money, (x^2=18.48, df=3, p<0.001) or for a place to stay (x^2=12.53, df=3, p<0.05) and reporting sex in exchange for something else (like cigarettes, drugs, food etc.) (x^2=11.28, df=3, p<0.05) in the last 12 months were significantly related to age. Younger men (16-25 years, 8%) were significantly more likely to report having sex in return to a place to sleep in the last 12 months compared to the rest of the age groups (26-35 years, 2.3%; 36-45 years, 2.6%; 46+ years, 2.9%). Younger men were also more likely to report sex in exchange for money (16-25 years, 11%; 26-35 years, 3.7%; 36-45 years, 2.2%; 46+ years, 4.4%) or in exchange for something else in the last 12 months (16-25 years, 7.4%; 26-35 years, 2%; 36-45 years, 2.6%; 46+ years, 2.9%).

3.8.3 Selling Or Exchanging Sex: By Sexual Orientation

Chi-square analyses suggested that reporting sex in exchange for money (x^2=0.39, df=1, p=0.58), a place to sleep (x^2=0.16, df=1, p=0.90) or anything else (x^2=1.47, df=1, p=0.23) in the last 12 months was not significantly associated to sexual orientation.

3.8.4 Selling Or Exchanging Sex: By Relationship Status

Chi-square analyses suggested that relationship status was related to reporting sex in exchange for a place to sleep (x^2=6.69, df=2, p<0.05), such that single men (4.7%) were more likely to have sex in exchange for a place to sleep compared to men who were in a relationship with a man (2.7%) or woman (0%). However, no significant associations were identified between reporting exchanging sex for money (x^2=1.19, df=2, p=0.37) or anything else (x^2=4.02, df=2, p=0.13) and relationship status.

3.8.5 Selling Or Exchanging Sex: By Financial Worries

Unsurprisingly, chi-square analyses suggested that reporting financial worries related to reporting sex in exchange for money (x^2=5.37, df=1, p<0.05) and for a place to sleep (x^2=6.19, df=1, p<0.05) in the last 12 months, with men having financial worries being more likely to report sex in return for money (6.5% versus 3.5%) or a place to sleep (5.2% versus 2.4%) compared to those who had no financial worries. However, reporting exchanging sex for something else in the last 12 months was not significantly associated to financial worries (x^2=0.22, df=1, p=0.64).

3.9 Attitudes towards condom use among young GBMSM

We examined the attitudes towards condom use of men aged 24 and under who reported penetrative condomless anal intercourse (CAI) with at least one partner in the last year (n=69). Participants were asked to select as many reasons for not using condoms as they felt that they were relevant for them from a list of 11 options (see Table 3.10), which were developed based on current literature, then further reviewed and developed by a group of GBMSM and sexual health experts.

The most common reason for not using condoms was that “sex feels unnatural” (42%, n=29) followed by “my partner does not like condoms” (29%, n=20). Almost a fifth said that they only have sex with partners of HIV seroconcordant status (21.7, n=15) and/or they have condomless sex in the heat of the moment or when condoms are not immediately available (23.2%, n=16). One in eight men (14.5%, n=10) said that they do not use condoms because they are on PrEP with a similar proportion saying they avoid condoms because they lose their erection (13%, n=9) when they use condoms. Only one man (1.4%) said that he does not use condoms because he does not think he can get HIV. Interestingly, almost a third (30.4%, n=21) of men who answered these condom attitudes questions also provided “other” reasons for condomless sex, with being in a trusting/monogamous relationship reported by a sizeable proportion of respondents (14.3%, n=9).

Table 3.11. Reasons for not using condoms

	n	%
Sex feels unnatural with condoms / I prefer skin to skin contact	29	**42**
My partner does not like condoms	20	**29**
I do not know how to ask my partner to use condoms	6	**8.7**
I lose my erection when I use condoms	9	**13**
I only have sex with partners who have the same HIV status as me	15	**21.7**
I don't bother with condoms in the heat of the moment/if they are not immediately available	16	**23.2**
I don't think I can get HIV	1	**1.4**
I think that even if I get HIV, this is highly manageable these days	4	**5.8**
I am not afraid of getting a sexually transmitted infection - they are treatable	6	**8.7**
I am on PrEP	10	**14.5**
I am HIV positive and I have an undetectable viral load	0	**0**
Other	21	**30.4**
I am in a trusting/monogamous relationship	9	**14.3**
Total	**69**	

3.11 Summary

- Overall, GBMSM in Scotland reported high numbers of regular and casual sex partners in the last 12 months.
- The number of regular partners did not differ by the three NHS regions or by any other sociodemographic variable. However, men living in Lothian had a higher number of casual sex partners compared to men living in RoS.
- 4 in 10 men reported high risk sex in the last 12 months. Younger men (16-35 years) were more likely to report high risk sex compared to older men (36-45 and 46+ years). Men who were in a relationship with a male partner were more likely to report high risk sex compared to those who were in a relationship with a regular female partner and those who were single.
- Almost a third of participants reported group sex in the last 12 months. Fisting was less common, reported by around 1 in 14 (7.6%) men annually.

- Over 1 in 9 men (11.5%) reported sex with a woman in the last 12 months, which did not differ by NHS region, age or financial worries, but unsurprisingly, bisexual/straight identified men and men reporting a regular female partner were significantly (far) more likely to report sex with women.
- One third of those men who had sex with women in the last 12 months reported high risk CVAI with women; this did not differ by NHS region, age, sexual orientation, relationship status or financial worries.
- Around 3-5% of men reported sexual exchange for money, a place to sleep or goods in the last 12 months; single men, younger men and men with financial worries were the most likely to exchange sex for money or goods. However, sexual exchange was not patterned by NHS region or sexual orientation.
- In line with past research, according to the SMMASH3 respondents aged 24 years or younger and avoided condom use in the last year, the most common reasons for not using condoms were that; sex feels unnatural with condoms (42%); partner does not like using condoms (29%); only have sex HIV seroconcordant partners (21.7%); and having sex in heat of the moment and/or lack of condom availability (23.2%).

Chapter 4 – HIV Testing Behaviour

4.1 Introduction

This chapter describes the HIV testing behaviours of GBMSM in the SMMASH3 study. We present the basic descriptive statistics (frequency and percentages) for these items and subsequently use inferential statistics to determine if significant differences were observed for each of the following variables;

1. Across the 3 NHS regions of NHS Greater Glasgow and Clyde (GGC), NHS Lothian and the Rest of Scotland (RoS).

2. By age category, grouped as aged 16-25 years, 26-35 years, 36-45 years and 46 years and over.

3. By sexual orientation, either gay or bisexual/straight.

4. By relationship status, either single, regular male partner or regular female partner.

5. By financial status, reporting financial worries either 'occasionally/never' or 'sometimes/all of the time'.

4.2 GBMSM's Belief Of Their HIV Status

A total of 1084 GBMSM completed the HIV testing section of the online survey, of which 31% (n=342/1084) lived within NHS GGC, 25% (n=270/1084) within NHS Lothian and 44% (n=472/1084) within the RoS.

These men were asked '*What do you believe your current HIV status is?*' Of the 1079 participants who responded to this question, most men (86%, n=932/1079) said they were HIV negative, 7% (n=76/1079) said they were HIV positive and 7% (71/1079) said they did not know (see Figure 4.1).

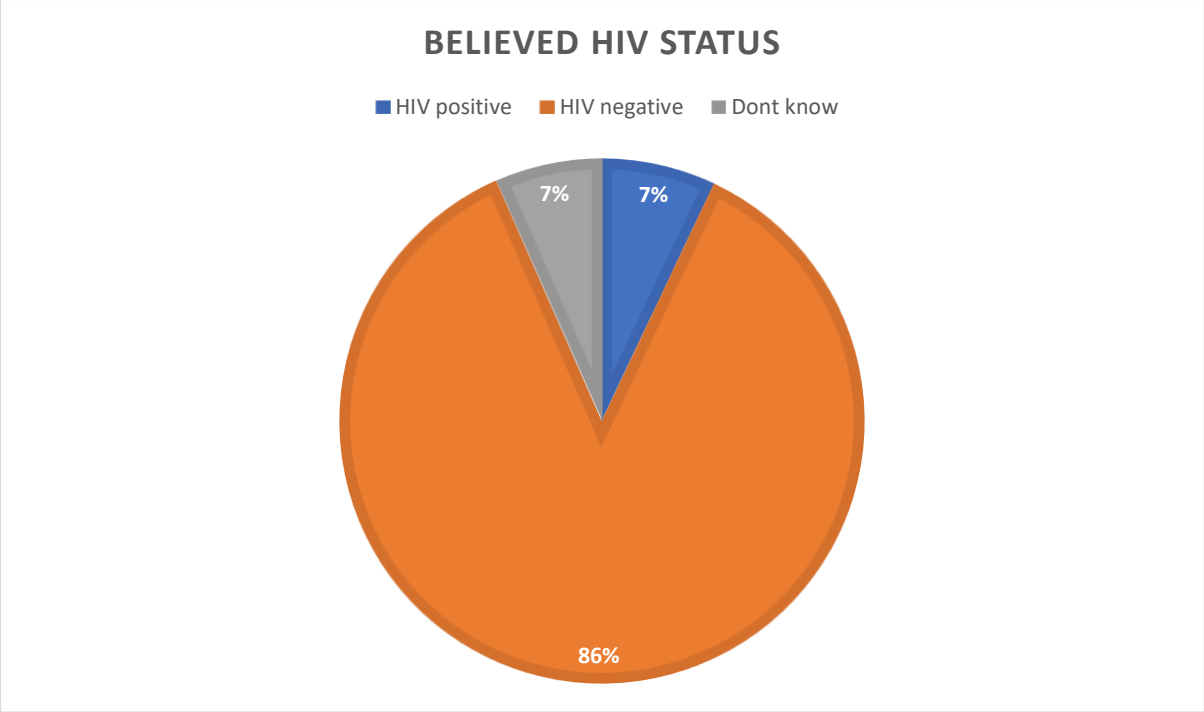


Figure 4.1. Believed HIV status for all SMMASH3 participants

4.3 HIV Testing And Recency

Men were asked whether they had ever had an HIV test (n=1074). Most (84%, n=903) said they had ever had an HIV test and the remaining 16% (n=171) reported that they had not.

Men were asked when their most recent HIV test was (see Table 4.1). Almost one third of all men (35.4%, n=380) tested in the last 3 months, 14.1 %(n=151) in the last 3 to 6 months and 12.9% (n=139) in the last 6 to 12 months. Another 14.6% (n=157) of men tested between 1 and 5 years ago and 7.1% (n=76) more than 5 years ago. 15.9% (n=171) said that they had never been tested for HIV.

Table 4.1. Most Recent HIV Test Date (Tested And Untested Men)

	n	%	Cumulative %
In the last 3 months	380	35.4	**35.4**
Between 3 and 6 months	151	14.1	**49.4**
Between 6 months and 1 year ago	139	12.9	**62.4**
Between 1 and 5 years ago	157	14.6	**77.0**
Over 5 years ago	76	7.1	**84.1**
Never had an HIV test	171	15.9	**100.0**
Total	**1074**		

4.4 HIV Test Result

We asked those men who had ever had an HIV test (n=898) what the result of their last test was. Most (91.9%, n=825/898) reported their last test was HIV negative, 7.5% (n=67/898) said it was HIV positive and a few (0.7%, n=6/898) said they 'didn't know'. Overall, a small number (n=9) of men in our sample said they thought they were HIV positive even though their last HIV test was negative.

4.5 Testing Behaviours: Sexually Active HIV Negative/Untested GBMSM Only

Only sexually active men who have not previously tested HIV positive logically need to test for HIV. For brevity we refer to these men herein as sexually active HIV negative/untested men. Overall, 65 men reported they were not sexually active with another person in the last year and a further 61 had tested HIV positive in the last year. Therefore, a total of 984 men in our sample were sexually active HIV negative/untested men. 950 out of the 984 men addressed the HIV testing recency question. Out of these men, 64.7% (n=615/950) had been tested for HIV in the last year whilst 35.3% (n=335/950) of these men had been tested more than a year ago or never.

4.5.1 Recency Of Testing: Sexually Active HIV Negative/Untested GBMSM Only

BASHH guidelines (Ross et al., 2014) suggest that sexually active GBMSM should test at least annually for HIV. Therefore, we analysed recency of HIV testing for sexually active HIV negative/untested men (n=950). Overall, we see that almost four in five men (64.7%, n=615) had tested for HIV in the previous year, meaning that in our sample of men in Scotland, 35.3% (n=335) of GBMSM are not testing sufficiently frequently for HIV (see Table 4.2). Compared to the SMMASH2 study in 2016 (53.7%), an 11% increase was recorded in sufficiently frequent HIV testing among HIV negative/untested GBMSM in Scotland. It is likely that PrEP availability and testing requirements have had a large part to play here.

Table 4.2. Most Recent HIV Test Date: Sexually Active HIV Negative/Untested GBMSM Only

	n	%	Cumulative %
In the last 3 months	344	36.2	36.2
Between 3 and 6 months ago	142	14.9	51.2
Between 6 months and 1 year ago	129	13.6	64.7
Between 1 and 5 years ago	142	14.9	79.7
Over 5 years ago	46	4.8	84.5
Never had an HIV test	147	15.5	100.0
Total	**950**		

4.5.2 Recent Testing: Sexually Active HIV Negative/Untested GBMSM: By NHS Region

In line with BASHH HIV testing guidelines for GBMSM, we define 'recent' HIV testing as reporting an HIV test within the last year. A x^2 analysis (x^2=12.9, df=2, p<0.01) showed that HIV testing recency of sexually active HIV negative/untested men was significantly different across the three NHS regions (see Table 4.3). Men in the RoS were significantly less likely to have been tested for HIV in the last year (58.6%, n=241) compared to men in NHS Lothian (71.8%, n=172) and GGC (67.4%, n=201).

Table 4.3. Recent Testing Behaviours: Sexually Active HIV Negative/Untested GBMSM: By NHS Region

HIV Testing	Whole Sample		NHS GGC		NHS Lothian		RoS	
	n	%	n	%	n	%	n	%
Recent testing < 12 months	615	64.7	201	67.4	173	71.8	241	58.6
Never tested > 12 months	335	35.3	97	32.6	68	28.2	170	41.4
Total	**950**		**298**		**241**		**411**	

4.5.3 Recent Testing: Sexually Active HIV Negative/Untested Sexually Active GBMSM: By Key Sociodemographics

Data on patterns of HIV testing recency were analysed across the 4 key demographic variables of age, sexual orientation, relationship status and financial status (as detailed in Chapter 1).

4.5.4 Recent Testing: Sexually Active HIV Negative/Untested GBMSM By Age

Chi-square analysis (x^2 =11.51, df=3, p< 0.05) suggested that HIV testing in the last year was not patterned by age (see Table 4.4).

Table 4.4. Recent Testing: Sexually Active HIV Negative/Untested GBMSM: Age Range

Age Range	Whole Sample	Recent testing < 12 months		Never tested or > 12 months	
	n	n	%	n	%
16-25 years	153	100	65.4	53	34.6
26-35 years	266	177	66.5	89	33.5
36-45 years	193	132	68.4	61	31.6
46+ years	338	206	60.9	132	39.1
Total	**950**	**615**	**64.7**	**335**	**35.3**

4.5.5 Recent Testing: Sexually Active HIV Negative/Untested GBMSM: By Sexual Orientation

A Chi-square analysis (x^2 =24,35, df=1, p<0.001) suggested that recent HIV testing differed by sexual orientation, such that men who identified themselves as gay were significantly more likely to have been tested for HIV in the last year (68.5%, n=523) compared to straight/bisexual men (48.5%, n=82) (see Table 4.5)

Table 4.5. Recent Testing: Sexually Active HIV Negative/Untested GBMSM: By Sexual Orientation

Sexual Orientation	Whole Sample	Recent Testing < 12 months		Never Tested or > 12 months	
	n	n	%	N	%
Gay	763	523	68.5	240	31.5
Bisexual/Straight	169	82	48.5	87	51.5
Total	**932**	**605**	**64.9**	**327**	**35.1**

4.5.6 Recent Testing: Sexually Active HIV Negative/Untested GBMSM: By Relationship Status

Chi-square analysis (x^2=28.06, df=2, p< 0.001) suggested that single men (70%, n=343) and GBMSM with a regular male partner (63.2%, n=227) were significantly more likely to report recent testing compared to those with a regular female partner (40.7%, n=35) (see Table 4.6).

Table 4.6. Recent Testing: Sexually Active HIV Negative/Untested GBMSM: Relationship Status

Relationship Status	Whole Sample	Recent Testing < 12 months		Never Tested or > 12 months	
	n	n	%	n	%
Single	490	343	70.0	147	30.0
Regular Male Partner	359	227	63.2	132	36.8
Regular Female Partner	86	35	40.7	51	59.3
Total	**935**	**605**	**64.7**	**330**	**35.3**

4.5.7 Recent Testing: Sexually Active HIV Negative/Untested GBMSM: By Financial Worries

Chi-square analysis (x^2=0.26, df=1, p=0.87) suggested that men who had financial worries 'sometimes/all of the time' were not significantly more likely to report testing in the last year, than men who 'occasionally/never' had financial worries (see Table 4.7).

Table 4.7. Recent Testing: Sexually Active HIV Negative/Untested GBMSM: By Financial Worries

Financial Worries	Whole Sample	Recent Testing < 12 months		Never Tested or > 12 months	
	n	n	%	n	%
Occasionally/Never	541	348	64.3	193	35.7
Sometimes/all of the time	401	260	64.8	141	35.2
Total	**942**	**608**	**64.5**	**334**	**35.5**

4.6 HIV Testing Amongst High Risk HIV Negative/Untested GBMSM

Current BASHH guidelines suggest that GBMSM who report *higher sex risk* should test for HIV every 3 months, although 'higher sex risk' is not specifically defined. Herein, HIV-/untested men not on PrEP who report condomless anal intercourse with i) HIV status-unknown partners, or ii) HIV+ partners with unknown/detectable viral load are considered to be at higher risk of HIV transmission and defined as being at 'high sexual risk'. Therefore, men on PrEP and HIV-/untested men who report i) no condomless anal intercourse, or ii) condomless anal intercourse with partners whose HIV status is known to be negative (i.e. *serosorting*) or positive but have an undetectable viral load (i.e. *treatment as prevention*), are defined as being at lower sexual risk. Overall, 41.6% (n=339/815) of the sexually active, HIV negative/untested men in our sample addressing the sex risk section report high risk sex. Among those men considered as at high risk and addressed the HIV testing section of the SMMASH3 questionnaire (n=322), 61.2% (n=197) had an HIV test in the last year but 38.8% (n=125) have not been tested for HIV in the last year.

Table 4.8 presents these data for HIV negative/untested men who report high risk sex and addressed the HIV testing section, broken down into discrete testing periods. It is clear that almost one quarter (26.7%, n=86/322) of high risk GBMSM report an HIV test in the previous 3 months, and cumulatively

61.2%, (n=125/322) were tested in the previous year. Consequently, about four in ten men (38.8%, n=125) were tested over a year ago. As such, a clear imperative for health improvement is to increase lifetime and recent HIV testing amongst GBMSM who report high sex risk.

Table 4.8. Most Recent HIV Test Date: High Risk Sexually Active HIV Negative/Untested GBMSM Only

	n	%
In the last 3 months	86	26.7
Between 3 and 6 months	56	17.4
Between 6 months and 1 year ago	55	17.1
Between 1 and 5 years ago	49	15.2
Over 5 years ago	18	5.6
Never had an HIV test	58	18.0
Total	**322**	

4.7 Appropriate HIV Testing: According To Sexual Behaviours

We explored 'appropriate' HIV testing behaviours by GBMSM who were sexually active and HIV negative or untested. We defined 'appropriate testing' as 3 monthly testing for men who were at high sex risk (for definition see sub-section 4.6) and high CVAI and at least annual testing for men with low sex risk and low CVAI. According to these criteria, 47.6% (n= 410/862) of men in Scotland appear to be testing appropriately, that is sufficiently frequently. Interestingly, an 8% increase in appropriate testing was recorded since the last iteration of the SMMASH project (40.3% testing appropriately then) which could be potentially attributed to the introduction of PrEP to the national healthcare system and the subsequent increase in HIV testing.

4.7.1 Appropriate HIV Testing: By NHS Region

Chi-square analysis indicated the findings were patterned (x^2=11.58 df=2, p<0.01) by NHS region, such that inappropriate testing was significantly higher among men living in the Ros (58.6%, n=222) followed by those living in NHS GGC (50%, n=134) and those living in NHS Lothian (44.7%, n=96) (see Table 4.9).

Table 4.9. Appropriate HIV Testing: By NHS Region

NHS Region	Whole Sample	Testing Inappropriately		Testing Appropriately	
	n	n	%	n	%
NHS GGC	268	134	50.0	134	50.0
NHS Lothian	215	96	44.7	119	55.3
RoS	379	222	58.6	157	41.4
Total	**862**	**452**	**52.4**	**410**	**47.6**

4.7.2 Appropriate HIV Testing: By Key Demographics

As before key demographic variables associated with age, sexual orientation, relationship status and financial worries were explored in the context of appropriate HIV testing according to sexual behaviour to establish the existence of statistically significant relationships.

4.7.3 Appropriate HIV Testing: By Age

Table 4.10 shows that about 48% of men, in each age category, reported appropriate HIV testing, with about 52% reporting inappropriate testing. Chi-square analysis (x^2=4.38, df=3, p=0.22) suggested that there were no significant differences in appropriate HIV testing by age.

Table 4.10. Appropriate HIV Testing: By Age

Age Range	Whole Sample	Testing Inappropriately		Testing Appropriately	
	n	n	%	n	%
16-25 years	141	84	59.6	57	40.4
26-35 years	244	119	48.8	125	51.2
36-45 years	169	86	50.9	83	49.1
46+ years	308	163	52.9	145	47.1
Total	**862**	**452**	**52.4**	**410**	**47.6**

4.7.4 Appropriate HIV Testing: By Sexual orientation

Chi-square analysis (x^2=21.66, df=1, p<0.001) suggested that gay identified men (48.6%, n=335) were significantly less likely to test inappropriately compared to bisexual/straight identified men (69.2%, n=108) (see Table 4.11).

Table 4.11. Appropriate HIV Testing: By Sexual Orientation

Sexual Orientation	Whole Sample	Testing Inappropriately		Testing Appropriately	
	n	n	%	n	%
Gay	689	335	48.6	354	51.4
Bisexual/Straight	156	108	69.2	48	30.8
Total	**845**	**443**	**52.4**	**402**	**47.6**

4.7.5 Appropriate HIV Testing: By Relationship Status

Chi-square analysis (x^2=26.70, df=2, p<0.001) suggested that single men (45.4%, n=199) and men with a regular male partner (56.6%, n=185) were significantly less likely to test inappropriately compared to those with a female partner (74.4%, n=61) (see Table 4.12).

Table 4.12. Appropriate HIV Testing: By Relationship Status

Relationship Status	Whole Sample	Testing Inappropriately		Testing Appropriately	
	n	n	%	n	%
Single	438	199	45.4	239	54.6
Regular Male Partner	327	185	56.6	142	43.4
Regular Female Partner	82	61	74.4	21	25.6
Total	**847**	**445**	**52.5**	**402**	**47.5**

4.7.6 Appropriate HIV Testing: By Financial Worries

Chi-square analysis (x^2 =0.29, df=1, p=0.59) suggested that similar proportions of men who had financial worries 'sometimes/all of the time' and those who had them 'occasionally/never' tested appropriately for HIV in the last year (see Table 4.13).

Table 4.13. Appropriate HIV Testing: By Financial Worries

Financial Worries	Whole Sample	Testing Inappropriately		Testing Appropriately	
	n	n	%	n	%
Occasionally/Never	484	250	51.7	234	48.3
Sometimes/all of the time	372	199	53.5	173	46.5
Total	**856**	**449**	**52.5**	**407**	**47.5**

4.8 Appropriate HIV Testing: High Risk HIV Negative/Untested GBMSM

Next, we explored the data to look at appropriate testing amongst those sexually active GBMSM who were HIV negative/untested and reported high risk sex in the last year (n=322). According to the BASHH guidelines, all of these men should be testing for HIV every 3 months. Of those eligible (n=322), only 26.7% (n=86) tested appropriately, with the remaining 73.3% (n=236) testing inappropriately, indicating a substantial deficit in reaching the BASHH recommendation. These results are similar to these reported by Frankis et al (2018), according to which only 30% of all men were appropriately tested against HIV. Future interventions should be developed which will target HIV testing in high sex risk men.

4.8.1 Appropriate HIV Testing: High Risk HIV Negative/Untested GBMSM: By NHS Region

Chi-square analysis suggested that appropriate HIV testing was not significantly different across the three NHS regions (X^2=0.28, df=2, p=0.87) (see Table 4.14).

Table 4.14. Appropriate HIV Testing: High Risk HIV Negative/Untested GBMSM: By NHS Region

NHS Region	Whole Sample	Not Tested in the last 3 months		Tested in the last 3 months	
	n	n	%	n	%
NHS GGC	97	73	75.3	24	24.7
NHS Lothian	72	52	72.2	20	27.8
RoS	153	111	72.5	42	27.5
Total	**322**	**236**	**73.3**	**86**	**26.7**

4.8.2 Appropriate HIV Testing: High Risk HIV Negative/Untested GBMSM: Key Demographics

As before, key demographic variables associated with age, sexual orientation, relationship status and financial worries were explored in the context of appropriate HIV testing amongst HIV negative/untested men who report high risk sexual behaviour to establish the existence of statistically significant relationships.

4.8.3 Appropriate HIV Testing: High Risk HIV Negative/Untested GBMSM: By Age

Chi-square analysis suggested that there were no significant differences in appropriate HIV testing by age (x^2=4.20, df=3, p=0.24) (see Table 4.15).

Table 4.15. Appropriate HIV Testing: High Risk HIV Negative/Untested GBMSM: By Age

Age Range	Whole Sample	Not Tested in last 3 months		Tested in last 3 months	
	n	n	%	n	%
16-25 years	74	51	68.9	23	31.1
26-35 years	103	71	68.9	32	31.1
36-45 years	58	44	75.9	14	24.1
46+ years	87	70	80.5	17	19.5
Total	**322**	**236**	**73.3**	**86**	**26.7**

4.8.4 Appropriate HIV Testing: High Risk HIV Negative/Untested GBMSM: By Sexual orientation

Chi-square analysis (x^2 = 0.49, df=1, p=0.83) suggested that amongst high risk HIV negative/untested men, gay identified men (26.5%) were not significantly more likely to test appropriately compared to bisexual/straight identified men (28.0%) (see Table 4.16).

Table 4.16. Appropriate HIV Testing: High Risk HIV Negative/Untested GBMSM: By Sexual Orientation

Sexual orientation	Whole Sample	Not Tested in last 3 months		Tested in last 3 months	
	n	n	%	n	%
Gay	268	197	73.5	71	26.5
Bisexual/Straight	50	36	72.0	14	28.0
Total	**318**	**233**	**73.3**	**85**	**26.7**

4.8.5. Appropriate HIV Testing: High Risk HIV Negative/Untested GBMSM: By Relationship Status

Chi-square analysis (x^2=5.29, df=2, p=0.07) suggested that appropriate HIV testing among high risk men was not patterned by age (see Table 4.17).

Table 4.17. Appropriate HIV Testing: High Risk HIV Negative/Untested GBMSM: By Relationship Status

Relationship Status	Whole Sample	Not Tested in last 3 months	Tested in last 3 months

	n	n	%	n	%
Single	157	108	68.8	49	31.2
Regular Male Partner	138	110	79.7	28	20.3
Regular Female Partner	23	15	65.2	8	34.8
Total	**318**	**233**	**73.3**	**85**	**26.7**

4.8.6 Appropriate HIV Testing: High Risk HIV Negative/Untested GBMSM: By Financial Worries

Chi-square analysis indicated (x^2=0.89, df=1, p=0.35) that appropriate HIV testing among high risk HIV-/untested men was not patterned by financial worries in the past year (see Table 4.18).

Table 4.18. Appropriate HIV Testing: High Risk HIV Negative/Untested GBMSM: By Financial Worries

Financial Worries	Whole Sample	Not Tested in last 3 months		Tested in last 3 months	
	n	n	%	n	%
Occasionally/Never	166	126	75.9	40	24.1
Sometimes/all of the time	153	109	71.2	44	28.8
Total	**319**	**235**	**73.7**	**84**	**26.3**

4.9 High Risk HIV Negative/Untested GBMSM: Tested In The Last 6 Months

Given that BASHH guidelines do not define high risk, and that few high risk men tested in the last 3 months, we re-explored HIV testing amongst HIV negative and untested men who reported high risk sex, re-defining appropriate HIV testing as 'in the last 6 months'. Of those eligible (n=322), 44.1% (n=142) reported appropriate testing and 55.9% (n=180) had not tested within this time frame, respectively.

4.9.1 High Risk HIV Negative/Untested GBMSM: Tested In The Last 6 Months: By NHS Region

Chi-square analysis suggested that HIV testing in the last 6 months among high risk HIV negative /untested men was not associated to the three NHS regions (x^2=1.13, df=2, p=0.52) (see table 4.19).

Table 4.19. High Risk HIV Negative/Untested GBMSM: Tested In The Last 6 Months: By NHS Region

NHS Region	Whole Sample	Not Tested in the last 6 months		Tested in the last 6 months	
	n	n	%	n	%
NHS GGC	97	56	57.7	41	42.3
NHS Lothian	72	36	50.0	36	50.0
RoS	153	88	57.5	65	42.5
Total	**322**	**180**	**55.9**	**142**	**44.1**

4.9.2 High Risk HIV Negative/Untested GBMSM: Tested In The Last 6 Months: By Key Demographics

As before key demographic variables such as age, sexual orientation, relationship status, and financial worries were explored in the context of appropriate HIV testing amongst HIV negative/untested men who report high risk sexual behaviour to establish the existence of statistically significant relationships.

4.9.3 High Risk HIV Negative/Untested GBMSM: Tested In The Last 6 Months: By Age

Table 4.20 shows that amongst high risk HIV negative/untested men, about 44% of men in each age category reported HIV testing in the last 6 months. However, Chi-square analysis indicated that there was no significant difference in 6-month HIV testing by age (x^2=4.16, df=3, p=0.24).

Table 4.20. High Risk HIV Negative/Untested GBMSM: Tested In The Last 6 Months: By Age

Age Range	Whole Sample	Not Tested in last 6 months		Tested in last 6 months	
	n	n	%	n	%
16-25 years	74	38	51.4	36	48.6
26-35 years	103	58	56.3	45	43.7
36-45 years	58	28	48.3	30	51.7
46+ years	87	56	64.4	31	35.6
Total	**322**	**180**	**55.9**	**142**	**44.1**

4.9.4 High Risk HIV Negative/Untested GBMSM: Tested In The Last 6 Months: By Sexual Orientation

Chi-square analysis (x^2 =0.45, df=1, p=0.50) suggested that amongst high risk HIV negative/untested men, gay identified men were not significantly more likely to test in the last 6 months compared to bisexual/straight identified men (see Table 4.21).

Table 4.21. High Risk HIV Negative/Untested GBMSM: Tested In The Last 6 Months: By Sexual Orientation

Sexual Orientation	Whole Sample	Not Tested in last 6 months		Tested in last 6 months	
	n	n	%	n	%
Gay	268	147	54.9	121	45.1
Bisexual/Straight	50	30	60.0	20	40.0
Total	**318**	**177**	**55.7**	**141**	**44.3**

4.9.5 High Risk HIV Negative/Untested GBMSM: Tested In The Last 6 Months: By Relationship Status

Chi-square analysis (x^2 =0.45, df=2, p=0.80) indicated that amongst high risk HIV negative/untested men, single men were not significantly more likely to test within the last 6 months compared to men with a regular female partner and those with a regular male partner (see Table 4.22).

Table 4.22. High Risk HIV Negative/Untested GBMSM: Tested In The Last 6 Months: By Relationship Status

Relationship Status	Whole Sample	Not Tested in last 6 months		Tested in last 6 months	
	n	n	%	n	%
Single	157	86	54.8	71	45.2
Regular Male Partner	138	80	58.0	58	42.0
Regular Female Partner	23	12	52.2	11	47.8
Total	**318**	**178**	**56.0**	**140**	**44.0**

4.9.6 High Risk HIV Negative/Untested GBMSM: Tested In The Last 6 Months: By Financial Worries

Chi-square analysis (x^2=3.55 df=1, p=0.06) suggested that HIV testing in the last 6 months was not patterned by financial worries in the past 6 months (see Table 4.23).

Table 4.23. High Risk HIV Negative/Untested GBMSM: Tested In The Last 6 Months: By Financial Worries

Financial Worries	Whole Sample	Not Tested in last 6 months		Tested in last 6 months	
	n	n	%	n	%
Occasionally/Never	166	102	61.4	64	38.6
Sometimes/all of the time	153	78	51.0	75	49.0
Total	319	**180**	**56.4**	**139**	**43.6**

4.10 Regularity Of HIV Testing Amongst Sexually Active HIV Negative/Untested GBMSM

4.10.1 Regular HIV Testing Pattern

In this study, 950 GBMSM identified as HIV negative/untested and sexually active, of which 84.5% (n=803) reported a prior HIV test. We asked these 803 men whether there was a regular pattern to their HIV testing. Of the 679 HIV negative/untested men who answered this question, approximately three in four men (75.7%, n=514) reported a regular pattern of testing with the remaining one fourth (24.3%, n=165/679) testing intermittently (see Figure 4.2). Data analysis also indicates that 68.8% (n=467/679) of all GBMSM test regularly and at least annually and in accordance with the BASHH guidelines. By default, 31.2% (n=212/679) of GBMSM in this study adopt variable and intermittent approaches, some triggered by high risk sexual behaviour.

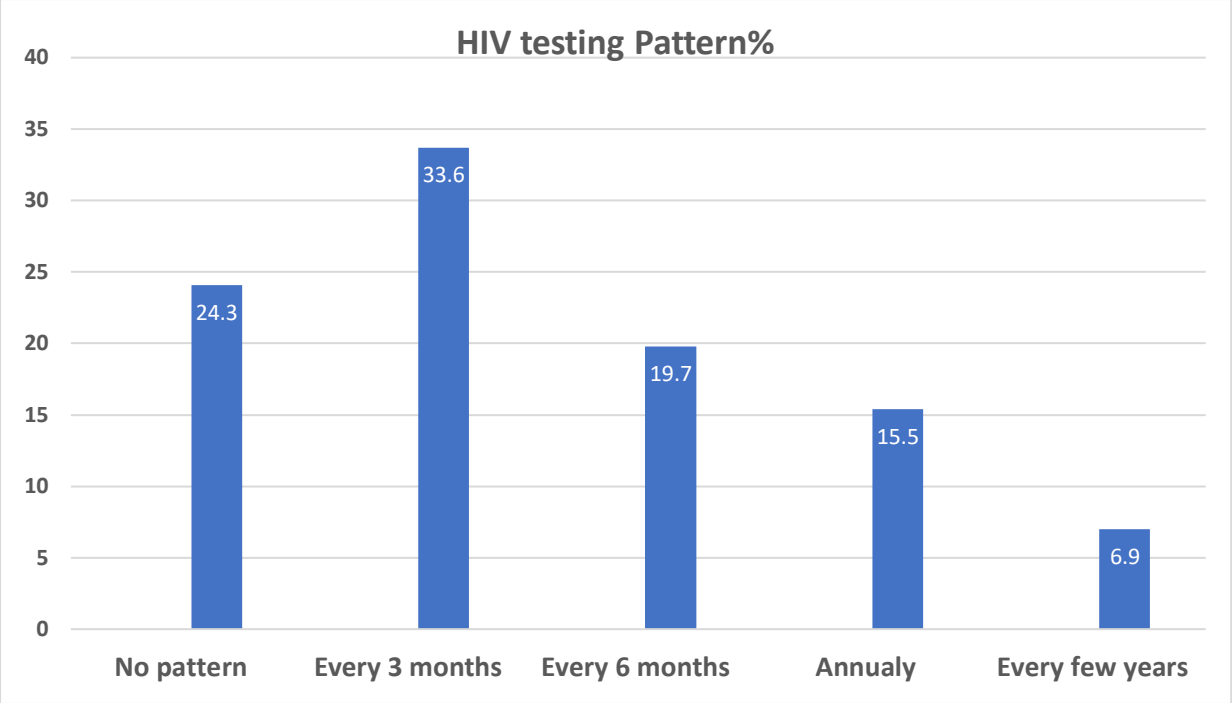


Figure 4.2. Regular HIV Testing Pattern: Sexually Active HIV Negative/Untested GBMSM

4.10.2 Regular HIV Testing Pattern: High Risk HIV Negative/Untested GBMSM

322 HIV negative/untested GBMSM reported high risk sexual activity in the last year. Out of these men, a total of 220 men had ever been tested for HIV at some point in their lives and addressed the HIV testing regularity section of the SMMASH3 questionnaire. As shown in Figure 4.3**,** only 17.3% (n=38) reported meeting the recommended BASHH guidelines of regular testing every 3 months. Whilst, cumulatively, a higher percentage of high risk negative/untested men are testing regularly at least every 6 months (44.6%, n=98/220), and yearly 65.1% (n=143/220), and a small group of men (8.3%; n=18/220) test less than yearly, almost 1 in four men (26.6%, n=59/218) have no regular pattern of testing.

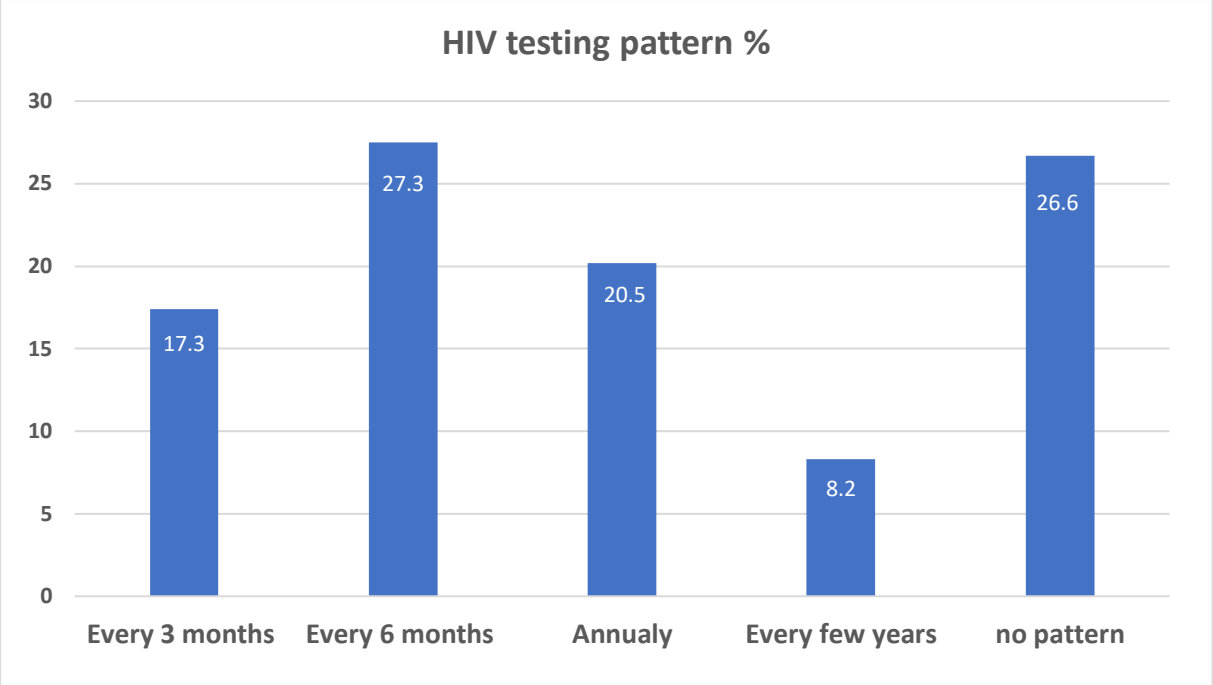


Figure 4.3. Regular HIV Testing Pattern: High risk Sexually Active HIV Negative/Untested MSM

4.11 Reasons for getting a recent HIV test

We asked those participants who have ever been tested for HIV (n=903) about the reasons why they decided to get the most recent HIV test. Participants were given the option to tick as many answers as they felt that were relevant for them. As Table 4.23 shows, the most cited reason for getting an HIV test in the last year was that it was part of men's sexual health routine (62.2%, n= 562), followed by not having a test for a long time (15.6%, n=141) and having risky sex they were worried about (13.8%, n=125). 12.8% (n=116) got an HIV test in order to get PrEP while 8.1% (n=73) reported taking a recent HIV test because they regularly have CAI. 9.4% (n=85) reported having HIV test for other reasons, including being advised to have an HIV test from their GP, employment reasons or in order to become blood donors.

Table 4.24. Reasons for having a recent HIV test

Reasons for HIV test	Participants selecting each option	
	n	%
Part of sexual health routine	562	**62.2**
Not having a test for a long time	141	**15.6**
Having risky sex I was worried about	125	**13.8**
To get PrEP	73	**12.8**
I was offered one in the STI clinic	63	**7.0**
Having regular CAI	73	**8.1**
I had a condom accident	11	**1.2**
Other reason	85	**9.4**
Whole sample	**903**	**N/A**

4.12 Summary

- Most of the men in this sample (86%) thought they were HIV negative whilst 7% said they thought they were HIV positive and 7% said they did not know.
- Overall, 84% of men said they had ever had an HIV test and the remaining 16% reported that they had not.
- Concerning their last HIV test, most (91.9%) men said it was HIV negative, 7.5% said it was HIV positive and a few men said they 'didn't know'. Therefore, overall, out of all men addressing the HIV status section of the survey (n=1069), 6.2% (n=67) were living with HIV, 77.2% (n=825) were HIV negative and a further 16.6% (n=177) were untested/unsure.

- Only sexually active, HIV-/untested GBMSM need to test for HIV (at least in terms of sexual risk factors). Considering this subgroup of men, 64.7% had been tested for HIV in the last year whilst 35.3% of these men had been tested more than a year ago or never. HIV testing in the last year was not patterned by financial worries and age. However, men in NHS Lothian and GGC, those identified themselves as gay and single men or men with a regular male partner were significantly more likely to report recent HIV testing in the last year compared to men living in the RoS, those identified themselves as bisexual/straight and men in a relationship with a woman.
- We defined 'appropriate testing' as 3 monthly testing for men who were at high sex risk and high CVAI and at least annual testing for men with low sex risk and low CVAI. According to these criteria, 47.6% of men in Scotland appear to be testing appropriately. Men with a regular female partner, those living in the RoS, and men identifying themselves as straight/bisexual were significantly more likely to test inappropriately. However, appropriate testing was not patterned by age and financial worries in the last year.
- Among the sexually active GBMSM who were HIV negative/untested and reported high risk sex in the last year (n=322), only 26.7% tested appropriately (every 3 months), with the remaining 73.3% testing inappropriately. Amongst high risk HIV negative/untested men, HIV appropriate HIV testing appropriate testing was not related to any of the key variables.
- When re-defining appropriate HIV testing as 'in the last 6 months', of those eligible (n=322), 44.1% reported appropriate testing and 55.9% had not tested within this time frame, respectively. Testing appropriately in the last 6 months was not related to any of the five sociodemographic variables.
- 7 in 10 (68.8%) of all sexually active HIV negative/untested men in this study test regularly and at least annually and in accordance with BASHH guidelines. However, among the HIV negative/untested GBMSM who report high risk sexual activity only 17.3% reported meeting the recommended BASHH guidelines of regular testing every 3 months. Whilst, cumulatively, a higher percentage of high sex risk negative/untested men are testing regularly, at least

every 6 months (44.6%) and yearly (65.1%), almost 1 in four men (26.6%) have no regular pattern of testing.

- Participants' primary reason to undergo their last HIV test was as part of an annual health check (50.6%). Other important reasons were testing because of 'risky sex that I was worried about' (11.3%) and 'not having had a test for a long time' (12.7%).
- There seems to be an increase in the proportion of men tested for HIV, since the last iteration of the SMMASH survey. However, HIV testing among GBMSM who are at higher sex risk remains suboptimal. Public health efforts should be tailored to meet the needs of those men who are at higher sex risk in order to increase HIV testing among this sub-population.

Chapter 5 - Sexually Transmitted Infection Testing Behaviours

5.1 Introduction

This chapter describes the sexually transmitted infection (STI) testing behaviours, excluding HIV, of GBMSM in the SMMASH3 study. **Herein, we focus on the men in the sample who are sexually active and HIV- or untested.** The STI testing behaviour of HIV+ men will be considered in a separate HIV+ report. We present the basic descriptive statistics (mean values, standard deviation (sd), modal values, frequency and percentages) for STI testing variables and subsequently use inferential statistics to determine if significant differences were observed for each of the following variables;

1. Across the 3 NHS regions of NHS Greater Glasgow and Clyde (GGC), NHS Lothian and the Rest of Scotland (RoS).

2. By age category, grouped as aged 16-25 years, 26-35 years, 36-45 years and 46 years and over.

3. By sexual orientation, either gay or bisexual/straight.

4. By relationship status, either single, regular male partner or regular female partner.

5. By financial status, reporting financial worries either 'occasionally/never' or 'sometimes/all of the time'.

5.2 When Was Your Most Recent STI Test?

According to BASHH guidelines, all sexually active GBMSM should test for STI at least once every 12 months. In this sample (see Table 5.1), almost two in ten (19.6%, n=178) participants had <u>never</u> had an STI test, whilst an additional 10.4% had most recently tested either over 5 years ago (n=94) and another 16.9% between 1 and 5 years ago (n=153). This means that only 53.2% (n=483) of this

sample of sexually active, HIV-/untested GBMSM had an STI test within the previous year. Next, we investigate whether STI testing in the last year was related to any of our key sociodemographic variables.

Table 5.1. When Was Your Most Recent STI Test?

	n	%
In the last 3 months	263	**29.0**
Between 3 and 6 months	106	**11.7**
Between 6 months and 1 year ago	114	**12.6**
Between 1 and 5 years ago	153	**16.9**
Over 5 years ago	94	**10.4**
Never	178	**19.6**
Total	**908**	

5.2.1 STI Testing In The Last Year: By NHS Region

Chi^2 analysis (x^2=11.88, df=2, p<0.01) suggested that there were significant differences in the proportion of participants who reported an STI test in the last year across the 3 NHS regions (see Table 5.2). Men living in NHS Lothian (59.1%) and those in GGC (57.4%) were significantly more likely to report an STI test in the last year compared to men living in the RoS (46.7%).

Table 5.2. STI Testing In The Last Year: By NHS Region

	Whole Sample		NHS GGC		NHS Lothian		RoS	
	n	%	n	%	n	%	n	%
Yes	483	53.2	163	57.4	137	59.1	183	46.7
No	425	46.8	121	42.6	95	40.9	209	53.3
Total	**908**		**284**		**232**		**392**	

5.2.3 STI Testing In The Last Year: By Age

Chi^2 analysis (x^2= 2.91,df=3, p=0.40) suggested that STI testing in the last years was not patterned by age (see Table 5.3).

Table 5.3. STI Testing In The Last Year: By Age

		STI Test in the last year		No STI Test in the last year	
Age Range	**Total**	**n**	**%**	**n**	**%**
16-25 years	145	79	54.5	66	45.5
26-35 years	251	141	56.2	110	43.8
36-45 years	183	100	54.6	83	45.4
46+ years	329	163	49.5	166	50.5
Total	**908**	**483**	**53.2**	**425**	**46.8**

5.2.4 STI Testing In The Last Year: By Sexual Orientation

Chi^2 analysis (x^2 = 15.82, df=1, p<0.001) suggested that gay identified men were significantly more likely to report an STI test in the last year (56.4%) compared to bisexual/straight identified men (39%) (see Table 5.4).

Table 5.4. STI Testing In The Last Year: By Sexual Orientation

		STI Test in the last year		No STI Test in the last year	
Sexual Orientation	**Total**	**n**	**%**	**n**	**%**
Gay	731	412	56.4	319	43.6
Bisexual/Straight	159	62	39.0	97	61.0
Total	**890**	**474**	**53.3**	**416**	**46.7**

5.2.5 STI Testing In The Last Year: By Relationship Status

Chi^2 analysis (x^2 =6.72, df=2, p< 0.05) suggested that men with a regular female partner (31.3%) were significantly less likely to report an STI test in the last year compared to men with a regular male (52.8%) or single men (57.2%) (see Table 5.5).

Table 5.5. STI Testing In The Last Year: By Relationship Status

		STI Test in the last year		No STI Test in the last year	
Relationship Status	**Total**	**n**	**%**	**n**	**%**
Single	474	271	57.2	203	42.8
Regular Male Partner	339	179	52.8	160	47.2
Regular Female Partner	80	25	31.3	55	68.8
Total	**893**	**475**	**53.2**	**418**	**46.8**

5.2.6 STI Testing In The Last Year: By Financial Worries

Chi^2 analysis (x^2=0.39, df=1, p=0.53) suggested that men who had financial worries 'sometimes/all of the time' were not significantly more likely to report an STI test in the last year than men who 'occasionally/never' had financial worries (see Table 5.6).

Table 5.6. STI Testing In The Last Year: By Financial Worries

		STI Test in the last year		No STI Test in the last year	
Financial Worries	**Total**	**n**	**%**	**n**	**%**
Occasionally/Never	516	268	51.9	248	48.1
Sometimes/all of the time	383	207	54.0	176	46.0
Total	**899**	**475**	**52.8**	**424**	**47.2**

5.3 Result Of Your Last STI Test: Men Who Tested In The Last Year

We asked those HIV-/untested sexually active men who had had an STI test in the last year (n=483) whether they had been diagnosed with an STI in the last year. One quarter of the men who addressed this question (n=481) (26.2%, n=126) said they had received a positive diagnosis in the last year, whilst the remainder (73.8%, n=355) had not. Six in ten men who received a positive STI diagnosis (59.5%, n=75/126) in the last year, were diagnosed with a rectal chlamydia, LGV or gonorrhoea.

Next, for those men who reported an STI test in the last year, we investigate whether receiving a positive result was related to any of our key sociodemographic variables.

5.3.1 Result Of Your Last STI Test: By NHS Region

Chi^2 analysis (x^2= 5.71, df=2, p=0.06) suggested that there were no significant differences in the proportion of participants who reported a positive STI test in the last year across the 3 NHS regions (see Table 5.7).

Table 5.7 Result Of Your Last STI Test: By NHS Region

	Whole Sample		NHS GGC		NHS Lothian		RoS	
	n	%	n	%	n	%	n	%
Positive	126	26.2	50	31.1	39	28.5	37	20.2
No Diagnosis	355	73.8	111	68.9	98	71.5	146	79.8
Total	**481**		**161**		**137**		**183**	

5.3.2 Result Of Your Last STI Test: By Age

Chi^2 analysis (x^2= 2.59, df=3, p=0.46) suggested that there were no significant differences in the result of men's last STI test, by age (see Table 5.8).

Table 5.8. Result Of Your Last STI Test: By Age

		Positive STI Diagnosis in the last year		No STI Diagnosis in the last year	
Age Range	**Total**	**n**	**%**	**n**	**%**
16-25 years	79	21	26.6	58	73.4
26-35 years	140	43	30.7	97	69.3
36-45 years	100	22	22.0	78	78.0
46+ years	162	40	24.7	122	75.3
Total	**481**	**126**		**355**	

5.3.3 Result Of Your Last STI Test: By Sexual Orientation

Chi^2 analysis (x^2=2.80, df=1, p=0.09) suggested that gay identified men were not significantly more likely to report a positive STI diagnosis in the last year than bisexual/straight identified men (see Table 5.9).

Table 5.9. Result Of Your Last STI Test: By Sexual Orientation

		Positive STI Diagnosis in the last year		No STI Diagnosis in the last year	
Sexual Orientation	**Total**	**n**	**%**	**n**	**%**
Gay	410	114	27.8	296	72.2
Bisexual/Straight	62	11	17.7	51	82.3
Total	**472**	**125**		**347**	**73.5**

5.3.4 Result Of Your Last STI Test: By Relationship Status

Chi^2 analysis (x^2 =1.56, df=2, p=0.46) suggested that single men were not significantly more likely to report a positive STI diagnosis in the last year compared to men with a regular female partner or those with a regular male partner (see Table 5.10).

Table 5.10. Result Of Your Last STI Test: By Relationship Status

		Positive STI Diagnosis in the last year		No STI Diagnosis in the last year	
Relationship Status	**Total**	**n**	**%**	**n**	**%**
Single	271	70	25.8	201	74.2
Regular Male Partner	177	49	27.7	128	72.3
Regular Female Partner	25	4	16.0	21	84.0
Total	**473**	**123**		**350**	

5.3.5 Result Of Your Last STI Test: By Financial Worries

Chi^2 analysis (x^2=7.20, df=1, p<0.05) suggested that the result of GBMSM's last STI test was patterned by financial worries, with men having financial worries sometimes/all of the time (32.4%) being more likely to have a positive STI diagnosis in the last year compared to men with no financial worries (21.4%) in the last year (see Table 5.11).

Table 5.11. Result Of Your Last STI Test: By Financial Worries

		Positive STI Diagnosis in the last year		No STI Diagnosis in the last year	
Financial Worries	**Total**	**n**	**%**	**n**	**%**
Occasionally/Never	266	57	21.4	209	78.6
Sometimes/all of the time	207	67	32.4	140	67.6
Total	**473**	**124**		**349**	

5.4 Regularity of STI testing

In this study, 730 GBMSM identified as HIV negative/untested and sexually active and reported an STI test at some point in their lives. We asked these men whether there was a regular pattern to their STI testing. Of the 518/730 (71%) HIV negative/untested men who answered this question, approximately four in five men (79.9%, n=409) reported a regular pattern of STI testing with the remaining one fifth (20.1%, n=109) testing intermittently (see Figure 5.1). Data analysis also indicates that 73% (n=373/518) of all GBMSM test regularly and at least annually and in accordance with BASHH guidelines. Accordingly, 27% (n=145/518) of GBMSM in this study adopt variable and intermittent approaches, some triggered by high risk sexual behaviour.

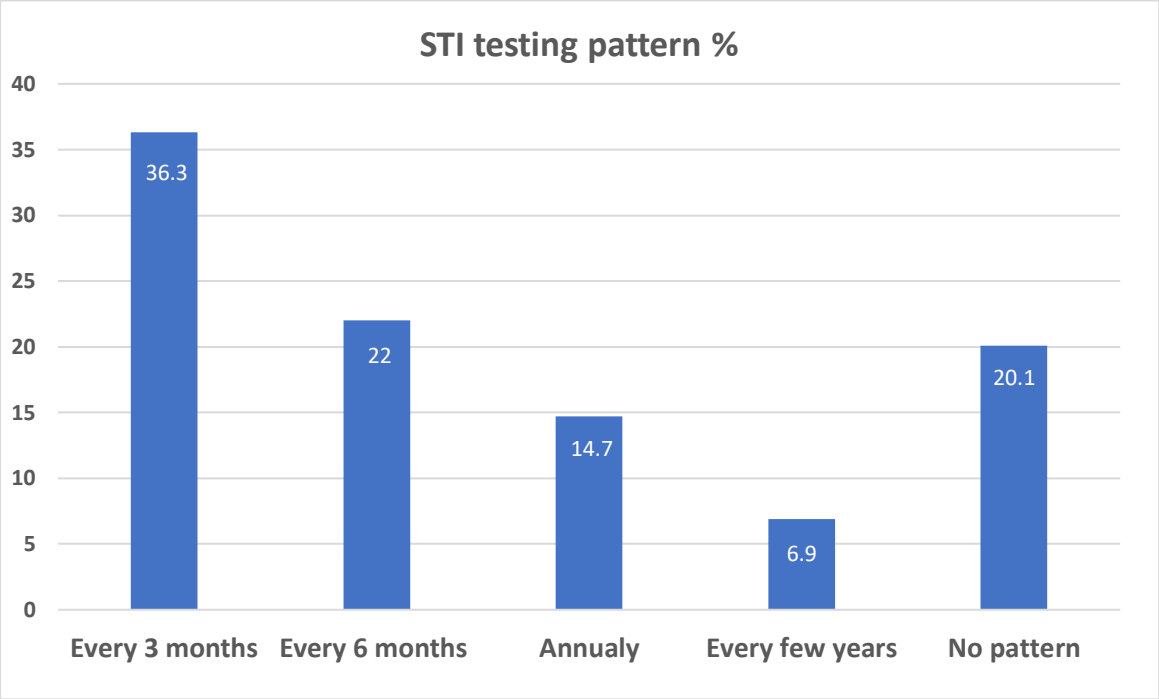


Figure 5.1. STI testing pattern among HIV-/untested sexually active GBMSM

5.5 Testing For HIV And/Or Other STIs In The Last Year

We combined our data on HIV and STI testing in the previous year to understand the composite testing behaviours for sexually active HIV-/untested men in Scotland (see Table 5.13). Overall a total

of 600/901 (66.6%) sexually active, HIV-/untested men, who addressed both the STI and HIV sections of the SMMASH3 survey, reported either an HIV test, an STI test or both in the last year and as such may be considered to be in touch with sexual health services in the widest sense. A further 33.4% (n=168) reported no such tests in the last year.

Table 5.13. Testing For HIV And/Or Other STIs In The Last Year

	n	% HIV-/untested GBMSM
STI test only	16	1.80
HIV Test only	121	13.4
Both STI and HIV test	463	51.4
Total tested	**600**	**66.6**
Neither test	301	33.4
Total Sample	**901**	

5.6 Where Did These Men Test In The Last Year?

We asked those men who reported either an HIV and/or an STI test in the last year (n=600) to tell us where they had been tested, giving them a choice of 15 options (see Table 5.14). Men were asked to tick all options that applied. The most frequently stated testing location was Steve Retson Project, a gay-specific sexual health clinic in Glasgow (31.8%, n=191), followed by Chalmers Sexual Health Clinic, which hosts a gay specific sexual health clinic in Edinburgh (22.5%, n=135) and generic (i.e. not gay specific) sexual health clinics (22.3%, n=134). Interestingly, using a home testing kit was the fourth most popular selected option (8%, n=48) with similar number of people reporting being tested in a sexual health clinic specific to gay men (7%, n=42). Both GP (6.8%, n=41) and generic hospital services (3.8%, n=23) were fairly widely cited.

Table 5.14. Where Did You Test For HIV And/Or Other STIs In The Last Year?

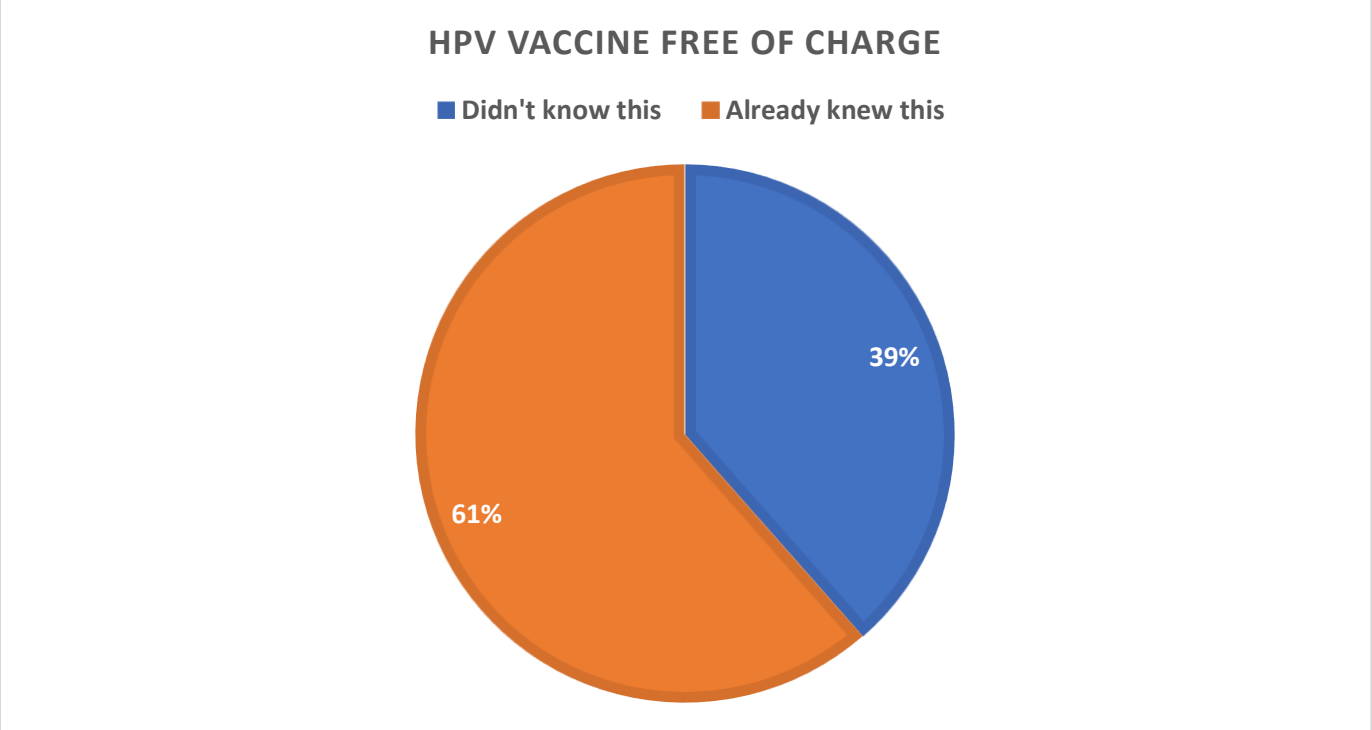
	n	%
Sexual health/GUM clinic (not gay specific)	134	**22.3**
Steve Retson Project (Glasgow)	191	**31.8**
Chalmers Sexual Health Clinic (Edinburgh)	135	**22.5**
ROAM m-test (Edinburgh)	22	**3.7**
Another sexual health clinic for gay men	42	**7.0**
GP Practice/Surgery	41	**6.8**
At a hospital (not GUM or sexual health clinic)	23	**3.8**
I used a home testing kit	48	**8.0**
Terrence Higgins Trust Fast Test	23	**3.8**
A gay sauna	19	**3.2**
Another outreach or community clinic	13	**2.2**
An HIV clinic	3	**0.5**
A gay bar	15	**2.5**
Waverley Care	18	**3.0**
Other	15	**2.5**

5.7 HPV Knowledge and HPV Vaccine Uptake

The SMMASH3 project examined GBMSM's knowledge about HPV (human papillomavirus, some types of which can cause genital warts and cancer) alongside the proportion of the eligible men that have been vaccinated against HPV. Among all the SMMASH3 respondents, 748 (67%) were eligible for the HPV vaccine through the NHS services (defined herein as men who have sex with men aged up to 45 years in 2018, when the free HPV vaccine was introduced in Scotland). Half (48%, n=308/644) of the eligible GBMSM addressing the HPV vaccine uptake section have received the HPV vaccine.

5.7.1 HPV Knowledge

Regarding eligible men's knowledge towards HPV infection, as Figure 5.1 shows, 82% (n=533/650) knew that HPV infection is linked to an increased risk for genital warts and several types of cancer; 78% (n=504/648) were aware of the existence of the HPV vaccine; however, almost 4 in 10 (39% , n=397/646) eligible GBMSM did ***not*** know that the vaccine was available to all GBMSM aged <= 45 years in Scotland for free.



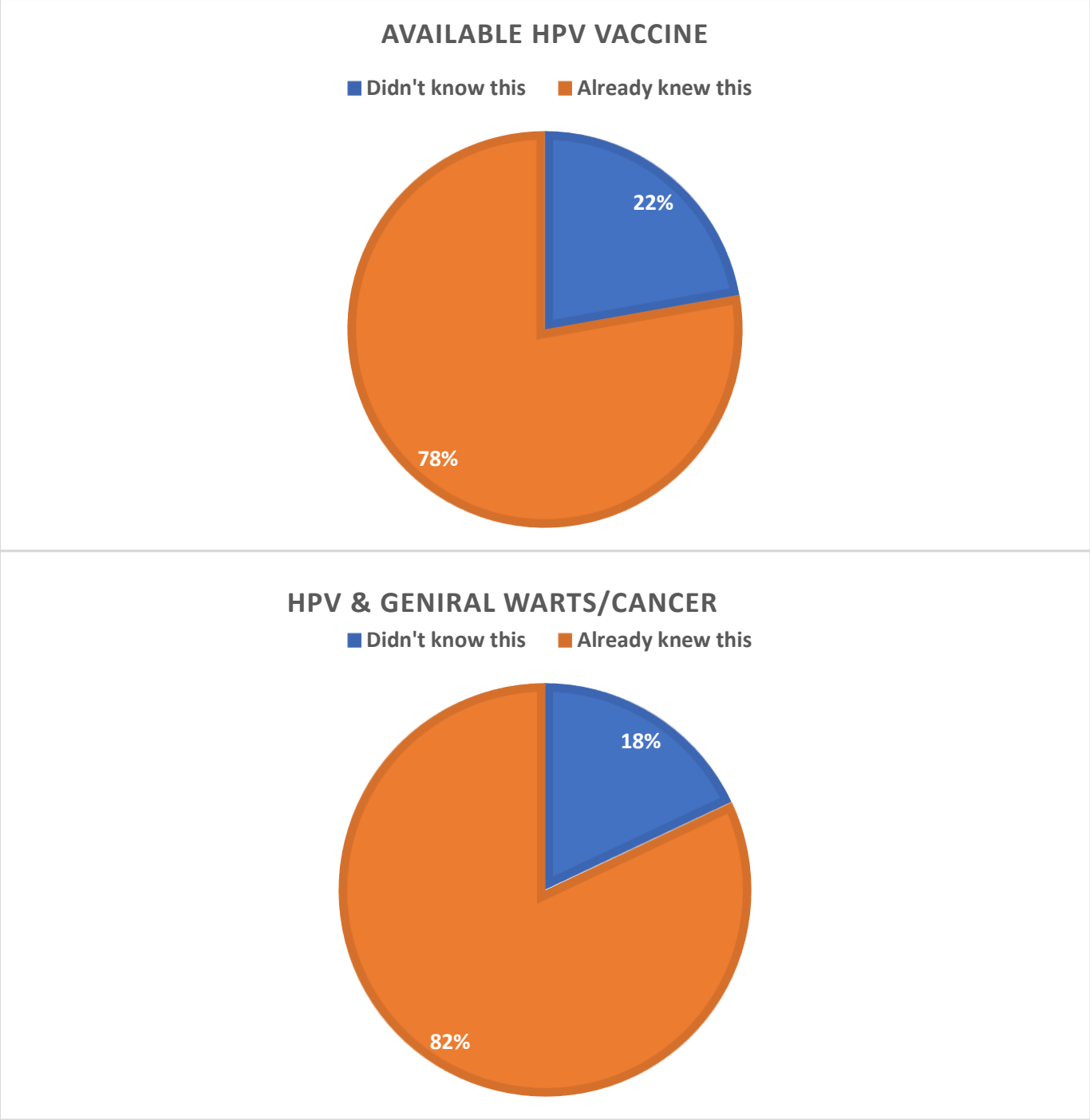


Figure 5.1. HPV related knowledge

5.7.2 HPV Vaccine Uptake by NHS Region

Chi^2 analysis (x^2=24.9, df=2, p<0.001) suggested that there were significant differences in the proportion of participants who reported receiving the HPV vaccine, with more men in NHS Lothian (59.6%) and in NHS GGC (53.3%) being vaccinated against HPV compared to the RoS (36.5%) (see Table 5.15).

Table 5.15. HPV vaccine uptake by NHS region

	Whole Sample		NHS GGC		NHS Lothian		RoS	
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Vaccinated	308	47.8	121	53.3	90	59.6	97	36.5
Unvaccinated	336	52.2	106	46.7	61	40.4	169	63.5
Total	**644**		**227**	**35.2**	**151**	**23.4**	**266**	**41.3**

5.7.3 HPV Vaccine uptake by Age

Chi^2 analysis (x^2=2.87, df=3, p=0.41) suggested that there were no significant differences in the proportion of participants who reported receiving the HPV vaccine by age (see Table 5.16).

Table 5.16. HPV Vaccine Uptake by Age

		HPV vaccinated		HPV unvaccinated	
Age Range	**Total**	**n**	**%**	**n**	**%**
16-25 years	145	63	43.4	82	56.6
26-35 years	263	134	51.0	129	49.0
36-45 years	197	95	48.2	102	51.8
46+ years	39	16	41.0	23	59.0
Total	**644**	**308**	**47.8**	**336**	**51.2**

5.7.4 HPV Vaccine Uptake by Sexual Orientation

Chi^2 analysis (x^2=9.57, df=1, p<0.005) suggested that there were significant differences in the proportion of participants who reported receiving the HPV vaccine by sexual orientation, such that gay men (50.5%) were more likely to be vaccinated against HPV compared to bisexual/straight (33.3%) (see Table 5.17). This finding might be explained by the fact that only men who self-identify as GBMSM are currently eligible for the HPV vaccine in the UK.

Table 5.17. HPV Vaccine Uptake by Sexual Orientation

		HPV vaccinated		HPV unvaccinated	
Sexual Orientation	**Total**	**n**	**%**	**n**	**%**
Gay	301	269	50.5	264	49.5
Bisexual/Straight	328	32	33.3	64	66.7
Total	**629**	**301**	**47.9**	**328**	**52.1**

5.7.5 HPV Vaccine Uptake by Relationship Status

Chi^2 analysis (x^2=9.85, df=2, p<0.005) suggested that there were significant differences in the proportion of participants who reported receiving the HPV vaccine by relationship status, such that men with a regular male partner were significantly more likely to be vaccinated against HPV (52.2%) compared to single men (47.2%) and men with a regular female partner (23.5%) (see Table 5.18).

Table 5.18. HPV Vaccine Uptake by Relationship Status

		HPV Vaccinated		HPV Unvaccinated	
Relationship Status	**Total**	**n**	**%**	**n**	**%**
Single	371	175	47.2	196	52.8
Regular Male Partner	226	118	52.2	108	47.8
Regular Female Partner	34	8	23.5	26	76.5
Total	**631**	**301**	**47.7**	**330**	**52.3**

5.7.6 HPV Vaccine Uptake by Financial Worries

Chi^2 analysis (x^2=0.51, df=1, p=0.47) showed that the proportion of participants who reported receiving the HPV vaccine was not patterned by financial worries (see Table 5.19).

Table 5.19. HPV Vaccine uptake by Financial Worries

		HPV Vaccinated		HPV Unvaccinated	
Financial Worries	**Total**	**n**	**%**	**n**	**%**
Occasionally/Never	342	159	46.5	183	53.5
Sometimes/all of the time	296	146	49.3	150	50.7
Total	**638**	**305**	**47.8**	**333**	**52.2**

5.8 Summary

- There was an increase in the STI testing rates since the SMMASH2 survey. 53% of this sample of sexually active, HIV-/untested GBMSM had an STI test in the previous year whilst in 2016,

under half (45.1%) of these men had taken an STI test in the last year. This represents an improvement towards current guidelines though still means that over one third of sexually active GBMSM in Scotland are not testing sufficiently regularly for STIs.

- With regards to the SMMASH3 findings, men with a regular female partner, bisexual/straight identified men and men living in the RoS were all less likely to report an STI test in the previous year. However, STI testing in the last year was not related to age and financial worries in the last year.
- A quarter of sexually active, HIV-/untested GBMSM who reported an STI test in the previous year said they received a positive STI diagnosis, with 6 in 10 men who received a positive STI diagnosis in the last year, were diagnosed with a rectal chlamydia, LGV or gonorrhoea. Among those men, men with financial worries sometimes/all of the time were significantly more likely to receive a positive STI diagnosis in the last year compared to men with no financial worries. However, STI results were not patterned by any other sociodemographic variable.
- 73% of all sexually active, HIV-/untested GBMSM test regularly and at least annually and in accordance with BASHH guidelines. Accordingly, 27% of GBMSM in this study adopt variable and intermittent approaches, some triggered by high risk sexual behaviour.
- 66.6% sexually active, HIV-/untested men in this study reported either an HIV test, an STI test or both in the last year whilst a further 33.4% reported no such tests in the last year.
- The main locations of testing were gay specific GUM services, non-gay-specific GUM services, GPs and home testing kits.
- Although the HPV vaccine is available for GBMSM aged up to and 45 years old, half of the eligible GBMSM in Scotland remain unvaccinated. Men living in Lothian, those with a regular male partner and those who self-identify as gay were more likely to be vaccinated against HPV. Nevertheless, HPV vaccine uptake was not patterned by financial worries or age.

- Regarding eligible men's knowledge towards HPV infection, most men (82%) knew that HPV infection is linked to an increased risk for genital warts and several types of cancer; 78% were aware of the existence of the HPV vaccine; however, almost 4 in 10 (39%) eligible GBMSM did not know that the vaccine was available to all GBMSM aged <= 45 years in Scotland for free. Increasing knowledge around vaccine accessibility and availability is required to increase future HPV vaccine uptake among GBMSM.

Chapter 6 – PrEP use, current and future intentions

6.1 Prep Use among HIV-/untested GBMSM

This chapter describes HIV pre-exposure prophylaxis (PrEP) use among HIV-/untested GBMSM in the SMMASH3 study. We present the basic descriptive statistics (mean values, standard deviation (sd), frequency and percentages) for PrEP use variables and subsequently use inferential statistics to determine if significant differences were observed for each of the following variables;

1. Across the 3 NHS regions of NHS Greater Glasgow and Clyde (GGC), NHS Lothian and the Rest of Scotland (RoS).
2. By age category, grouped as aged 16-25 years, 26-35 years, 36-45 years and 46 years and over.
3. By sexual orientation, either gay or bisexual/straight.
4. By relationship status, either single, regular male partner or regular female partner.
5. By financial status, reporting financial worries either 'occasionally/never' or 'sometimes/all of the time'.

6.2 Current Prep Use and PrEP sources

The vast majority of all HIV negative GBMSM (94.1%, n=926/984) had heard about PrEP. At the time of survey completion, about 1 in 5 (21.6%, n=213/984) HIV negative/untested GBMSM were on PrEP, with 13.2% (n=130/984) taking PrEP daily, 0.7% (n=7/984) taking PrEP on alternating days and 7.7% (n=76/984) when needed (or on demand/event-based). A further 3.4% (n=33/984) of all HIV negative men were past PrEP users.

Table 6.1. PrEP use among HIV GBMSM

	n	%
I have NEVER heard of PrEP	58	**5.9**
I have heard of PrEP but never taken it	680	**69.1**
I am taking PrEP daily	130	**13.2**
I am taking PrEP on alternating days	7	**0.7**
I am taking PrEP when needed	76	**7.7**
I took PrEP in the past but not now	33	**3.4**
Total	**984**	

Out of all PrEP users (past and current, n=246), 87% (n=214) got their PrEP from an NHS sexual health clinic, 9.3% (n=23) bought PrEP online, 1.6% (n=4) bought PrEP from a private sexual health clinic in Scotland, 1.2% (n=3) got PrEP freely as part of a trial, and 0.8% (n=2/246) from a friend, boyfriend, or a sex partner (see Table 6.2). We now examine current PrEP use by our five key sociodemographic variables.

Table 6.2. What was your most recent way of getting PrEP?

	n	%
Free from a sexual health clinic/GUM clinic	214	**87.0**
Free as part of a clinical trial	3	**1.2**
I bought PrEP online	23	**9.3**
I bought privately PrEP from a clinic	4	**1.6**
I got PrEP from a friend/boyfriend/sex partner	2	**0.8**
Total	**246**	

6.2.1 PrEP Use: by NHS Region

Chi^2 analysis (x^2=10.29, df=2, p<0.005) suggested that current PrEP use was patterned by NHS region, such that men living in NHS GGC (23.1%) and Lothian (27.5%) were more likely to be currently on PrEP compared to those in RoS (17.2%) (see Table 6.3). It may be that men in the RoS find accessing PrEP services more difficult compared to those living in NHS Lothian and GGC; however, in order to safely interpret this finding greater analysis – potentially within a qualitative study – is needed.

6.2.2 PrEP Use: By Age

Chi^2 analysis (x^2=13.74, df=3, p<0.001) suggested that current PrEP use was associated with age, such that older men (36-45 years, 25.9%, 46+ years, 24.2% and 26-35 years, 21.5%) were significantly more likely to be on PrEP compared to younger men (16-25 years, 11.2%). In fact, those aged 46+ years were twice more likely to be on PrEP compared to those aged 16-25 years (see Table 6.3).

Table 6.3. PrEP Use: by Key Sociodemographics

Sociodemographic variable	No PrEP		Currently on PrEP		Total
	n	%	n	%	N
Total	771	**78.4**	213	**21.6**	984
NHS Region					
GGC	237	**76.9**	71	**23.1**	308
Lothian	179	**72.5**	68	**27.5**	247
RoS	355	**82.8**	74	**17.2**	429
Age					
16-25 years	143	**88.8**	18	**11.2**	161
26-35 years	215	**78.5**	59	**21.5**	274
36-45 years	147	**74.2**	51	**25.8**	198
46+ years	266	**75.8**	85	**24.2**	351
Sexual Orientation					
Gay	601	**75.2**	198	**24.8**	799
Bisexual/Straight	155	**93.4**	11	**6.6**	166
Relationship Status					
Single	398	**74.8**	134	**25.2**	532
Regular Male Partner	285	**80.5**	69	**19.5**	354
Regular Female Partner	78	**95.1**	4	**4.9**	82
Financial Worries					
No (Occasional/Never)	426	**77.2**	126	**22.8**	552
Yes (Sometimes/All of the time)	336	**79.6**	86	**20.4**	422

6.2.3 PrEP Use: By Sexual Orientation

Chi^2 analysis (x^2=26.70, df=1, p<0.001) suggested that current PrEP use was associated to sexual orientation, such that those men who identify themselves as gay (24.8%) were more than three times more likely to currently be on PrEP compared to bisexual/straight men (6.6%) (see Table 6.3).

6.2.4 PrEP Use: By Relationship Status

Chi^2 analysis (x^2=18.62, df=2, p<0.001) suggested that current PrEP use was associated to relationship status. Unsurprisingly, men with a regular female partner (4.9%) were significantly less likely to be on PrEP compared to those with a regular male partner (19.5%) and those who were single (25.2%) (see Table 6.3).

6.2.5 PrEP Use: By Financial Worries

Chi^2 analysis (x^2=0.84, df=1, p=0.36) suggested that current PrEP use was not related to financial worries (see Table 6.3).

6.3 Stopping PrEP

Thirty-three SMMASH3 participants reported that they used to get PrEP in the past, but they have now discontinued its use. We further explored the reasons behind their decision to stop taking PrEP by asking them *"Can you tell us why you stopped taking PrEP?".* Participants could select as many options as they felt they were relevant for them; the first nine options listed in Table 6.4 below have been informed by the existing literature whilst "I took PrEP as PEP" was suggested as "other reasons for stopping PrEP" by a sizeable number of SMMASH3 respondents addressing this question.

The most popular reason for stopping PrEP was entering a stable relationship (39.4%, n=13) followed by experiencing side-effects (36.4%, n=12). Too much testing and clinical visits (18.2%, n=6), forgetting to take PrEP (18.2%, n=6), and getting worried about potential consequences of long-term use (15.2%, n=5) were also selected by almost 1 in 5 men. A smaller number of respondents selected PrEP affordability (6.1%, n=2) and accessibility (9.1%, n=3) as primary reasons for stopping PrEP. No longer wishing to have sex without condoms was selected by a few men (9.1%, n=3) whilst only one (3%) participant said he stopped PrEP because a health professional advised them to stop taking it.

Interestingly, another three (9.1%, n=3) men reported taking PrEP as PEP as "other reasons" for stopping PrEP.

Table 6.4. Reasons for Stopping PrEP

Reasons for Stopping PrEP	Participants selecting each option	
	n	%
I was worried about possible consequences of long-term PrEP us	5	**15.2**
I experienced side effects	12	**36.4**
I entered a stable relationship where my risk of getting HIV is low	13	**39.4**
I no longer want to have sex without condoms	3	**9.1**
I kept forgetting to take my PrEP	6	**18.2**
I could not afford PrEP	2	**6.1**
I can no longer access PrEP	3	**9.1**
Too much testing and clinical visits	6	**18.2**
My doctor, nurse or other health professional advised me to stop taking PrEP	1	**3.0**
I took PrEP as PEP	3	**9.1**
Total	**33**	

6.4 Intention to Take PrEP in the Future

We asked all the HIV negative men (n=712) whether they would consider taking PrEP in the future. As Table 6.5 shows, just over half would consider taking PrEP in the future (55.2%, n=393) whilst 44.8% (n=319) would not or probably would not take PrEP in the future. In particular, 11.8% (n=84) said that they would not take PrEP in the future and 33% (n=235) said that they were unsure whether they would take PrEP in the future. Next, we asked the men who said that they would consider taking PrEP in the future (n=393) what regimen they would consider taking. Most men (55.5%, n=218) said they would consider taking PrEP regularly, 30.8% (n=121) event based, and 13.7% (n=54) were unsure.

Table 6.5. Intention to take PrEP in the Future

	n	%	Whole Sample (n)
I ***would not consider/were unsure about*** taking PrEP in the future	319	**44.8**	**712**
I would ***consider*** taking PrEP in the future	393	**55.2**	
I would consider taking PrEP in the future:			**393**

Regularly (Every day)	187	**47.6**
Regularly (every other day)	31	**7.9**
Event-based (i.e. only take it when I plan to have sex without condoms)	121	**30.8**
I don't know	54	**13.7**

Next, we further examined the reasons why some men would not consider, or they were unsure about taking PrEP in the future.

Those men who said that they would not consider future PrEP use (n=84) they were further asked to select as many reasons why they would not take PrEP in the future as they felt they were relevant for them; these options have been informed from past research and are listed in Table 6.6.

Table 6.6

Table 6.6. Reasons for not taking PrEP in the future

Reasons for not taking PrEP in the Future	**Participants selecting each option**	
	n	**%**
I don't have risky sex	55	**65.5**
I prefer other safer sex methods (e.g. condoms)	32	**38.1**
I am worried about possible side-effects	29	**34.5**
PrEP only protects against HIV, not other STIs	19	**22.6**
I don't like taking pills	15	**17.9**
I 'm not sure if PrEP works	7	**8.3**
Too much testing and clinical visits	6	**7.1**
I am worried about what my family and friends might think if they found out I was on PrEP	5	**6.0**
I do not think I'll get HIV	4	**4.8**
I am worried about what my sex partner(s) might think if they found out I was on PrEP	2	**2.4**

I am worried about being judged by my healthcare provider	2	**2.4**
Whole sample	**84**	

Having safer sex (65.5%, n=55), preference for other safer sex methods (38.1%, n=32), potential side effects (34.5%, n=29) and lack of protection against other STIs (22.6%, n=19) were the most commonly cited reasons among those SMMASH3 participants who said that they would not take PrEP in the future. Interestingly, 17.9% (n=15) of those men said that they do not like taking pills and for this reason they would not consider taking PrEP in the future. Only 8.3% (n=7) said that they are unsure about PrEP efficacy and another 4.8% (n=4) said that they do not think that they are at risk of HIV, and for these reasons, they do not intend to take PrEP in the future. 7.1% (n=6) said that they do not intend to take PrEP because of the high number of tests and visits required for PrEP uptake. Similarly, a very small proportion of survey participants said that they would avoid PrEP because they are worried about what significant others, such as family (6%, n=5), sex partner(s) (2.4%, n=2) or healthcare providers (2.4%, n=2) would think about PrEP (see Table 6.6).

Similarly, those men who said that they were unsure about getting PrEP in the future (n=235) they were further asked to select as many reasons why they were not sure about taking PrEP in the future as they felt they were relevant for them; these options have been informed from past research and are listed in Table 6.7.

Similar to men who said that they would not take PrEP in the future, having safer sex (54.9%, n=129), lack of protection against other STIs (31.5%, n=74), potential side effects of PrEP (30.2%, n=71) and preference for other safer sex methods (29.4%, n=69) were the most popular reasons among those men who were unsure about taking PrEP in the future (see Table 6.7). Only 7.2% (n=17) said that they were unsure about getting PrEP because they do not think that they are at risk of HIV whilst another 8.9% (n=21) said that they were unsure about PrEP efficacy. About 1 in 9 men said that the

high number of tests and visits required for PrEP uptake (13.6%, n=32) would probably discourage them from taking PrEP in the future. Similarly, about 1 in 10 men said that they might avoid PrEP because they are worried about what significant others, such as family (12.8%, n=30), sex partner(s) (9.4%, n=22) or healthcare providers (8.9%, n=21) would think about PrEP (see Table 6.7).

Table 6.7. Reasons for being unsure about taking PrEP in the future

Reasons for being unsure about taking PrEP in the Future	**Participants selecting each option**	
	n	**%**
I don't have risky sex	129	**54.9**
PrEP only protects against HIV, not other STIs	74	**31.5**
I am worried about possible side-effects	71	**30.2**
I prefer other safer sex methods (e.g. condoms)	69	**29.4**
Too much testing and clinical visits	32	**13.6**
I am worried about what my family and friends might think if they found out I was on PrEP	30	**12.8**
I am worried about what my sex partner(s) might think if they found out I was on PrEP	22	**9.4**
I 'm not sure if PrEP works	21	**8.9**
I am worried about being judged by my healthcare provider	21	**8.9**
I don't like taking pills	19	**8.1**
I do not think I'll get HIV	17	**7.2**
Whole sample	**235**	

Next, we examine HIV negative men's intention to take PrEP in the future by each of the five key sociodemographic variables.

6.4.1 Intention to take PrEP in the future: by NHS region

Chi^2 analysis (x^2=3.26, df=2, p=0.19) suggested that future PrEP use was not patterned by NHS region (see Table 6.8).

6.4.2 Intention to take PrEP in the future: By Age

Chi^2 analysis (x^2=13.11, df=3, p<0.05) suggested that future PrEP use was associated with age, such that younger men (16-25 years, 68.2%) were significantly more likely to take PrEP in the future compared to older men (26-35 years, 55.3%; 36-45 years, 54%, 46+ years, 48.8%) (see Table 6.8).

Table 6.8. Future PrEP Use: By Sociodemographic Variables

Sociodemographic variable	PreP in Future		No PrEP in future		Total
	n	%	n	%	N
Total	393	**55.2**	319	**44.8**	712
NHS Region					
GGC	124	**56.1**	97	**43.9**	221
Lothian	79	**49.1**	82	**50.9**	161
RoS	190	**57.6**	140	**42.4**	330
Age					
16-25 years	90	**68.2**	42	**31.8**	132
26-35 years	112	**55.2**	91	**44.8**	203
36-45 years	74	**54.0**	63	**46.0**	137
46+ years	117	**48.8**	123	**51.3**	240
Sexual Orientation					
Gay	326	**57.2**	244	**42.8**	570
Bisexual/Straight	64	**50.4**	63	**49.6**	127
Relationship Status					
Single	212	**57.6**	156	**42.4**	368
Regular Male Partner	150	**55.1**	122	**44.9**	272
Regular Female Partner	28	**43.8**	36	**56.3**	64
Financial Worries					
No (Occasional/Never)	206	**51.9**	191	**48.1**	397
Yes (Sometimes/All of the time)	182	**59.5**	124	**40.5**	306

6.4.3 Intention to take PrEP in the future: By Sexual Orientation

Chi^2 analysis (x^2=1.95, df=1, p=0.16) suggested that future PrEP use was not patterned by sexual orientation (see Table 6.8).

6.4.5 Intention to take PrEP in the future: By Relationship Status

Chi^2 analysis (x^2=4.22, df=2, p=0.12) suggested that future PrEP use was not patterned by relationship status (see Table 6.8).

6.4.6 Intention to take PrEP in the future: By Financial Worries

Chi^2 analysis (x^2=4.02, df=1, p<0.05) suggested that future PrEP use was patterned by financial worries, such that men with no financial worries (59.5%) were more likely to take PrEP in the future compared to men who had financial worries (51.9%) (see Table 6.8).

6.5 Perceived PrEP acceptability

We examined SMMASH3 participants' attitudes towards PrEP acceptability. In doing so, a total of 8 items of The Attitudes toward Pre-Exposure Prophylaxis (PrEP) Scale (Jaspal et al., 2019) were developed by the research team to be more appropriate for the Scottish context. Then, the scale was piloted in a group of Scotland-based GBMSM experts. The 8 items of the Pre-Exposure Prophylaxis (PrEP) Scale utilized in the SMMASH survey are presented in Table 6.8.

As Table 6.9 shows, most people agreed (strongly agree and agree) that people who do not use condoms should take PrEP (89.7%, n=827) and that PrEP is likely to work (86%, n=790). Similarly, 85.5% (n=785) agreed that the NHS should fund PrEP and 89.3% (n=820) that PrEP is an exciting breakthrough in medical science. The majority of SMMASH3 respondents (66%, n=605) disagreed (disagree and strongly disagree) that PrEP does more harm than good; however, 4 in 10 men (42.3%,

n=385) were unsure about whether PrEP can have serious side effects. Interestingly, half of the participants (50%, n=458) thought that PrEP will encourage people to take sexual risks.

Table 6.9. Items of The Attitudes toward Pre-Exposure Prophylaxis (PrEP) Scale

In the last year, have you experienced any of the following things?	Strongly Agree		Agree		Neither agree or disagree		Disagree		Strongly Disagree		Total
	n	%	n	%	n	%	n	%	n	%	N
People who don't use condoms should take PrEP	698	**75.7**	129	**14**	74	**8**	11	**1.2**	10	**1.1**	922
PrEP is likely to work	557	**60.6**	233	**25.4**	112	**12.2**	13	**1.4**	4	**0.4**	919
PrEP will probably have serious side effects	49	**5.4**	96	**10.5**	385	**42.3**	260	**28.5**	121	**13.3**	911
The NHS should fund PrEP	654	**71.2**	131	**14.3**	86	**9.4**	26	**2.8**	21	**2.3**	918
PrEP is an exciting breakthrough in medical science	632	**68.8**	188	**20.5**	82	**8.9**	8	**0.9**	8	**0.9**	918
PrEP does more harm than good	37	**4.0**	47	**5.1**	227	**24.8**	275	**30**	330	**36**	916
PrEP will encourage people to take sexual risks	187	**20.4**	271	**29.6**	248	**27**	137	**14.9**	74	**8.1**	917
People will probably take PrEP correctly, as directed by their doctor/nurse.	244	**26.6**	358	**39**	233	**25.4**	73	**8.0**	9	**1.0**	917

In order to analyse how men's attitudes towards PrEP varied by our key sociodemographic variables and after reversing some of the items of the scale, we created a new variable which summed men's responses on each of the attitudes towards PrEP scale variables. We refer to this herein as men's Overall PrEP Acceptability Score (OPAS). Men's OPAS score varied from 8, denoting low perceived PrEP acceptability to 40, denoting high perceived PrEP acceptability. As such, ***higher*** values on the OPAS scale represented ***higher*** perceived PrEP acceptability. Overall, the mean score on OPAS for all HIV negative participants in this study was 16.2 (SD=4.4) and scores ranged from a minimum of 8 to a maximum of 40.

6.5.1 OPAS: By NHS Region

One-way ANOVA (F=1.60, df(2,899), p=0.20) suggested that there were no significant differences in men's overall perceived PrEP acceptability across the 3 NHS Regions.

6.5.2 OPAS: By Age

One-way ANOVA (F=3.70, df(3,898), p<0.05) suggested that age was significantly related to overall PrEP acceptability. Post hoc analyses suggested that men aged 16-25 years (Mean OPAS=15.2) had significantly lower perceived PrEP acceptability compared to men aged 26-35 (Mean OPAS= 16.4) and those aged 46+ years (Mean OPAS=16.6). Perceived PrEP acceptability for men aged 26-35 years (Mean OPAS=16.0) was not significantly different from older or younger men.

6.5.3 OPAS: By Sexual Orientation

An independent samples T-test (t(881) = -2.34, p<0.05) suggested that sexual orientation was related to overall perceived PrEP acceptability, such that straight/bisexual men (Mean OPAS=17.0) reported significantly higher PrEP acceptability compared to those who identified themselves as gay (Mean OPAS=16.0).

6.5.4 OPAS: By Relationship Status

One-way ANOVA (F=0.97, df(2,886), p=0.38) suggested that relationship status was not related to overall perceived PrEP acceptability.

6.5.5 OPAS: By Financial Worries

Independent Samples T-test (t(891)=-0.62, p=0.53) suggested that overall perceived PrEP acceptability was not different by financial worries.

6.6 Summary

- 1 in 5 (21.6%) HIV negative/untested GBMSM were on PrEP, with 13.2% of all HIV-/untested men taking PrEP daily, 0.7% taking PrEP on alternating days and 7.7% on-demand. A further 3.4% of all HIV negative men were past PrEP users.
- The vast majority of current and past PrEP users (87%) got their PrEP from an NHS sexual health clinic and almost 1 in 10 men (9.3%) bought PrEP online.
- Men living in NHS Lothian and GGC and older men (36-45 plus years) were significantly more likely to be on PrEP compared to those residing in the RoS and younger men (16-35 years). Similarly, men who identify themselves as gay were three times more likely to be currently on PrEP compared to bisexual/straight men whilst men with a regular female partner were significantly less likely to be on PrEP compared to those with a regular male partner and those who were single. However, current PrEP use was not patterned by financial worries.
- 33 men said that they were past PrEP users. Common reasons for stopping PrEP include entering a stable relationship (39.4%), experiencing side-effects (36.4%), "too much testing and clinical visits" (18.2%), forgetting to take PrEP (18.2%), getting worried about potential consequences of long-term use (15.2%) and no longer wishing to have sex without condoms (9.1%).
- Over half of HIV-/untested men would consider taking PrEP in the future (55.2%), whilst 44.8% would not. Having safer sex, preference for other safer sex methods, potential side effects, and lack of protection against other STIs were the most commonly cited reasons among those SMMASH3 participants who said that they would not or probably would not take PrEP in the future.
- Intention to take PrEP in the future was not associated to relationship status, NHS region, and sexual orientation. However, younger men (16-25 years) were significantly more likely to take PrEP in the future compared to older men (17-25 years, 26-35 years, 36-45 years) and men

with no financial worries were more likely to take PrEP in the future compared to men who had financial worries.

- Overall, GBMSM hold positive attitudes towards PrEP acceptability; most agreed that people who do not use condoms should take PrEP (89.7%); PrEP is likely to work (86%); it is an exciting breakthrough in medical science (89.3%); and NHS should fund PrEP (85.5%). Most men (66%) disagreed that PrEP does more harm than good; however, 4 in 10 men (42.3%) were unsure about whether PrEP can have serious side effects whilst half of the participants (50.0%) thought that PrEP will encourage people to take sexual risks .
- GBMSM's perceived PrEP acceptability was not patterned by financial worries, NHS region, and relationship status. However, men aged 16-25 years had significantly lower perceived PrEP acceptability compared to men aged 26-35 and those aged 46+ years. Similarly, gay men had significantly lower perceived PrEP acceptability compared to those who identified as straight/bisexual.

Chapter 7 - Sexual Function

7.1 Introduction

This chapter describes the sexual function of men in SMMASH3 study **who were sexually active in the previous year** and addressed this section (n=914). To assess these issues, components from the *Sexual Function Clinical Use* scale was employed, which was originally developed as part of the 'National Survey of Sexual Attitudes and Lifestyles' study (NATSAL; Mitchell et al, 2013). We present the basic descriptive statistics (frequency and percentages) for sexual function clinical use scale and subsequently use inferential statistics to determine if significant differences were observed for each of the following variables;

1. Across the 3 NHS regions of NHS Greater Glasgow and Clyde (GGC), NHS Lothian and the Rest of Scotland (RoS).

2. By age category, grouped as aged 16-25 years, 26-35 years, 36-45 years and 46 years and over.

3. By sexual orientation, either gay or bisexual/straight.

4. By relationship status, either single, regular male partner or regular female partner.

5. By financial status, reporting financial worries either 'occasionally/never' or 'sometimes/all of the time'.

7.2 Sexual Function – Sexually Active GBMSM

A total of 8 items from the NATSAL *Sexual Function* scale (see Mitchell et al., 2013) were developed to be more appropriate to GBMSM participants (see Table 7.1). Key changes were made to item #4 (adding the word 'unwanted' to acknowledge that certain types of pain may be desirable during sex, e.g. BDSM etc.), items #6 and #7 (including the word 'cum' as a more familiar and contemporary

term to express reaching orgasm amongst GBMSM) and an additional response category was added ('Yes, but this was not a problem for me') as suggested by the NATSAL author Dr C Mercer, following the team's research experience using the original scale.

Overall, few men (between 0.9%-3.3% per item) reported that they 'always' experienced each of the items respectively. Indeed, the proportion of responses across the 6 possible answers was remarkably similar for each of the items, except for #4 item where markedly fewer men reported unwanted physical pain during sex to be a problem than the remaining answers.

Table 7.1. Response To Sexual Function Scale Items: All Sexually Active GBMSM

In the last year, have you experienced any of the following things?	Always		Very Often		Sometimes		Not Very Often		Never		Yes, but this was not a problem for me		Total
	n	%	n	%	n	%	n	%	n	%	n	%	N
1. Lacked interest in having sex	11	**1.2**	115	**12.6**	403	**44.2**	183	**20.1**	156	**17.1**	44	**4.8**	912
2. Lacked enjoyment in sex	8	**0.9**	88	**9.7**	329	**36.2**	236	**25.9**	221	**24.3**	28	**3.1**	910
3. Felt anxious during sex	25	**2.7**	108	**11.9**	282	**31.0**	197	**21.6**	270	**29.7**	28	**3.1**	910
4. Felt unwanted physical pain as a result of sex	9	**1.0**	31	**3.4**	146	**16.0**	210	**23.1**	469	**51.5**	46	**5.0**	911
5. Felt no excitement or arousal during sex	10	**1.1**	52	**5.7**	246	**26.9**	239	**26.2**	333	**36.5**	33	**3.6**	913
6. Did not 'cum' (experience an orgasm or climax) during sex, or took a long time to 'cum' despite feeling excited/aroused	23	**2.5**	138	**15.2**	289	**31.8**	206	**22.7**	191	**21.0**	62	**6.8**	909
7. 'Cum' (had an orgasm or climax) more quickly than you would like	19	**2.1**	74	**8.1**	233	**25.5**	252	**27.6**	317	**34.7**	19	**2.1**	914
8. Had trouble getting or keeping an erection	30	**3.3**	118	**13.0**	285	**31.3**	219	**24.0**	236	**25.9**	23	**2.5**	911

7.3 Any Sexual Function Problem?

In order to understand the overall proportion of men who reported each sexual function issue, we reanalysed these data to define whether men reported each issue as a problem (reported Always, Very Often or Sometimes) or not (reported Not very often, Never or Yes, but this was not a problem for me). These figures are shown in Table 7.2. We see that most of these issues were experienced by around 40% of participants in this study. Whilst 'unwanted physical pain' was experienced by the smallest proportion of men (20.4%) at least sometimes, most of the participants said they 'lacked interest in having sex' (58%) at least some of the time. Half of the participants said they had experienced lack of orgasm during sex/taking too long to orgasm (49.5%). In addition, lack of enjoyment during sex (46.7%), erectile difficulties (47.5%) and anxiety during sex (45.6%) were experienced by just under half of participants. This finding seems worthy of greater analysis within a qualitative study.

Of note, approximately one third of the SMMASH3 respondents said they 'had an orgasm more quickly than they would like' (35.7%) at least sometimes. Similarly, one third of men said they felt no excitement or arousal during sex (33.7%) at least sometimes. In concert, these findings show that a large proportion of GBMSM experience various sexual function problems at least some of the time. It is important therefore to examine whether these sexual function problems are related to other demographic issues, which is examined in the next section.

Table 7.2. Proportion Of GBMSM Reporting Each Sexual Function Problem

In the last year, have you experienced any of the following things?	No		Yes		Total
	n	%	n	%	
1. Lacked interest in having sex	383	**42.0**	529	**58.0**	912
2. Lacked enjoyment in sex	485	**53.3**	425	**46.7**	910
3. Felt anxious during sex	495	**54.4**	415	**45.6**	910
4. Felt unwanted physical pain as a result of sex	725	**79.6**	186	**20.4**	911
5. Felt no excitement or arousal during sex	605	**66.3**	308	**33.7**	913
6. Did not 'cum' (experience an orgasm or climax) during sex, or took a long time to 'cum' despite feeling excited/aroused.	459	**50.5**	450	**49.5**	909
7. 'Cum' (had an orgasm or climax) more quickly than you would like	588	**64.3**	326	**35.7**	914
8. Had trouble getting or keeping an erection	478	**52.5**	433	**47.5**	911

7.4 Overall Sexual Function

In order to analyse how men's overall sexual function varied by our key sociodemographic variables, we created a new variable which summed men's responses on each of the sexual function scale variables. We refer to this herein as men's Overall Sexual Function score (OSF). Men's OSF score varied from 32, denoting no sexual function problems (i.e. answered 'never' or 'yes but it is not a problem' on all of the sexual function items) to 0, indicating multiple sexual function problems (i.e. answered 'Yes' to all of the sexual function items). As such, ***higher*** values on the OSF scale represented ***better*** sexual function. Overall, the mean score on OSF for all sexually active participants in this study was 22.3 (SD=5.2) and scores ranged from a minimum of 0 to a maximum of 32. This equates to an average response for each question of 'not very often'. Below we analyse OSF scores for each of our sociodemographic variables. Although in most cases significant differences were found, the mean size of the difference between groups was, in each case, rather small, between 1 – 1.8 points of the total scale.

7.4.1 Overall Sexual Function: By NHS Region

One-way ANOVA (W=1.03, df (2,1215), p=0.36) suggested that there were no significant differences in men's overall sexual function scores across the three NHS Regions.

7.4.2 Overall Sexual Function: By Age

One-way ANOVA (W=4.07, df (3,404), p<0.01) suggested that age was significantly related to overall sexual function. Post hoc analyses suggested that older men aged 46+ years (mean OSF=22.8) and those aged 36-45 (mean OSF=22.7) had significantly better overall sexual function than younger men aged 16-25 (mean OSF=21.2). Overall Sexual Function for men aged 26-35 years (OSF=21.8) was not significantly different from older or younger men.

7.4.3 Overall Sexual Function: By Sexual Orientation

An independent samples T-test (t(881) = -2.25, p<0.05) suggested that sexual orientation was significantly related to overall sexual function, such that gay identified men (mean OSF=22.1) had significantly poorer overall sexual function than bisexual/straight identified men (mean OSF=23.3).

7.4.4 Overall Sexual Function: By Relationship Status

One-way ANOVA (W=9.84, df(2,215), p<0.001) suggested that relationship status was significantly related to overall sexual function. Post hoc analyses suggested that single men (mean OSF=21.6) reported significantly poorer overall sexual function than men with a regular male partner (mean OSF=22.9) and men with a regular female partner (mean OSF=23.7). Overall sexual function between men reporting a regular female or male partner was not significantly different.

7.4.5 Overall Sexual Function: By Financial Worries

Independent Samples T-test (t(885)=5.87, p<0.001) suggested that men who reported financial worries (OSF=21.1) had significantly poorer overall sexual function than men who reported no financial worries (OSF=23.2).

7.5 Summary

- Overall, around half of the sexually active participants in this study reported at least some sexual function problems at least some of the time in the last year. Whilst unwanted physical pain was experienced by a lower number of men (20.4%), lack of enjoyment in sex (40.7%), lack of orgasm/taking too long to orgasm (49.5%), premature ejaculation (31.2%) and feeling anxious during sex (45.6%) at least sometimes were rather common. A third (33.7%) of men felt no sexual arousal whilst 6 in 10 men (58.0%) lacked interest in having sex at least some of the time.
- In terms of overall sexual function, clear sociodemographic differences were observed herein, by age (younger men had significantly poorer OSF than older men), sexual orientation (gay men had significantly poorer OSF than bisexual/straight identified men), relationship status (single men had significantly poorer OSF than men with a regular (male or female) partner) and financial worries (men with financial worries had significantly poorer OSF).
- In concert, that a large proportion of GBMSM experience various sexual function problems at least some of the time is worthy of further attention.

Chapter 8 - Sexual confidence

8.1 Introduction

This chapter describes the sexual confidence of GBMSM in the SMMASH3 study **who were sexually active in the previous year**. To assess these issues, components of the *Confidence about Sex and Relationships* scale, which was originally developed as part of the 'Sex Unzipped' study (Bailey et al., 2013) were modified. We present the basic descriptive statistics (frequency and percentages) for sexual function clinical use scale and subsequently use inferential statistics to determine if significant differences were observed for each of the following variables;

1. Across the 3 NHS regions of NHS Greater Glasgow and Clyde (GGC), NHS Lothian and the Rest of Scotland (RoS).

2. By age category, grouped as aged 16-25 years, 26-35 years, 36-45 years and 46 years and over.

3. By sexual orientation, either gay or bisexual/straight.

4. By relationship status, either single, regular male partner or regular female partner.

5. By financial status, reporting financial worries either 'occasionally/never' or 'sometimes/all of the time'.

8.2 Sexual Confidence: All Sexually Active GBMSM

A total of 12 items were developed from the 'Sex Unzipped' *Sexual Confidence* scale to be more appropriate to GBMSM participants (see Table 8.1). Key changes were made as follows; Items #1 and #2 were added to the scale, as GBMSM are a key risk group for HIV infection. The original item 'Could you put a condom on yourself or a partner without losing the erection?' was split into two

separate questions #9 and #10. Finally 3 items from the original scale were omitted from the SMMASH3 questionnaire as follows; 'Ask if they have ever had a sexually transmitted infection?' reflected historical behaviour and so was not relevant; 'Discuss contraception (birth control) (e.g. the pill)' was irrelevant for sex between men and 'Discuss condom use?' was covered in other questions. Table 8.1 shows the breakdown of answers to these 12 questions for all sexually active GBMSM in the SMMASH3 study.

Table 8.1. Response To Sexual Function Scale Items: All Sexually Active GBMSM

When communicating about sex with a partner, how easy or difficult would it be for you to…?	Very Difficult		Difficult		Easy		Very Easy		N/A		Total
	n	%	n	%	n	%	n	%	n	%	N
1. Ask about their HIV status?	37	**4.2**	221	**25.0**	384	**43.5**	183	**20.7**	58	**6.6**	883
2. Ask about their viral load?	60	**6.8**	247	**28.0**	304	**34.5**	145	**16.5**	125	**14.2**	881
3. Refuse to have sex if they won't use a condom?	25	**2.8**	109	**12.4**	321	**36.4**	274	**31.1**	152	**17.3**	881
4. Make the first move with sex?	55	**6.3**	228	**25.9**	394	**44.8**	175	**19.9**	27	**3.1**	879
5. Tell them that you like a specific sexual activity?	19	**2.2**	142	**16.2**	479	**54.5**	218	**24.8**	21	**2.4**	879
6. Tell them that you do not want to have sex?	17	**1.9**	149	**16.9**	455	**51.6**	222	**25.2**	38	**4.3**	881
7. Tell them if a certain sexual activity makes you uncomfortable?	14	**1.6**	96	**11.0**	485	**55.4**	254	**29.0**	26	**3.0**	875
	I definitely could		**I probably could**		**I probably could not**		**I definitely could not**		**N/A**		**Total**
8. Stop to use a condom in the heat of the moment	288	**32.6**	334	**37.2**	129	**14.6**	82	**9.3**	50	**5.7**	883
9. Put a condom on yourself without losing the erection?	285	**32.3**	282	**32**	154	**17.5**	96	**10.9**	65	**7.4**	882
10. Put a condom on your partner without losing the erection?	277	**31.4**	415	**47.1**	84	**9.5**	43	**4.9**	62	**7.0**	881
11. Suggest sex if you want it?	395	**44.8**	397	**45.1**	62	**7.0**	21	**2.4**	6	**0.7**	881
12. Tell or show someone how they can give you sexual pleasure?	381	**43.2**	400	**45.4**	68	**7.7**	28	**3.2**	5	**0.6**	882

Overall, the proportions of men who found each issue very difficult or difficult differed for each of the 7 items quite markedly. One third of men said that asking partners about their viral load (34.8%) and HIV status (29.4%) were difficult or very difficult. Similarly, one third of men (32.2%) said that

they found it difficult or very difficult to make the first move with sex. In contrast, about two in ten men said they would find it difficult or very difficult to tell their partners that they do not want to have sex (18.8%) or that they like a specific sexual activity (18.4%). A lower proportion of men said that they would find it difficult or very difficult to tell their partners that a sexual activity makes them feel uncomfortable (12.6%) or to refuse sex if their partners would not use a condom (15.2%).

Most felt they could probably or definitely stop to use a condom in the heat of the moment (69.8%) or put a condom on themselves (64.3%) or their partner (78.5%) without losing the erection. Only 1 in 10 men said that they probably or definitely could not show someone how to give them sexual pleasure (10.9%) or could not suggest sex if they wanted it (9.4%).

8.3 Any Sexual Confidence Problems?

In order to understand the overall proportion of men who reported each sexual confidence problem we reanalysed these data to define whether men reported each issue as a problem (reported the issue as difficult/very difficult, or that they definitely/probably could not do the activity) or not (reported the issue as easy/very easy, or that they probably/definitely could do the activity). These data are shown in Table 8.2. Men who answered *not applicable* to these questions were removed from this analysis and, consequently, the sample size changed quite markedly for each question as shown in the table.

Overall, we see that the majority of men reported no sexual problems overall. Most men were able to refuse sex if a partner won't use a condom (81.6%) and were able to stop using a condom in the heat of the moment (74.7%). Most were confident they could put a condom on themselves (69.4%) or their partner (84.5%) without losing the erection. Most were able to tell a partner that a certain activity makes them uncomfortable (87%), that they do not want to have sex (80.3%) or that they like a certain activity (81.2%) or how to give them sexual pleasure (89.1%). Almost three-quarters were confident to make the first move with sex (66.8%) and almost all could suggest sex if they

wanted it (90.5%). Overall, asking a partner about their HIV status (68.7%) or viral load (59.4%) were the most difficult issues examined. In concert, these findings show that most GBMSM are sexually confident across a wide range of issues, though each issue was problematic for between 10% and 40% of sexually active men in this study. It is important therefore to examine whether these sexual confidence problems are related to other demographic issues, which is examined in the next section.

Table 8.2. Overall Proportion Of GBMSM Reporting Each Sexual Confidence Problem

When communicating about sex with a partner, how easy or difficult would it be for you to…?	Not problematic		Problematic		Total
	n	%	n	%	
1. Ask about their HIV status?	567	**68.7**	258	**31.3**	825
2. Ask about their viral load?	449	**59.4**	307	**40.6**	756
3. Refuse to have sex if they won't use a condom?	595	**81.6**	134	**18.4**	729
4. Make the first move with sex?	569	**66.8**	283	**33.8**	852
5. Tell then that you like a specific sexual activity?	697	**81.2**	161	**18.8**	858
6. Tell them that you do not want to have sex?	677	**80.3**	166	**19.7**	843
7. Tell them if a certain sexual activity makes you uncomfortable?	739	**87.0**	110	**13.0**	849
8. Stop to use a condom in the heat of the moment	622	**74.7**	211	**25.3**	833
9. Put a condom on yourself without losing the erection?	567	**69.4**	250	**30.6**	817
10. Put a condom on your partner without losing the erection?	692	**84.5**	127	**15.5**	819
11. Suggest sex if you want it	792	**90.5**	83	**9.5**	875
12. Tell or show someone how they can give you sexual pleasure?	781	**89.1**	96	**10.9**	877

8.4 Overall Sexual Confidence

In order to analyse how men's overall sexual confidence varied by our key sociodemographic variables, we created a new variable which summed men's responses on each of the sexual function scale variables. We refer to this herein as men's Overall Sexual Confidence score (OSC). Men's OSC score varied from 36, denoting high sexual confidence (i.e. answered 'very easy' or 'I definitely could' to all 12 sexual confidence items, see Table 7.1) to 0, indicating low sexual confidence (i.e. answered 'very difficult' or 'I definitely could not' to all 12 sexual confidence items – see Table 8.1).

As such, ***higher*** values on the OSF scale represented ***higher*** sexual confidence. A total of 571 men answered all 12 questions and so were included in this analysis.

Overall, the mean score on OSC for all sexually active participants in this study was 24.5 (SD=5.20) and scores ranged from a minimum of 5 to a maximum of 36. This equates to an average response for each question of 'easy' or 'I probably could'. Below we analyse OSC scores for each of our sociodemographic variables.

8.4.1 Overall Sexual Confidence: By NHS Region

One-way ANOVA (W=0.86, df(2,342), p=0.43) suggested that there were no significant differences in men's overall sexual confidence scores across the 3 NHS regions (mean OSC was NHS GGC=24.2, NHS Lothian=24.9, RoS=24.4).

8.4.2 Overall Sexual Confidence: By Age

One-way ANOVA (W=0.22, df(3,257), p=0.89) suggested that age was not significantly related to overall sexual confidence (mean OSC for 16-25 years = 24.7, for 26-35 years = 24.3, for 36-45 years = 24.4, and for 46+ years = 24.7).

8.4.3 Overall Sexual Confidence: By Sexual Orientation

An independent Samples T-test (t(559)=-1.16, p=0.25) suggested that sexual orientation was not significantly related to overall sexual confidence (mean OSC was gay identified men=24.4, bisexual/straight identified men=25.1).

8.4.4 Overall Sexual Confidence: By Relationship Status

One-way ANOVA (W=3.29, df(2,119), p<0.05) suggested that relationship status was significantly related to overall sexual confidence. Post hoc analyses suggested that single men (mean OSC=23.9) reported significantly poorer overall sexual confidence than men with a regular male partner (mean

OSC=25.1) but not those with a regular female partner (OSC=24.7). Overall sexual confidence between single men and men with a regular female partner were not significantly different.

8.4.5 Overall Sexual Confidence: By Financial Worries

One Sample Independent T-test ($t(564)=2.24$ $p<0.05$) suggested that men who report financial worries (OSC=23.9) have significantly poorer overall sexual confidence than men who report no financial worries (OSC=24.9).

It is important to note that, whilst significant differences were found for OSC by both Relationship Status and Financial Worries, the mean difference between groups was, in each case, rather small, (1.4 and 1.5 points of the total scale respectively), which means that whilst this was a real difference, men in each group only differed a little in their overall sexual confidence.

8.5 Summary

- Men's overall sexual confidence differed quite markedly around the different items examined within this study. Whilst certain issues were difficult for a sizeable proportion of participants, most of the other issues were generally less problematic overall.
- In particular, most men had few problems suggesting sex (90.5%), refusing sex if a partner won't use a condom (81.6%), telling a partner they don't want sex (82.4%), telling a partner how to give them sexual pleasure (80.3%), telling a partner that they like a certain sexual activity (81.2%) or that a certain activity makes them uncomfortable (87%). Putting a condom on their partner (84.5%) without losing the erection was unproblematic for most men but it is notable that almost a third of men said they probably or definitely could not put a condom on themselves without losing their erection (30.6%) and that they would find it difficult to make the first move with sex (33.8%).
- Considering overall sexual confidence, this did not differ by NHS Region, age group or sexual orientation. Men with a regular male partner had significantly greater sexual confidence

than single men. This may be because being with a regular partner can increase sexual confidence, compared to new or intermittent sexual partners, although this cannot be assumed in all cases. Finally, men with financial worries also have significantly poorer overall sexual confidence; though the direction of this relationship, or whether it is mitigated by other variable(s) related to both issues (e.g. for example, mental health), cannot be ascertained from this analysis.

Chapter 9 - Experiences Of Sexual, Physical And Emotional Abuse

9.1 Introduction

This chapter describes the experiences of sexual, physical, and emotional abuse of GBSMSM in the SMMASH3 study. To assess these issues, components of the *Sex and Relationships Problems* scale, which was originally developed as part of the 'Sex Unzipped' study (Bailey et al., 2013) were modified. We present the basic descriptive statistics (frequency and percentages) for these abuse items and subsequently use inferential statistics to determine if significant differences were observed for each of the following variables;

1. Across the 3 NHS regions of NHS Greater Glasgow and Clyde (GGC), NHS Lothian and the Rest of Scotland (RoS).

2. By age category, grouped as aged 16-25 years, 26-35 years, 36-45 years and 46 years and over.

3. By sexual orientation, either gay or bisexual/straight.

4. By relationship status, either single, regular male partner or regular female partner.

5. By financial status, reporting financial worries either 'occasionally/never' or 'sometimes/all of the time'.

9.2 Experiences Of Sexual, Physical And Emotional Abuse: Survey Items

A total of 5 items were taken from the *Sex and Relationships Problems* scale (see Table 9.1) and an additional item (#6) was developed to measure emotional abuse, targeting those men who experience emotional abuse but may not recognize it as such. In the original 'Sex Unzipped' study, participants were asked about experiences of abuse during the previous 3 months. However, it was

felt that this fairly narrow time period would miss recent, if not still on-going, experiences, so we asked participants to report experience of abuse during the previous year, in line with our sexual behaviour questions.

Because of the extremely sensitive nature of these questions, participants were warned they were upcoming and asked whether they were prepared to see them as follows;

> *"The next questions ask whether you have had any kind of abuse from a partner or ex-partner in the last year. We understand these are difficult issues to talk about, so please feel free to ignore these questions if you would rather (you can click the 'submit' button to move on to the next page of the survey).*
>
> *If you have experienced abuse in any way, please see below for resources.*
>
> *Are you happy to see these questions?*
>
> *Yes* *No*
>
> *If you have experienced abuse in any way, and would like to talk to someone about it, click on the resources below, which will open in a new window."*

Relevant, local resources were displayed below this message on the survey webpage. Clicking 'Yes' displayed the sexual abuse questions on the webpage. Clicking 'No' then 'Submit' at the bottom of the page, routed participants past these questions and onto the next section of the questionnaire.

9.3 Experiences Of Abuse: Number Of Participants

Overall, 90.8% (n=828/912) of the men who were asked this question agreed to view the experiences of abuse questions. As such, almost 1 in 10 participants did not want to answer questions about abuse. Although we cannot be sure of their reasoning behind this, it may be that

these men have had some experiences of abuse they were not prepared to reflect on for the purposes of a survey. As such the results in this chapter should be considered a conservative estimate of the prevalence of experience of abuse amongst GBMSM in Scotland.

9.4 Experiences Of Sexual, Physical And Emotional Abuse: Results

Table 9.1 shows the breakdown of answers to these 6 questions for the GBMSM who chose to view and answer them. Overall, we see that between 6.8– 14% of men reported that they had experienced each of these different abuse issues in the last year. Both measures of emotional abuse (#1 Humiliated or emotionally abused; 14%; #6 Put down or told worthless, 13.8%) were the most commonly reported experiences of abuse, with the same number of men reporting both of these two experiences of emotional abuse. Controlling behaviour (#5 Told who you could see, where you could go) was experienced by 9.1% of men. Similarly, physical partner abuse (#4 Kicked, slapped or physically hurt) was reported by 9.0% of men whilst a slightly higher proportion of men (9.8%) also said they had been afraid of a partner/ex-partner in the past year (#2). Finally, 6.8% of men said they have been forced to have sexual activity by a partner/ex-partner in the last year (#3).

Table 9.1. Response To Sexual, Physical And Emotional Abuse Items: All GBMSM

In the last year, have you been….?	Yes		No		Prefer not to say		Total
	n	%	n	%	n	%	n
1. Humiliated or emotionally abused in other ways by a partner or ex-partner?	116	**14**	701	**84.7**	11	**1.3**	828
2. Afraid of a partner or ex-partner?	81	**9.8**	736	**89.2**	8	**1.0**	825
3. Forced to have any kind of sexual activity by a partner or ex-partner?	56	**6.8**	760	**92.0**	10	**1.2**	826
4. Kicked, hit, slapped or otherwise physically hurt by a partner or ex-partner without your consent?	74	**9.0**	743	**90.1**	8	**1.0**	825
5. Told by a partner who you could see and where you could go?	75	**9.1**	739	**89.5**	12	**1.5**	826
6. Been put down or told you are worthless by a partner or ex-partner?	114	**13.8**	703	**85.1**	9	**1.1**	826

9.5 Any Experiences Of Abuse?

In order to understand the overall proportion of men who experienced any kind of abuse, we reanalysed these data. Overall, we found that 23.8% (n=196/823) of men said that they had experienced at least one of these types of abuse in the last year. It is also important to bear in mind that a further 9% of men declined to consider answering these questions, so the level of recent partner abuse amongst GBMSM may be even higher than these data suggest. We now analyse these data to see if experiences of abuse varied with any of our key sociodemographic variables. These data are shown in Table 9.2.

9.5.1 Experience Of Abuse: By NHS Region

Chi^2 analysis (x^2= 6.28, df=2, $p<0.05$) suggested that experience of abuse was patterned by NHS Region with men in NHS GGC (29.2%) being more likely to experience any kind of abuse in the last year compared to those residing in NHS Lothian (22.7%) and RoS (20.6%) (see Table 9.2).

9.5.2 Experience Of Abuse: By Age

Chi^2 analysis (x^2= 6.51, df=3, p=0.09) suggested that experience of abuse was not patterned by age (see Table 9.2).

9.5.3 Experience Of Abuse: By Sexual Orientation

Chi^2 analysis (x^2=0.62, df=1, p=0.42) suggested that experience of abuse was not patterned by sexual orientation (see Table 9.2).

9.5.4 Experience Of Abuse: By Relationship Status

Chi^2 analysis (x^2=1.68, df=2, p=0.43) suggested that experience of abuse was not patterned by relationship status (see Table 9.2).

Table 9.2. Any Experience Of Abuse: By Sociodemographic Variables

Sociodemographic variable	No		Yes		Total
	n	%	n	%	N
Total	627	**76.2**	196	**23.8**	823
NHS Region					
GGC	179	**70.8**	74	**29.2**	253
Lothian	163	**77.3**	48	**22.7**	211
RoS	285	**79.4**	74	**20.6**	359
Age					
16-25 years	87	**72.5**	33	**27.5**	120
26-35 years	158	**71.8**	62	**28.2**	220
36-45 years	133	**76.4**	41	**23.6**	174
46+ years	249	**80.6**	60	**19.4**	309
Sexual Orientation					
Gay	516	**75.7**	166	**24.3**	682
Bisexual/Straight	101	**78.9**	27	**21.1**	128
Relationship Status					
Single	328	**75.1**	109	**24.9**	437
Regular Male Partner	238	**77.0**	71	**23.0**	309
Regular Female Partner	51	**82.3**	11	**17.7**	62
Financial Worries					
No (Occasional/Never)	388	**82.4**	83	**17.6**	471
Yes (Sometimes/All of the time)	233	**68.3**	108	**31.7**	341

9.5.5 Experience Of Abuse: By Financial Worries

Chi^2 analysis (x^2=21.7, df=1, p<0.001) suggested that experience of abuse was patterned by financial worries, such that men who reported financial worries (31.7%) were significantly more likely to report experience of abuse in the last year than men who reported no financial worries (17.6%) (see Table 9.2).

9.6 Multiple Experiences Of Abuse

We also wanted to understand the proportion of men who had experienced multiple types of abuse in the last year. To these ends, we reanalysed the data to count the types of abuse that each man reported he experienced in the past year. These data are shown in Table 9.3. We see that whilst a

small proportion of men (4%, n=32) reported experiencing all 6 types of abuse in the previous year, 2 in 10 men (20.5%, n=166) had experienced at least 2 types of abuse and 1 in 6 men (17.5%, n=142) had experienced at least 3 types of abuse.

Table 9.3. Cumulative Number Of Abuse Issues Men Reported To Have Experienced In The Previous Year

Total number of types of Abuse reported	n	%	Cumulative %
0	627	77.5	-
1	16	2.0	22.5
2	24	3.0	20.5
3	78	9.6	17.5
4	22	2.7	7.9
5	10	1.2	5.2
6	32	4.0	4.0
Total	**809**	**100**	-

9.7 Summary

- Overall, just over 1 in 5 GBMSM in Scotland (23.8%) have experienced some form of abuse in the previous year from a partner or an ex-partner.
- Emotional abuse (#1 Humiliated or emotionally abused; 14%; #6 Put down or told worthless, 13.8%) was the most commonly reported experience of abuse. About 1 in 10 men experienced controlling behaviour, physical partner abuse or they had been afraid of a partner/ex-partner in the past year. 6.8% of all men said they have been forced to have sexual activity by a partner/ex-partner in the last year.
- Experiences of abuse were also patterned by several of our key sociodemographic variables. Specifically, men in NHS GGC were significantly more likely to experience any kind of abuse in the last year compared to those residing in Lothian and RoS. Similarly, men with financial worries were significantly more likely to report experience of abuse in the previous year compared to men with no financial worries.

- In addition, 1 in 5 men (20.5%) reported multiple (2 or more) types of abuse in the previous year.
- Finally, since almost 1 in 10 participants declined to view these questions, which may be because they were not willing to reflect on difficult experiences, these results should be considered a conservative estimate of the actual levels of abuse experienced by GBMSM in Scotland.

Chapter 10 - Mental Health

10.1 Introduction

This chapter describes the mental health of men in the SMMASH3 study. To assess these issues, a range of questions were developed based on content within the Mind.org.uk website, items in the 'Adult psychiatric morbidity in England, Results of a household survey' study (McManus et al., 2009), the 'National Survey of Sexual Attitudes and Lifestyles 3' study (see natsal.ac.uk), the 'Patient Health Questionnaire' (PHQ9 - see Kroenke et al., 2001) and the 'Generalised Anxiety Disorder' scale (GAD 7 - see Spitzer et al., 2006). We present the basic descriptive statistics (frequency and percentages) for these items and subsequently use inferential statistics to determine if significant differences were observed for each of the following variables;

1. Across the 3 NHS regions of NHS Greater Glasgow and Clyde (GGC), NHS Lothian and the Rest of Scotland (RoS).

2. By age category, grouped as aged 16-25 years, 26-35 years, 36-45 years and 46 years and over.

3. By sexual orientation, either gay or bisexual/straight.

4. By relationship status, either single, regular male partner or regular female partner.

5. By financial status, reporting financial worries either 'occasionally/never' or 'sometimes/all of the time'.

10.2 Ever Diagnosed With A Mental Health Problem?

Participants were asked, *'Have you ever been diagnosed with a mental health problem by a doctor?'* Out of the 924 participants who answered this question, 4 in 10 participants (41.3%, n=382) said that they had, whilst 58.7 % (n=542) had not (see Table 10.1). This was an increase of almost one fifth

(17.4%) compared to the SMMASH2 survey, where 32.3% of men reported a diagnosed mental health problem.

10.2.1 Diagnosed Mental Health Problem: By NHS Region

Chi^2 analysis (x^2=4.52, df=2, p=0.10) suggested that diagnosed mental health problems were not patterned by NHS Region (see Table 10.1).

Table 10.1. Diagnosed Mental Health Problem: By Sociodemographic Variables

Sociodemographic variable	No		Yes		Total
	n	%	n	%	N
Total	542	**58.7**	382	**41.3**	924
NHS Region					
GGC	156	**53.6**	135	**46.4**	291
Lothian	140	**60.3**	92	**39.7**	232
RoS	246	**61.3**	155	**38.7**	401
Age					
16-25 years	77	**57.9**	56	**42.1**	133
26-35 years	141	**57.1**	106	**42.9**	247
36-45 years	107	**54.9**	88	**45.1**	195
46+ years	217	**62.2**	132	**37.8**	349
Sexual orientation					
Gay	431	**56.9**	327	**43.1**	758
Bisexual/Straight	99	**66.0**	51	**34.0**	150
Relationship Status					
Single	272	**55.2**	221	**44.8**	493
Regular Male Partner	205	**60.3**	135	**39.7**	340
Regular Female Partner	58	**77.3**	17	**22.7**	75
Financial Worries					
No (Occasional/Never)	360	**68.8**	163	**31.2**	523
Yes (Sometimes/All of the time)	176	**45.2**	213	**54.8**	389

10.2.2 Diagnosed Mental Health Problem: By Age

Chi^2 analysis (x^2=3.22, df=3, p=0.35) suggested that diagnosed mental health problems were not patterned by age (see Table 10.1).

10.2.3 Diagnosed Mental Health Problem: By Sexual Orientation

Chi^2 analysis (x^2=4.30, df=1, p<0.05) suggested that diagnosed mental health problems were patterned by sexual orientation, such that gay identified men (43.1%) were significantly more likely to report a diagnosed mental health problem in their lifetime than bisexual/straight identified men (34%) (see Table 10.1).

10.2.4 Diagnosed Mental Health Problem: By Relationship Status

Chi^2 analysis (x^2=14.8, df=2, p<0.005) suggested that diagnosed mental health problems were patterned by relationship status, such that single men (44.8%) and men with a regular male partner (39.7%) were significantly more likely to report a diagnosed mental health problem in their lifetime, compared to men with a regular female partner (22.7%) (see Table 10.1).

10.2.5 Diagnosed Mental Health Problem: By Financial Worries

Chi^2 analysis (x^2=51.2, df=1, p<0.001) suggested that diagnosed mental health problems were patterned by financial worries, such that men who reported financial worries (54.8%) were significantly more likely to report a diagnosed mental health problem in their lifetime than men who reported no financial worries (31.2%) (see Table 10.1).

10.3 Which Mental Health Problems Have You Been Diagnosed With?

We asked those 382 men who said they had been diagnosed with a mental health problem by a doctor in their lifetime to tell us what diagnosis(es) they had received. The results of these questions are shown in Table 10.2 (note, some men specified multiple mental health problems). Overall, it is clear that depression, anxiety, and mixed depression/anxiety make up the overwhelming majority of diagnosed mental health problems amongst men in this study. Two thirds of participants reported a depression diagnosis (66.5%, n=254) and almost half an anxiety (53.1%, n=203) and mixed anxiety/depression (45.8%, n=175) diagnosis respectively. The remaining psychiatric disorders were

far less common, with between 1% - 8% of men reporting each of these conditions (see Table 10.2). Notably, post-traumatic stress disorder (11.0%), eating disorders (8.1%) were reported by twice as many men in SMMASH3 compared to SMMASH2.

Table 10.2. Reported Lifetime Diagnosed Mental Health Problems

Which of the following mental health problems have you been diagnosed with by a doctor?	Yes		No	
	n	%	n	%
Depression	254	**66.5**	128	**33.5**
Anxiety	203	**53.1**	179	**46.9**
Mixed Anxiety/Depression	175	**45.8**	207	**54.2**
Obsessive-Compulsive Disorder	26	**6.8**	356	**93.2**
A Phobia	<5	**1.0**	>370	**99.0**
An Eating Disorder	31	**8.1**	351	**91.9**
Post-traumatic Stress Disorder	42	**11**	340	**89.0**
Bipolar Disorder	20	**5.2**	362	**94.8**
Schizophrenia	5	**1.3**	377	**98.7**
Psychotic Illness	12	**3.1**	370	**96.9**
Other	19	**5.0**	363	**95.0**

10.4 Mental Health Problems: In The Last 12 Months

We asked all participants *'Which of the following mental health problems have affected you in the last 12 months?'* We then stratified these results for men who were diagnosed with each mental health disorder. Table 10.3 shows the results of these questions. Overall, we see that most people who have been diagnosed with each mental health problem in their lifetime have also been affected by them in the previous year. For example, depression had an impact on 80.3% of all those diagnosed with the condition during the last year (n=204/254 diagnosed), compared to 98.9% for mixed anxiety/depression (n=173/175 diagnosed) and 94.6% for anxiety (n=192/203 diagnosed). Similar results were found for phobias (100%), eating disorders (87%) and post-traumatic stress disorder (66.7%). However, our findings suggest that a lower proportion of men have been affected in the last year from diagnosed schizophrenia (60%) and psychotic illness (50%).

Table 10.3. Reported Experience Of Mental Health Problems In The Last 12 Months

Which of the following mental health problems have affected you in the last 12 months?	Total	Yes		No	
		n	%	n	%
Depression	254	204	**80.3**	50	**19.7**
Anxiety	203	192	**94.6**	11	**5.4**
Mixed Anxiety/Depression	175	173	**98.9**	2	**1.1**
Obsessive-Compulsive Disorder	26	25	**96.2**	1	**3.8**
A Phobia	<5	<5	**100.0**	0	**0**
An Eating Disorder	31	27	**87.0**	4	**13.0**
Post-traumatic Stress Disorder	42	28	**66.7**	14	**33.3**
Bipolar Disorder	20	15	**75.0**	5	**25.0**
Schizophrenia	5	3	**60.0**	2	**40.0**
Psychotic Illness	12	6	**50.0**	6	**50.0**
Other	19	19	**100**	0	

10.5 Generalised Anxiety Disorder (GAD-7) Questionnaire

The GAD-7 (Generalised Anxiety Disorder) Questionnaire is a screening tool and severity measure for generalized anxiety disorder. It consists of 7 anxiety related problems (see Table 10.4) and asks participants to rate how often they have experienced them (Not at all, several days, more than half the days, nearly every day) over the last 2 weeks. These results are summed together so participants can score between 0 (not affected by any issue at all) and 21 (affected by every issue nearly every day). These scores are then translated into an anxiety assessment as experiencing either no (score 0-4), mild (score 5-9), moderate (score 10-14) or severe (score 15-21) anxiety.

Table 10.4. Items On The GAD-7 Scale

1. Feeling nervous, anxious or on edge?
2. Not being able to stop or control worrying?
3. Worrying too much about different things?
4. Trouble relaxing?
5. Being so restless that it is hard to sit still?
6. Becoming easily annoyed or irritable?
7. Feeling afraid as if something awful might happen?

Overall, we found that half of participants (51.1%, n=448) were assessed as experiencing no anxiety (see Table 10.5) according to their self-reported feelings during the previous 2 weeks. A further quarter of participants (26.4%, n=231) were assessed as having mild anxiety, with almost 1 in 8 (11.5%, n=101) assessed as having severe and another 1 in 8 men (11%, n=96) with moderate anxiety symptoms during the previous 2 weeks.

Table 10.5. GAD Diagnosis

GAD Diagnosis	n	%
None	448	**51.1**
Mild	231	**26.4**
Moderate	96	**11.0**
Severe	101	**11.5**
Total	**876**	

When using GAD-7 as a screening tool in clinical practice, it is recommended that people who score 10 or over (equating to an assessment of moderate or severe anxiety) are evaluated further (e.g. by their GP or clinically) in terms of their mental health, to assess whether they should be treated for their anxiety, or may be experiencing other related conditions such as panic disorder, social anxiety disorder or post-traumatic stress disorder. As such, 22.5% (n=197) of our sample of GBMSM would

fall under that category. Of these, a total of 114 men (57.9% of men with moderate/severe anxiety) had not previously been diagnosed by a doctor with an anxiety problem in their lifetime. We further examine those men who were assessed as having moderate/severe anxiety symptoms in the past 2 weeks by our 5 key sociodemographic variables.

10.5.1 GAD Assessment: By NHS Region

Chi^2 analysis (x^2=3.26, df=2, p=0.19) suggested that generalized anxiety disorder was not patterned by NHS Region (see Table 10.6).

10.5.2 GAD Assessment: By Age

Chi^2 analysis (x^2=19.6, df=3, p<0.001) suggested that generalized anxiety disorder was patterned by age, such that men in the two younger age categories (16-25 years = 29.4%; 26-35 years = 26.1%) were significantly more likely to be assessed with moderate/severe anxiety, and men in the oldest group (46+ years = 14.5%) were significantly less likely to be so assessed, than expected by chance (see Table 10.6).

10.5.3 GAD Assessment: By Sexual Orientation

Chi^2 analysis (x^2=3.62, df=1, p=0.60) suggested that generalized anxiety disorder was not patterned by sexual orientation (see Table 10.6).

10.5.4 GAD Assessment: By Relationship Status

Chi^2 analysis (x^2=12.9, df=2, p<0.005) suggested that generalized anxiety disorder was patterned by relationship status, such that single men (26.4%) were significantly more likely to be assessed with moderate/severe anxiety, and men with a regular male (18.5%) or female (10.3%) partner were significantly less likely to be so assessed, than expected by chance (see Table 10.6).

Table 10.6. GAD Assessment: By Sociodemographic Variables

Sociodemographic variable	None/Mild		Moderate/Severe		Total
	n	%	n	%	n
Total	679	**77.5**	197	**22.5**	876
NHS Region					
GGC	207	**74.2**	72	**25.8**	279
Lothian	178	**80.9**	42	**19.1**	220
RoS	294	**78.0**	83	**22.0**	377
Age					
16-25 years	89	**70.6**	37	**29.4**	126
26-35 years	176	**73.9**	62	**26.1**	238
36-45 years	136	**72.7**	51	**27.3**	187
46+ years	278	**85.5**	47	**14.5**	325
Sexual Orientation					
Gay	751	**78.1**	211	**21.9**	962
Bisexual/Straight	173	**86.5**	27	**13.5**	200
Relationship Status					
Single	346	**73.6**	124	**26.4**	470
Regular Male Partner	264	**81.5**	60	**18.5**	324
Regular Female Partner	61	**89.7**	07	**10.3**	68
Financial Worries					
No (Occasional/Never)	425	**85.5**	72	**14.5**	497
Yes (Sometimes/All of the time)	248	**67.4**	120	**32.6**	368

10.5.5 GAD Assessment: By Financial Worries

Chi^2 analysis (x^2=40.20, df=1, p<0.001) suggested that generalized anxiety disorder was patterned by financial worries, such that men who reported financial worries (32.6%) were significantly more likely to be assessed with moderate/severe anxiety than men who reported no financial worries (14.5%) (see Table 10.6).

10.6 Depression Amongst GBMSM Using The PHQ-9 (Patient Health Questionnaire)

The PHQ-9 (Patient Health Questionnaire) is a self-complete questionnaire which assesses levels of depression; unlike the GAD-7, PHQ-9 is not a screening tool for depression, but rather is used to monitor the severity of depression and response to treatment. Moreover, as the PHQ-9 can also be

used as a tentative measure of depression in certain populations (e.g. Haddad et al., 2013), it was included within the SMMASH3 study to assess potential levels of depression amongst GBMSM.

The PHQ-9 consists of 9 depression related problems (see Table 10.7) and participants rate how often they have experienced them (Not at all, several days, more than half the days, nearly every day) over the last 2 weeks. These results are summed together so participants can score between 0 (not affected by any issue at all) and 27 (affected by every issue nearly every day). These scores are then translated into a depression assessment as experiencing either none (score 0-4), mild (score 5-9), moderate (score 10-14), moderately severe (score 15-19) or severe (score 20-27) depression.

Table 10.7. Items On The PHQ-9 Scale

1. Little interest or pleasure in doing things?
2. Feeling down, depressed, or hopeless?
3. Trouble falling or staying asleep, or sleeping too much?
4. Feeling tired or having little energy?
5. Poor appetite or overeating?
6. Feeling bad about yourself - or that you are a failure or have let yourself or your family down?
7. Trouble concentrating on things, such as reading the newspaper or watching television?
8. Moving or speaking so slowly that other people could have noticed? Or the opposite - being so fidgety or restless that you have been moving around a lot more than usual?
9. Thoughts that you would be better off dead or hurting yourself in some way

Overall, 886 men answered the PHQ-9 questions (see Table 10.8). Less than half of participants (40.1%, n=355) were assessed as experiencing no depression according to their self-reported feelings during the previous 2 weeks. A further quarter of participants (27%, n=239) were assessed

as having mild depression, with 1 in 7 (14.9%, n=132) assessed as having moderate, 1 in 10 (9.7%, n=86) moderately severe and a further 8.4% (n=74) as having severe depression symptoms during the previous 2 weeks.

Table 10.8. PHQ Depression Symptoms Assessment

PHQ Diagnosis	n	%
None	355	**40.1**
Mild	239	**27.0**
Moderate	132	**14.9**
Moderately Severe	86	**9.7**
Severe	74	**8.4**
Total	**886**	

When using PHQ-9 in clinical practice, guidelines (UMHS, 2011) suggest the course of action that the physician should use, based on patients' depression assessment. For patients with 'mild to moderate' depression, physicians should use 'clinical judgment about treatment, based on patients' duration of symptoms and functional impairment' (UMHS, 2011). Moreover, these guidelines suggest that patients with moderately severe to severe depression 'warrant treatment for depression, using antidepressant, psychotherapy and/or a combination of treatments'. Based on these criteria (see Table 10.9, top row), we see that 40.1% (n=355) of GBMSM in this sample do not have depression, 41.9% (n=371) have mild-to-moderate depression and should be referred to their GPs regarding this issue whilst a further 18.1% (n=160) had moderately-severe-to-severe symptoms and as such warrant clinically lead treatment for their depression.

Of the 371 men with mild/moderate depression, 108 (29.1%) had received a depression diagnosis from a doctor, meaning that n=263 (70.9%) had not. Of the 160 men with moderately severe-to-severe depression, 92 (57.5%) men had received a positive diagnosis; as such, 68 (42.5%) men were undiagnosed. Therefore, of the total 531 men suffering from moderate-severe depression, only 200 (37.7%) men have been diagnosed from a health professional, meaning that 62.3% of all men suffering from depression symptomatology remained undiagnosed.

We further examine those men who were assessed as having mild/moderate and moderately severe/severe depression symptoms in the past 2 weeks by our 5 key sociodemographic variables.

10.6.1 Depression Assessment: By NHS Region

Chi^2 analysis (x^2=5.86, df=4, p=0.21) suggested that depression levels were not patterned by NHS region (see Table 10.9).

Table 10.9. GAD Assessment: By Sociodemographic Variables

Sociodemographic variable	None		Mild/Moderate		Moderately Severe/ Severe		Total
	n	%	n	%	n	%	N
Total	355	**40.1**	371	**41.9**	160	**18.1**	886
NHS Region							
GGC	105	**37.5**	124	**44.3**	51	**18.2**	280
Lothian	104	**46.6**	80	**35.9**	39	**17.5**	223
RoS	146	**38.1**	167	**43.6**	70	**18.3**	383
Age							
16-25 years	33	**26.4**	56	**44.8**	36	**28.8**	125
26-35 years	73	**30.7**	118	**49.6**	47	**19.7**	238
36-45 years	72	**38.3**	80	**42.6**	36	**19.1**	188
46+ years	177	**52.8**	117	**34.9**	41	**12.2**	335
Sexual Orientation							
Gay	287	**39.4**	300	**41.2**	142	**19.5**	729
Bisexual/Straight	64	**44.8**	63	**44.1**	16	**11.2**	143
Relationship Status							
Single	160	**33.4**	204	**42.6**	115	**24.0**	479
Regular Male Partner	149	**46.4**	131	**40.8**	41	**12.8**	321
Regular Female Partner	42	**58.3**	29	**40.3**	1	**1.4**	72
Financial Worries							
No (Occasional/Never)	252	**50.4**	199	**39.8**	49	**9.8**	500
Yes (Sometimes/All of the time)	102	**27.1**	165	**43.8**	120	**29.2**	387

10.6.2 Depression Assessment: By Age

Chi^2 analysis (x^2=47.13, df=6, p<0.001) suggested depression levels were patterned by age (see Table 10.9). Men aged 16-25 years (28.8%) were significantly more likely to report moderately severe/severe depression, than men aged 26-35 years (19.7%) and 36-45 years (19.1%) and those

aged 46 years or older (12.2%). In fact, the youngest group of men (16-25 years) were twice more likely to report moderately severe/severe depression compared to the oldest participants (46+ years). In summary, depression levels tended to reduce as age increased.

10.6.3 Depression Assessment: By Sexual Orientation

Chi^2 analysis (x^2=5.64, df=2, p=0.60) suggested that depression levels were not patterned by sexual orientation (see Table 10.9).

10.6.4 Depression Assessment: By Relationship Status

Chi^2 analysis (x^2=40.15, df=4, p<0.001) suggested that depression levels were patterned by relationship status. Single men were more likely to report moderately severe/severe depression (24%) than men with a regular male partner (12.8%) and those with a regular female partner (1.4%). (see Table 10.9).

10.6.5 Depression Assessment: By Financial Worries

Chi^2 analysis (x^2=74.34, df=2, p<0.001) suggested that depression levels were patterned by financial worries, such that men who reported financial worries were significantly more likely to report moderately severe/severe depression (29.2%) than men who reported no financial worries (9.8%) (see Table 10.9).

10.7 Summary

- Diagnosed mental health problems were common amongst GBMSM in Scotland, with almost 4 in 10 participants (41.3%) having had a mental health problem diagnosed by a doctor within their lifetime.
- Gay identified men, men who were single, have a regular male partner or report financial worries were all significantly more likely to report a diagnosed mental health problem.

- Regarding the type of mental health disorder men have been diagnosed with, depression (66.5% of those diagnosed with a mental health problem), anxiety (53.1%) and mixed anxiety/depression (45.8%) were by far the most common. Few men in the whole sample reported each of the other psychiatric disorders assessed.
- Most men who have been diagnosed with mental health problems in their lifetime had also been affected by them in the previous year. Overall depression had an impact on 80.3% of all those diagnosed with the condition during the last year, compared to 98.9% for mixed anxiety/depression and 94.6% for anxiety. The pattern for other psychiatric disorders was equally high.
- Just over 1 in 5 (22.5%) men in this study were assessed as having moderate to severe anxiety symptoms in the previous 2 weeks and as such should be considered for treatment according to clinical guidelines; of these men, 57.9% had never been diagnosed with an anxiety disorder from a health professional.
- Moreover, younger men (16-35 years), gay identified men, single men, and men with financial worries were all significantly more likely to report moderate/severe anxiety symptoms.
- Less than half of participants (40.1%) were assessed as experiencing no depression according to their self-reported feelings during the previous 2 weeks. A further quarter of participants (27%) were assessed as having mild depression, with 1 in 7 (14.9%) assessed as having moderate, 1 in 10 (9.7%) moderately severe, and a further 8.4% severe depression symptoms during the previous 2 weeks.
- Of the men in this study who had mild-to-severe depression, two thirds (62.3%) had not had this diagnosed by a doctor and therefore were likely not receiving treatment for their mental health problems.
- Depression levels and severity tended to decrease with age, with younger men being significantly less likely to report no depression (16-25 years) and significantly more likely to

report both mild-to-moderate (16-25 years) and moderately severe-to-severe (16-25 years and 26-35 years) depression. Single men were significantly more likely to report depression symptoms than men with a regular (male or female) partner and men with financial worries were significantly more likely to report depression symptoms than men with no financial worries.

- In concert, these data suggest that GBMSM experience high levels of depression, anxiety and mixed depression/anxiety symptoms, a sizeable proportion of which appears to be undiagnosed, but that levels of other mental health disorders are in line with the wider population.

Chapter 11 - Stigma And Psychological Functioning

11.1 Introduction

This chapter looks at issues of stigma and psychological functioning amongst GBMSM in Scotland. This is divided into three key sections; i) Resilience (measured by the 14 item Sense of Coherence Scale – Orientation to Life Scale, Antonovsky, 1987), ii) Emotional Competency (measured by the Trait Emotional Intelligence Questionnaire – Short Form (TEIQue-SF), Petrides and Furnham, 2006) and iii) Personalised stigma and sexual orientation concealment (measured by the Frost et al. (2007) modification of the Berger et al. (2001) HIV stigma scale). We examine the reliability of each scale, based on Cronbach's Alpha, before using inferential statistics to determine if significant differences were observed for each of the following variables;

1. Across the 3 NHS regions of NHS Greater Glasgow and Clyde (GGC), NHS Lothian and the Rest of Scotland (RoS).

2. By age category, grouped as aged 16-25 years, 26-35 years, 36-45 years and 46 years and over.

3. By sexual orientation, either gay or bisexual/straight.

4. By relationship status, either single, regular male partner or regular female partner.

5. By financial status, reporting financial worries either 'occasionally/never' or 'sometimes/all of the time'.

11.2 Resilience: Sense of Coherence Questionnaire

The 13-item Sense of Coherence – Orientation to Life (SoC) questionnaire, measures resilience to stressful life situations which might otherwise deleteriously impact upon health issues. This is based

on the salutogenic concept of a "sense of coherence" as a specific way of viewing life as comprehensible, manageable and meaningful' (Eriksson, 2007). This approach theorises that the way that people relate to their life will subsequently impact upon their health. Of particular interest to Health Promotion is that, where SoC is found to be related to poor health behaviours and outcomes, interventions that improve SoC and resilience should also improve these poor health behaviours and outcomes. The SoC questionnaire comprises an overall score (0-78) as well as 3 subscales as follows; Comprehensibility (0-30), Manageability (0-24), and Meaning (0-24). To calculate each component, the relevant questions for each subscale are summed, with the overall SoC score comprising all 13 items summed. Low scores are indicative of low resilience and a poor sense of coherence. Herein these will be referred to as Overall SoC, SoC Comprehensibility, SoC Manageability and SoC Meaning. No imputations for missing data were included in this analysis, resulting in slightly different sample sizes for the overall SoC score, and each subscale, respectively.

11.2 Sense Of Coherence Scale Reliability Analysis

The psychometric properties and robustness of the SoC scale and subscales has already been established (see Eriksson, 2007) amongst the general population. However, it is good practice to check the reliability of this scale with our population, GBMSM. Cronbach's Alpha is used herein. Scores of around 0.7 – 0.8 indicate good reliability within the items in a scale. Table 11.1 shows that the reliability analysis of the overall SoC scale, and two of the subscales were within the region of 0.7 – 0.9 which suggests good reliability. Although the SoC Manageability score of 0.64 was a little low, this subscale is well established, so this value is not troubling. Moreover, in each case, deleting a variable did not substantially impact on the scales' reliability statistic overall. In concert, these results suggest that no amendments should be made to the SoC scale and subscales for this population of GBMSM.

Table 11.1. Reliability Analysis Of SOC Scale And Subscales

Scale/Sub-scale	Cronbach's Alpha
Overall SoC	**0.862**
SoC Comprehensibility	**0.706**
SoC Manageability	**0.636**
SoC Meaning	**0.723**

11.3 Sense Of Coherence: Overall Mean Score

For the 755 men who answered all 13 SoC questions, the overall mean score was M=39.5 (SD=12.8) (see Table 11.2). This is substantially (20%) lower than the average levels of SoC reported for a general population research study conducted in Glasgow (SoC mean = 51.2), Manchester (M=47.1) and Liverpool (M=44.0) (Walsh et al., 2014) where gender was not a significant predictor of SoC. As such we may tentatively conclude that overall, GBMSM in Scotland have lower resilience, as measured by the SoC scale, than the general population.

11.3.1 Sense Of Coherence: By NHS Region

ANOVA suggested that SoC (W=2.16, df(2,468), p=0.12) and each of the three subscales (Comprehensibility, Manageability and Meaning) were not significantly related to NHS region (see Table 11.2). This means that levels of resilience amongst GBMSM in Scotland did not differ by the area in which they live.

11.3.2 Sense Of Coherence: By Age

ANOVA suggested that SoC (W=18.9, df(3,2906), p<0.001) and each of the three subscales [Comprehensibility (W=20.9, df(3,565), p<0.001), Manageability (W=12.9, df(3,252), p<0.001) and Meaning (W=7.88, df(3,178), p<0.001)] were significantly related to Age (see Table 11.2). Post-hoc analyses suggested that overall, younger men (16-25 years) had significantly lower levels of resilience than the oldest men (46+ years). *Comprehensibility* – younger men (16-25 years) had

significantly lower levels than men aged 26–35 and 36-45 years, who in turn had significantly lower levels than men aged 46+ years. *Manageability* – younger men (16-25 years, 26-35 years, 36-45 years) had significantly lower levels than men aged 46+ years. *Meaning* – younger men (16-25 years, 26–35 years, 36-45 years) had significantly lower levels than men aged 46+ years. In summary, these results suggest that younger men had lower levels of resilience than older men (see Table 11.2).

Table 11.2. Sense Of Coherence Mean Scores: By Sociodemographic Variables

Sociodemographic variable (Range)	SoC Scale (0-78)	Comprehensibility (0-30)	Manageability (0-24)	Meaning (0-24)	N (SoC Scale)
N	755	775	777	789	
Average score overall	39.5	14.4	11.8	13.2	
NHS Region					
GGC	38.2	14.0	11.5	12.6	242
Lothian	40.7	14.9	12.0	13.5	199
RoS	39.5	14.4	11.7	13.2	314
Age					
16-25 years	35.2	12.3	10.7	12.3	110
26-35 years	37.2	13.5	11.1	12.6	211
36-45 years	37.7	13.8	11.1	12.6	153
46+ years	43.8	16.2	13.0	14.2	281
Sexual Orientation					
Gay	39.2	14.3	11.7	13.2	621
Bisexual/Straight	41.1	15.0	12.3	13.3	121
Relationship Status					
Single	37.7	13.8	11.3	12.4	405
Regular Male Partner	41.5	15.1	12.3	14.1	282
Regular Female Partner	42.1	15.3	12.7	13.7	56
Financial Worries					
No (Occasional/Never)	43.0	15.8	12.9	14.2	431
Yes (always/sometimes)	34.7	12.7	10.2	11.7	313

11.3.3 Sense Of Coherence: By Sexual Orientation

Independent Samples T-test suggested that SoC ($t(740) = -1.42$, $p=0.16$) and each of the three subscales (Comprehensibility, Manageability and Meaning) were not significantly related to sexual

orientation. This means that levels of resilience amongst gay identified and bisexual/straight identified men in Scotland are not significantly different (see Table 11.2).

11.3.4 Sense Of Coherence: By Relationship Status

ANOVA suggested that SoC ($W=8.95$, $df(2,1439)$, $p<0.001$) and each of the three subscales [Comprehensibility ($W=5.25$, $df(2,151)$, $p<0.05$), Manageability ($W=5.72$, $df(2,114)$, $p<0.005$) and Meaning ($W=11.5$, $df(2,260)$, $p<0.001$)] were significantly related to relationship status (see Table 11.2). Post-hoc analyses suggested that overall, single men had significantly lower levels of resilience than men with either a regular male or a regular female partner. In addition, single men had significantly lower levels than men with either a regular male or a regular female partner, for each of the Comprehensibility, Manageability, and Meaning resilience subscales. In summary, these results suggest that single men had lower level of resilience than men with either a regular male or a regular female partner (see Table 11.2).

11.3.5 Sense Of Coherence: By Financial Worries

Independent Samples T-test suggested that SoC ($t(742)=9.27$, $p<0.001$) and each of the three subscales [Comprehensibility ($t(762)=8.07$, $p<0.001$), Manageability ($t(763)=8.38$, $p<0.001$) and Meaning ($t(776)=7.59$ $p<0.001$)] were significantly related to financial worries. In each case, men who reported financial worries had significantly lower levels of resilience than men who reported no financial worries (see Table 11.2).

11.4 Emotional Competency

The Trait Emotional Intelligence Questionnaire (TEI-QUE) is a 30-item scale that measures emotional competency, that is, the ability to understand and regulate emotions skilfully to help improve your well-being (Petrides and Furnham, 2003). The scale is used to measure Emotional Competency (EC) overall, as well as four subscales which measure Wellbeing, Self-control, Emotionality and Sociability.

In each case, items relating to each subscale and overall EC scale are summed, then each scale is adjusted to score from 1 (low EC) to 7 (high EC). It is important to note that these measures do not directly equate to our everyday understanding of the concepts after which they are named. Rather, these measure components of the participants' emotional competency. As such, herein we will refer to these as Overall EC (Overall EC score), EC Wellbeing (EC wellbeing subscale score), EC Self-Control (EC self-control subscale score), EC Emotionality (EC emotionality subscale score) and EC Sociability (EC sociability subscale score).

11.5 TEI-QUE Emotional Competency Scale Reliability Analysis

The psychometric properties and robustness of the TEIque-SF scale and subscales has already been established (see Petrides & Furnham, 2006) amongst the general population. However, it is good practice to check the reliability of this scale with our population, GBMSM. Cronbach's Alpha is used herein. Scores of around 0.7 – 0.8 indicate good reliability within the items in a scale. Table 10.3 shows that the reliability analysis of the overall EC scale, and four subscales were within the region of 0.7 – 0.9 which suggests good reliability. Moreover, in each case, deleting a variable did not substantially impact on the scales' reliability. In concert, these results suggest that no amendments should be made to the TEIque-SF EC scale and subscales for this population of GBMSM.

Table 11.3. Reliability Analysis Of TEI-QUE Scale And Subscales.

Scale/Sub-scale	Cronbach's Alpha
Overall EC	**0.917**
EC Wellbeing	**0.872**
EC Self-Control	**0.707**
EC Emotionality	**0.715**
EC Sociability	**0.761**

11.6 Emotional Competency: Overall Mean Score

For the 759 men who completed the EC questionnaire, the overall mean score was 3.33 (see Table 11.4). This is substantially lower than the average level of overall EC reported for a wider male population research study conducted in the UK (*M*=4.95) (Petrides, 2009).

11.6.1 Emotional Competency: By NHS Region

ANOVA suggested that Overall EC (W=2.10, df(2,468), p=0.12) and three of the four subscales (EC Wellbeing, Self-Control, and Sociability) were not significantly related to NHS region. However, EC Emotionality (W=4.41, df(2,493), p<0.05) was significantly different by NHS region. Post-hoc analyses suggested that men in NHS Lothian had significantly lower EC Emotionality compared to men in the RoS (see Table 10.4), however, no significant EC emotionality differences were detected between men living in NHS GGC and those living in NHS Lothian and the RoS (see Table 11.4).

11.6.2 Emotional Competency: By Age

ANOVA suggested that Overall EC (W=4.60, df(3,344), p<0.005), EC Wellbeing (W=3.52, df(3,354), p<0.05), EC Self-Control (W=14.01, df(3,358), p<0.001) and EC Emotionality (W=5.26, df(3,349), p<0.005) were significantly patterned by age, although EC Sociability was not. Post-hoc analyses suggested that older men (46+ years) had significantly lower Overall EC compared only to men aged at least 45 years. In addition, older men (46+ years) also reported significantly lower EC Wellbeing to men aged 16-25. Older men (46+ years) also had significantly lower EC self-control than men aged 16–25 years and those aged 26–35 years. Finally, older men (46+ years) also reported significantly lower EC Emotionality than the youngest group of men (16–25 years) (see Table 11.4).

In concert, these findings suggest that older men had significantly lower emotional competency than younger men, albeit of a rather small magnitude in each case. This discrepancy might be better attributed to generational differences among the SMMASH3 participants rather than the age differences per se. In particular, the formulation of EC skills of older men might have been adversely

impacted by the socio-legal situation (e.g. 1960 – mid 1980s) according to which homosexuality was illegal (in Scotland until 1981) and highly socially stigmatised. As such, it would have been substantially easier for the youngest men in this study to develop EC skills, compared to older men, due to the great steps in social and legal acceptance of homosexuality over the past 3 decades, not least the introduction of equal marriage in Scotland in 2014.

Table 11.4. Emotional Competency Mean Scores: By Sociodemographic Variables

Sociodemographic variable	Overall EC	EC Wellbeing	EC Self-control	EC Emotionality	EC Sociability	Total N
N	759	804	803	800	803	759
Average score for whole sample	3.3	3.1	3.7	3.2	2.5	
NHS Region						
GGC	3.4	3.2	3.7	3.2	2.5	236
Lothian	3.2	3.0	3.6	3.1	2.5	203
RoS	3.4	3.1	3.7	3.3	2.5	320
Age						
16-25 years	3.5	3.2	4.0	3.5	2.5	111
26-35 years	3.4	3.2	3.9	3.3	2.5	214
36-45 years	3.3	3.2	3.6	3.2	2.5	157
46+ years	3.2	2.9	3.4	3.1	2.5	277
Sexual Orientation						
Gay	3.3	3.1	3.7	3.2	2.5	627
Bisexual/Straight	3.2	2.9	3.6	3.2	2.4	119
Relationship Status						
Single	3.5	3.3	3.8	3.4	2.6	404
Regular Male Partner	3.2	2.8	3.5	3.1	2.4	287
Regular Female Partner	3.0	2.6	3.4	3.1	2.4	56
Financial Worries						
No (Occasional/Never)	3.1	2.8	3.4	3.2	2.4	432
Yes (Sometimes/All of the time)	3.6	3.4	4.0	3.3	2.6	318

11.6.3 Emotional Competency: By Sexual Orientation

Independent samples T-Test suggested that overall EC ($t(744)= 1.42$, $p=0.15$) and the four emotional competency subscales were not significantly patterned by sexual orientation (see Table 11.4).

11.6.4 Emotional Competency: By Relationship Status

ANOVA suggested that Overall EC (W=16.4, df(2,152), p<0.001), EC Wellbeing (W=22.6, df(2,169), p<0.001), EC Self-control (W=8.31, df(2,161), p<0.001), EC Emotionality (W=8.63, df(2,167), p<0.001) and EC Sociability (W=4.18, df (2,174), p<0.05) were significantly related to relationship status. Post hoc analyses suggested that single men had significantly higher emotional competency compared to men with a regular male or regular female partner. Single men had significantly higher EC Wellbeing compared to men with a regular male or regular female partner. Similarly, single men had significantly higher EC Self-control, EC Emotionality, and EC Sociability than men with a regular male or regular female partner. (see Table 11.4). However, no significant EC (total EC and for each of the 4 EC sub-scales) differences were detected between men with a regular male partner and men with a regular female partner. Overall, these data suggest that single men had higher emotional competency than men with a regular male or regular female partner.

11.6.5 Emotional Competency: By Financial Worries

Independent Samples T-tests suggested that Overall EC (t(748)= -6.70, p<0.001), EC Wellbeing (t(792)= -6.92, p<0.001), EC Self-control (t(789)= -7.81 p<0.001), EC Emotionality (t(787)= -2.28, p<0.05), and EC Sociability (t(790)=-3.81 p<0.001) were all related to financial worries. Men with financial worries have significantly higher Overall EC than men with no financial worries. They also had higher EC Wellbeing, higher EC Self-control, higher EC emotionality, and higher EC Sociability (see Table 11.4). Overall, these data suggest that men with financial worries have higher emotional competency than men with no financial worries.

11.7 Stigma – Personalised And Concealment Stigma

The 20–item Gay-Related Stigma scale (Frost et al, 2007), measures *overall* gay-related stigma (using all 20 items) along with two sub-components of gay-related stigma;

- Personalised Stigma, which measures men's 'awareness of social attitudes about gay people' and their perceptions of 'the potential social consequences related to being gay' (Frost et al, 2007; p637) and
- Concealment Stigma, which measures 'the extent to which participants disclose their sexual orientation and how worried they were about others finding out they were gay' (Frost et al, 2007; p637).

11.8 Gay-Related Stigma Scale Sub-Component Analysis And Scoring

Factor analysis completed for the purposes of the SMMASH2 project and reported in the relevant report suggested that the *Personalised Stigma subscale* comprised items #1 – #7 and #20 and the Concealment Stigma subscale comprised items #10 - #19 from the questionnaire (see SMMASH3 questionnaire, Appendix 1).

11.9 Gay-Related Stigma Scale Reliability Analysis

The psychometric properties and robustness of the Gay-Related Stigma Scale have already been established amongst GBMSM in the USA (see Frost et al, 2007). However, it is good practice to check the reliability of this scale with our population of GBMSM in Scotland. Cronbach's Alpha is used herein. Scores of around 0.7 – 0.8 indicate good reliability within the items in a scale. Table 11.5 shows that the reliability analysis of the overall Gay-Related Stigma Scale, and two of the subscales were all around 0.9 which suggests good reliability. Moreover, in each case, deleting a variable did not substantially impact on the scales' reliability statistic overall. In concert, these results suggest that no amendments should be made to the Gay-Related Stigma scale and subscales for this population of GBMSM.

Table 11.5. Reliability Analysis Of Gay-Related Stigma Scale And Subscales

Scale/Sub-scale	Cronbach's Alpha
Gay-Related Stigma	**0.912**
Personalised Stigma	**0.897**
Concealment Stigma	**0.922**

11.10 Gay-Related Stigma: Mean Values

Mean scores for Overall, Personalised and Concealment gay-related stigma are shown in Table 11.6. In each case the mean score suggested that men experience some, but reasonably low levels of gay related stigma overall. Mean Overall Gay-Related Stigma was 22.7, Personalised Stigma was 10.1 and Concealment Stigma was 9.5. This equated to 'disagreeing' that they experienced stigma for each item on average, meaning that overall men did not feel they experienced gay related, personalised or concealment stigma.

11.10.1 Gay-Related Stigma: By NHS Region

ANOVA suggested that although concealment stigma ($W=1.78$, $df(2,519)$, $p=0.17$) was not significantly different by NHS region, Personalised Stigma ($W=6.01$, $df(2,518)$, $p<0.05$) and gay related stigma ($W=4.19$, $df(2,503)$, $p<0.05$) were related to NHS region (see Table 11.6). In particular, men living in the RoS experienced significantly higher gay related stigma and personalised stigma compared to men living in NHS Lothian and GGC. However, no significant differences in experienced stigma were detected between men living in NHS Lothian and GGC.

11.10.2 Gay-Related Stigma: By Age

ANOVA suggested that Gay-Related Stigma ($W=1.77$, $df(3,368)$, $p=0.15$), Personalised Stigma ($W=2.08$, $df(3,381)$, $p=0.10$) or Concealment Stigma ($W=2.47$, $df(3,380)$, $p=0.07$) were not significantly related to age (see Table 11.6).

Table 11.6. Gay-Related Stigma: By Sociodemographic Variables

Sociodemographic variable (Range)	Gay-Related Stigma (0-60)	Personalised Stigma (0-24)	Concealment Stigma (0-32)	Total N
N	813	838	831	
Total	22.7	10.1	9.5	
NHS Region				
GGC	21.8	9.4	9.3	263
Lothian	21.8	9.6	8.9	211
RoS	24.1	11	10	339
Age				
16-25 years	21.3	10.1	8.3	120
26-35 years	22.4	10.1	9.2	219
36-45 years	22.3	9.2	10.2	173
46+ years	23.8	10.6	9.8	301
Sexual Orientation				
Gay	21.6	9.2	9.5	674
Bisexual/Straight	28.8	15	9.5	127
Relationship Status				
Single	23.4	10.4	9.9	444
Regular Male Partner	20.7	8.5	9.2	297
Regular Female Partner	29.7	16.4	8.5	59
Financial Worries				
No (Occasional/Never)	22.3	10.1	8.9	466
Yes (Sometimes/All of the time)	23.5	10.1	10.5	336

11.10.3 Gay-Related Stigma: By Sexual Orientation

Independent samples T-tests suggested that Gay-Related Stigma ($t(799)=-6.67$, $p<0.001$) and Personalised Stigma ($t(823)= -10.9$, $p<0.001$) were significantly lower for gay identified men compared to bisexual/straight identified men (see Table 11.6). Concealment Stigma was not related to sexual orientation ($t(817)= -0.72$, $p=0.94$). In summary, gay identified men reported less gay-related and personalised stigma than bisexual/straight men.

11.10.4 Gay-Related Stigma: By Relationship Status

ANOVA suggested that Gay-Related Stigma (W=19.3, df(2,163), p<0.001) and Personalised Stigma (W=60.7, df(2,172), p<0.001) but not Concealment Stigma (W=1.87, df (2,182), p=0.16), were significantly related to Relationship Status. Post-hoc analyses suggested that men with a regular female partner reported significantly higher Gay-Related Stigma and Personalised Stigma than single men and men with a regular male partner (see Table 11.6). This effect is likely to be tempered by the fact that fewer GBMSM with a regular female partner are likely to be open or 'out' about their sexuality, which will impact upon gay-related and personalised stigma scores.

11.10.5 Gay-Related Stigma: By Financial Worries

Independent Samples T-tests suggested that Gay-Related Stigma (t(800)= -1.41, p=0.16) and personalised Stigma (t(825)= -0.67, p=0.95) were not related to financial worries. However, concealment stigma (t(818)= -3.46, p=0.05) was significantly related to financial worries. Specifically, men who reported financial worries reported significantly higher concealment stigma than men who had no financial worries (see Table 11.6).

11.11 Summary

- The salutogenic concept of a "sense of coherence" (Eriksson, 2007), theorises that the way people relate to their life will subsequently impact upon their health. The Sense of Coherence (SoC - Eriksson, 2007) scale was used in the SMMASH3 study to measure participants' overall resilience, which comprises three sub-scales of Comprehensibility, Manageability and Meaning as well as an overall SoC score.
- Reliability analysis using Cronbach's Alpha suggested good reliability for the overall SoC, Comprehensibility and Meaning. SoC Manageability demonstrated acceptable reliability, given this is a well-established measure.

- Average SoC amongst GBMSM in Scotland was 20% lower compared to the general population. As such we may tentatively conclude that overall, GBMSM in Scotland have lower resilience, as measured by the SoC scale, than the general population.
- Analyses suggested that; younger men had significantly lower levels of resilience than older men; single men had significantly lower levels of resilience than men with a regular (male or female) partner and men who reported financial worries had significantly lower levels of resilience than men who reported no financial worries.
- Emotional Competency (EC) is the ability to understand and regulate emotions skilfully to help improve your well-being. EC was assessed using the Trait Emotional Intelligence Questionnaire (Petrides and Furnham, 2003), which measures overall EC as well as EC Wellbeing, EC Self-control, EC Emotionality and EC Sociability. It is important to note that these measures do not directly equate to our everyday understanding of the concepts after which they are named. Rather, they measure components of participants' emotional competency.
- Reliability analysis using Cronbach's Alpha suggested that the overall EC scale, and four subscales demonstrated good reliability amongst this population.
- Older men had significantly lower emotional competency than younger men. This discrepancy might be better attributed to generational differences among the SMMASH3 participants rather than the age differences per se. In particular, the formulation of EC skills of older men might have been adversely impacted by the socio-legal situation (e.g. 1960 – mid 1980s) according to which homosexuality was illegal (in Scotland until 1981) and highly socially stigmatised. As such, it would have been substantially easier for the youngest men in this study to develop EC skills, compared to older men, due to the great steps in social and legal acceptance of homosexuality over the past 3 decades, not least the introduction of equal marriage in Scotland in 2014.

- Men in NHS GGC and NHS Lothian report significantly lower EC Emotionality than men in the RoS. In addition, men in NHS GGC report significantly lower EC Sociability than men in the RoS. Further research is required to interpret why these differences have arisen.
- Single men reported significantly higher EC (overall EC, EC Wellbeing, EC Self-control and EC Emotionality) than men with a regular male, or regular female partner. Further research is required to interpret these differences.
- Men with financial worries have significantly higher EC than men with no financial worries, based on the overall measure and each sub-component. Further research is required to interpret these differences.
- The 20–item Gay-Related Stigma scale (Frost et al, 2007), was used to measure overall gay-related stigma, along with two sub-components of gay-related stigma as follows; Personalised Stigma, which measures men's 'awareness of social attitudes about gay people' and their perceptions of 'the potential social consequences related to being gay' and Concealment Stigma, which measures 'the extent to which participants disclose their sexual orientation and how worried they were about others finding out they were gay'.
- Reliability analysis using Cronbach's Alpha suggested that the Gay-Related Stigma Scale and the Personalised Stigma and Concealment Stigma sub-scales demonstrated good reliability amongst this population.
- Overall men's average score on the Gay-Related Stigma scale equated to 'disagreeing' that they experienced stigma for each item on average, meaning that overall men did not feel they experienced gay related, personalised or concealment stigma.
- Men living in the RoS experienced significantly higher gay related stigma and personalised stigma compared to men living in NHS Lothian and GGC. However, no significant differences in experienced stigma were detected between men living in NHS Lothian and GGC.
- Gay identified men reported significantly lower levels of gay related and personalized stigma than bisexual/straight identified men.

- Men with a regular female partner reported significantly higher levels of gay related and personalized stigma than single men or men with a regular male partner. This effect is likely to be tempered by the fact that fewer GBMSM with a regular female partner are likely to be open or 'out' about their sexuality, which will impact upon gay-related and personalized stigma scores.
- Men with financial worries reported significantly higher gay-related and concealment stigma than men with no financial worries.

Chapter 12 - Alcohol, Smoking/Vaping, Recreational Drug Use and Chemsex

12.1 Introduction

This chapter describes alcohol and recreational drug use amongst GBMSM in Scotland. To assess these issues, a range of questions were drawn from the Vital Statistics study (Sigma Research, 2014). In addition, the Fast Alcohol Screening Tool (FAST; Hodgson et al., 2002, Meneses-Gaya et al., 2010) was also included in the questionnaire. We present the basic descriptive statistics (frequency and percentages) for these items and subsequently use inferential statistics to determine if significant differences were observed for each of the following variables;

1. Across the 3 NHS regions of NHS Greater Glasgow and Clyde (GGC), NHS Lothian and the Rest of Scotland (RoS).

2. By age category, grouped as aged 16-25 years, 26-35 years, 36-45 years and 46 years and over.

3. By sexual orientation, either gay or bisexual/straight.

4. By relationship status, either single, regular male partner or regular female partner.

5. By financial status, reporting financial worries either 'occasionally/never' or 'sometimes/all of the time'.

12.2 When Did You Last Consume Alcohol?

Participants were asked *'When was the last time you consumed alcohol… even if this was not typical for you?'* This wording allows for a more accurate estimate at a population, rather than individual, level. Out of the 899 men who answered this question, most men (40%, n=360) had consumed alcohol within the last 24 hours, a further third (32.5%, n=292) within the last 7 days, and a 12.8% (n=115) within the last 4 weeks (see Table 12.1). As such, 72.3% (n=652) of participants could be

described as ‘regular drinkers’ and 12.8% (n=115) as infrequent drinkers. A further 7.5% (n=65) of men last drank alcohol only in the previous 6 – 12 months and the remaining 7.5% (n=67) did so over a year ago or never.

Table 12.1. When Did You Last Consume Alcohol?

	n	%
Never	33	**3.7**
Within the last 24 hours	360	**40.0**
Within the last 7 days	292	**32.5**
Within the last 4 weeks	115	**12.8**
Within the last 6 months	50	**5.6**
Within the last 12 months	15	**1.7**
Within the last 5 years	14	**1.6**
More than 5 years ago	20	**2.2**
Total	**899**	

12.3 Sex And Alcohol In The Last 12 Months

We asked men who reported any sexual partners in the last 12 months, how much of the sex they have had was after drinking alcohol (n=789). The results are shown in Table 12.2. About one third of men (33.7%, n=266) said none of the sex they had was after drinking alcohol, and a further third (35.6%, n=281) answered ‘a little’. Further, 7.5% (n=59) said that around half of their sex they had was after alcohol consumption and only 7.8% (n=62) said that almost all or all of it was after alcohol consumption. Therefore, overall, most (69.3%, n=547) GBMSM in Scotland report that most or all of their sex was sober.

Table 12.2. In The Last 12 Months, How Much Of The Sex You've Had Was After Consuming Alcohol?

	n	%
None of it	266	**33.7**
A little	281	**35.6**
Less than half	78	**9.9**
About half	59	**7.5**
More than half	40	**5.1**
Almost all	43	**5.4**
All of it	19	**2.4**
I don't know	3	**0.4**
Total	**789**	

12.4 Fast Alcohol Screening Tool Results

The FAST consists of 4 questions designed to identify alcohol misuse during a clinical interaction with a client in order that a brief alcohol prevention intervention may be delivered. The initial question uses a graphic to help clients identify a 'standard drink', which roughly equates to 1 unit of alcohol (see Figure 12.1). Male clients are then asked; 'Using the graphic to work this out… How often do you have EIGHT of more standard drinks on one occasion?'. This graphic and question were included in the SMMASH3 questionnaire; the results are shown in Table 12.3.

Figure 12.1. FAST Standard Drink Image

Table 12.3. How Often Do You Have EIGHT Or More Standard Drinks On One Occasion?

	n	%
Never	173	**20.9**
Less than monthly	302	**36.4**
Monthly	137	**16.5**
Weekly	184	**22.2**
Daily or almost daily	33	**4.0**
Total	**829**	

About one in five men (20.9%, n=173) said they 'never' consume this level of alcohol on one occasion and a further 36.4% (n=302) did so 'less than monthly'[1]. As such these men are defined by the FAST as 'not misusing alcohol'. Next, 22.2% (n=184) said they consumed 8 or more standard drinks on one occasion weekly and 4% (n=33) daily; these men are defined by the FAST as 'hazardous, harmful, or dependent drinkers' who would benefit from a brief alcohol intervention. Finally, 16.5% (n=137) said they consumed 8+ units of alcohol on one occasion 'monthly'. The FAST requires that these participants are asked additional questions to determine whether their drinking is hazardous or not. In this study, we asked all participants who report drinking 8+ units on one occasion either 'monthly' or more often, the remaining 3 FAST questions, as follows;

1. How often during the last 6 months have you been unable to remember what happened the night before because you had been drinking?

2. How often in the last 6 months have you failed to do what was normally expected of you because of drinking?

3. In the last 6 months has a relative or friend, or doctor or other health worker been concerned about your drinking or suggested you cut down?

[1] Although FAST scoring usually suggests men who report drinking 8 units of alcohol 'less than monthly' are assessed on the additional 3 questions to determine potentially hazardous drinking, given the wider cultural context of alcohol consumption in Scotland, we considered this level of drinking to be non-hazardous.

Responses to all 4 FAST questions were then scored as follows;

0 Never, **1** Less than monthly, **2** Monthly, **3** Weekly, **4** Daily or almost daily

Therefore, the FAST score ranges from 0 – 16, with a score of 3 indicating potentially hazardous, harmful, or dependent drinking. Note, men who said they consumed 8+ units of alcohol on one occasion either 'Never' (score 0) or 'Less than monthly' (score 1) were not scored on the remaining 3 FAST questions and defined as not reporting hazardous, harmful or dependent drinking.

The FAST suggests that a score of 3 or more indicates 'hazardous, harmful, or dependent drinkers'. In the SMMASH3 sample, whilst two thirds (67.4%, n=557) of participants were assessed as 'safe' drinkers, a further third (32.6%, n=270) were assessed as 'hazardous' drinkers (see Table 12.4). We now analyse these data to examine whether hazardous alcohol consumption is patterned by our key sociodemographic variables.

Table 12.4. FAST Score Categorization, Either 'Safe' Or 'Hazardous' Alcohol Consumption

FAST Score Categorization	n	%
Safe	557	**67.4**
Hazardous	270	**32.6**
Total	**827**	

12.4.1 Hazardous Alcohol Consumption: By NHS Region

Chi^2 analysis (x^2=3.09, df=2, p=0.21) suggested that hazardous alcohol consumption was not patterned by NHS Region (see Table 12.5).

12.4.2 Hazardous Alcohol Consumption: By Age

Chi^2 analysis (x^2=9.88, df=3, p<0.05) suggested that hazardous alcohol consumption was patterned by age. Older men (46+ years) were significantly less likely (27.5%) compared to younger men (16 – 25 years, 43.1%; 26-35 years, 32.7%; 36-45 years, 34.1%) to report hazardous alcohol consumption (see Table 12.5).

12.4.3 Hazardous Alcohol Consumption: By Sexual Orientation

Chi^2 analysis (x^2=0.73 df=1, p=0.39) suggested that hazardous alcohol consumption was not patterned by sexual orientation (see Table 12.5).

Table 12.5. Hazardous Alcohol Consumption: By Sociodemographic Variables

Sociodemographic variable	Safe		Hazardous		Total
	n	%	n	%	N
Total	557	**67.4**	270	**32.6**	827
NHS Region					
GGC	182	**68.2**	85	**31.8**	267
Lothian	134	**62.6**	80	**37.4**	214
RoS	241	**69.7**	105	**30.3**	346
Age					
16-25 years	70	**56.9**	53	**43.1**	123
26-35 years	150	**67.3**	73	**32.7**	223
36-45 years	116	**65.9**	60	**34.1**	176
46+ years	221	**72.5**	84	**27.5**	305
Sexual Orientation					
Gay	461	**68.0**	217	**32.0**	678
Bisexual/Straight	88	**64.2**	49	**35.8**	137
Relationship Status					
Single	300	**68.5**	138	**31.5**	438
Regular Male Partner	204	**66.2**	104	**33.8**	308
Regular Female Partner	47	**69.1**	21	**30.9**	68
Financial Worries					
No (Occasional/Never)	324	**68.2**	151	**31.8**	475
Yes (Sometimes/All of the time)	224	**65.7**	117	**34.3**	341

12.4.4 Hazardous Alcohol Consumption: By Relationship Status

Chi^2 analysis (x^2=0.49, df=2, p=0.80) suggested that hazardous alcohol consumption was not patterned by relationship status (see Table 12.5).

12.4.5 Hazardous Alcohol Consumption: By Financial Worries

Chi^2 analysis (x^2=0.57, df=1, p=0.45) suggested that hazardous alcohol consumption was not patterned by financial worries (see Table 12.5).

12.5 Recreational Drug Use: Legal Drugs

We asked participants about their most recent use of a range of recreational drugs. In each case, participants were asked to say when they last used each drug, even if this was not typical for them. This wording allows for a more accurate estimate at a population, rather than individual, level. The results of these questions relating to legal drugs are shown in Table 12.6.

Most men (72.6%, n=647) had ever tried poppers, with almost half (51.8%, n=462) doing so in the last year and over one quarter (34.9%, n=311) within the last month. Similarly, 42.4% (n=377) of all men had ever tried erectile dysfunction medications (such as Viagra©, Cialis© etc.), with one third (33.5%, n=298) doing so in the last year and 19.6% (n=174) in the last month.

Table 12.6. When Did You Last Consume The Following Drugs?

	Poppers		Erectile Dysfunction Medications	
	n	%	n	%
Never	244	**27.4**	512	**57.6**
Within the last 24 hours	99	**11.1**	40	**4.5**
Within the last 7 days	130	**14.6**	64	**7.2**
Within the last 4 weeks	82	**9.2**	70	**7.9**
Within the last 6 months	94	**10.5**	76	**8.5**
Within the last 12 months	57	**6.4**	48	**5.4**
Within the last 5 years	78	**8.8**	46	**5.2**
More than 5 years ago	107	**12.0**	33	**3.7**
Total	**891**		**889**	

12.6 Recreational Drug Use: Illicit Drugs

We asked men whether they had ever taken any illicit recreational drugs (e.g. cannabis, ecstasy, cocaine etc.?) (n=891). Overall, 59.7% (n=532) of participants said they had and 40.3% (n=359) said they had not. We asked those 532 men who had ever taken illicit drugs when was the last time they had taken a range of recreational drugs (Cannabis, Ecstasy, Amphetamines, Crystal

Methamphetamine, Mephedrone, GHB/GBL, Ketamine, Cocaine, Crack Cocaine and Heroin) including chems and whether they had injected illicit drugs. The results of these questions are shown in Tables 12.7-12.11 below. In these tables, the first column 'n' shows the number of men reporting each drug use type, the second column '%' shows the proportion within all men who had used illicit drugs (n=532) whilst the third column '% Tot' shows the proportion of *all* SMMASH3 participants (n=891) who report using the particular drug in each time period. Herein we discuss the frequency of drug use amongst the whole SMMASH3 cohort.

12.7 Illicit Recreational Drug Use: Cannabis, Ecstasy, Cocaine, and Amphetamines

In Table 12.7, we see that just over half (54.4%, n=485) of all men in the SMMASH3 study (n=891) have ever used cannabis, one in four (24.9%, n=222) did so in the last year and 12.8% (n=114) in the last month. One third (31.6%, n=281) of all men have ever used Ecstasy, 12.7% (n=113) did so in the last year and 5.3% (n=47) in the last month. One in five men (23.2%, n=207) have ever used amphetamines, 4.2% did so in the last year (n=38) and 1.4% (n=13) in the last month. Finally, 33.4% (n=297) of all men have ever used cocaine, 7% used cocaine in the last month (n=62) and 16.5% (n=147) in the last year. As such, a clear pattern of commonality arises, with cannabis use the most widespread and frequent, followed by cocaine, ecstasy then amphetamines.

Table 12.7. When Did You Last Consume The Following Drugs?

	Cannabis			Ecstasy			Amphetamine			Cocaine		
	n	**%**	**% Tot**	**n**	**%**	**% Tot**	**n**	**%**	**% Tot**	**n**	**%**	**% Tot**
Never	45	8.5	**45.6**	231	45.1	**68.4**	320	60.7	**76.8**	227	43.3	**66.6**
Within the last 24 hours	48	9.1	**5.4**	6	1.2	**0.7**	4	0.8	**0.4**	10	1.9	**1.1**
Within the last 7 days	32	6.0	**3.6**	19	3.7	**2.1**	6	1.1	**0.7**	21	4.0	**2.4**
Within the last 4 weeks	34	6.4	**3.8**	22	4.3	**2.5**	3	0.6	**0.3**	31	5.9	**3.5**
Within the last 6 months	56	10.6	**6.3**	36	7.0	**4.0**	13	2.5	**1.5**	43	8.2	**4.8**
Within the last 12 months	52	9.8	**5.8**	30	5.9	**3.4**	12	2.3	**1.3**	42	8.0	**4.7**

Within the last 5 years	106	20.0	**11.9**	72	14.1	**8.1**	56	10.6	**6.3**	71	13.5	**8.0**
More than 5 years ago	157	29.6	**17.6**	96	18.8	**10.8**	113	21.4	**12.7**	79	15.1	**8.9**
Total	**530**		**891**	**512**		**891**	**527**		**891**	**524**		**891**

12.8 Illicit Recreational Drug Use: Injecting Drug Use

A small number of all SMMASH3 participants (3.9%, n=35) said that they had ever injected illicit drugs; only 2.7% of all men had done so in the last year, and just 1.2% in the last 4 weeks (see Table 12.8). Out of the 24 men that took part in a sex party under the influence of drugs in the last year, 19 (79.2%) men reported using injected drugs. Overall, 2% (19/891) of all SMMASH3 participants said that they took part in a sex party and injected drugs within the last year.

Table 12.8. Injecting Drug Use

	Injecting Drugs			**Injecting Drugs At A Sex Party**		
	n	**%**	**% Tot**	**n**	**%**	**% Tot**
Never	494	93.4	**96.1**	5	20.8	**98**
Within the last 24 hours	5	0.9	**0.6**	1	4.2	**0.1**
Within the last 7 days	2	0.4	**0.2**	1	4.2	**0.1**
Within the last 4 weeks	4	0.8	**0.4**	4	16.7	**0.4**
Within the last 6 months	8	1.5	**0.9**	9	37.5	**1.0**
Within the last 12 months	5	0.9	**0.6**	4	16.7	**0.4**
Within the last 5 years	7	1.3	**0.8**	-	-	**-**
More than 5 years ago	4	0.8	**0.4**	-	-	**-**
Total	**529**		**891**	**24**		**891**

12.9 Recent Illicit Drug Use

Combining these data, we calculated the proportion of men who reported recent (within the last 4 weeks) illicit drug use. Since exclusive cannabis use accounted for almost half of those men who reported recent illicit drug use, we calculated two measures of recent illicit drug use; 1) Recent illicit drug use (all drugs) and 2) Non-cannabis recent illicit drug use. Table 12.9 shows that 19.3% (n=172) of all men in Scotland report recent illicit drug use, but only 11.6% (n=103) report non-cannabis

recent illicit drug use. As such, 7.3% (n=69) of men in this study report recent cannabis use but no other illicit drugs.

Table 12.9. Recent Illicit Drug Use

	Recent Illicit Drug Use		Recent Illicit Drug Use excluding cannabis	
	n	**%**	**N**	**%**
Yes	172	**19.3**	103	**11.6**
No	718	**80.7**	787	**88.4**
Total	**890**		**890**	

12.9.1 Recent Illicit Drug Use (including cannabis): By NHS Region

Chi^2 analysis (x^2=1.46, df=2, p=0.48) suggested that recent illicit drug use was not patterned by NHS Region (see Table 12.10).

12.9.2 Recent Illicit Drug Use: By Age

Chi^2 analysis (x^2=45.39, df=3, p<0.001) suggested that recent illicit drug use was patterned by Age (see Table 12.10), such that men in all 3 younger age categories (16-25 years, 35.7%; 26-35 years, 24.3%; 36-45 years, 19%) were significantly more likely, and men in the oldest age category (46+ years) significantly less likely (9.8%) to report recent illicit drug use than expected by chance.

12.9.3 Recent Illicit Drug Use: By Sexual Orientation

Chi^2 analysis (x^2=0.11, df=1, p=0.92) suggested that recent illicit drug use was not patterned by sexual orientation (see Table 12.10).

12.9.4 Recent Illicit Drug Use: By Relationship Status

Chi^2 analysis (x^2=3.34, df=2, p=0.19) suggested that recent illicit drug use was not patterned by relationship status (see Table 12.10).

12.9.5 Recent Illicit Drug Use: By Financial Worries

Chi^2 analysis (x^2=16.9, df=1, p<0.001) suggested that recent illicit drug use was patterned by financial worries (see Table 12.10), such that men with financial worries were more likely (25.7%) to report recent illicit drug use than men with no financial worries (14.7%).

Table 12.10. Recent Illicit Drug Use: By Sociodemographic Variables

	Recent Illicit Drug Use Including Cannabis				Recent Illicit Drug Use Excluding Cannabis				
Sociodemographic variable	**Yes**		**No**		**Yes**		**No**		**Total**
	n	**%**	**n**	**%**	**N**	**%**	n	**%**	**N**
Total	172	**19.3**	718	**80.7**	103	**11.6**	787	**88.4**	890
NHS Region									
GGC	58	**20.6**	224	**79.4**	42	**14.9**	240	**85.1**	282
Lothian	47	**20.9**	178	**79.1**	28	**12.4**	197	**87.6**	225
RoS	67	**17.5**	316	**82.5**	33	**8.6**	350	**91.4**	383
Age									
16-25 years	46	**35.7**	83	**64.3**	30	**23.3**	99	**76.7**	129
26-35 years	57	**24.3**	178	**75.7**	38	**16.2**	197	**83.8**	235
36-45 years	36	**19.0**	153	**81.0**	17	**9.0**	172	**91.0**	189
46+ years	33	**9.8**	304	**90.2**	18	**5.3**	319	**94.7**	337
Sexual Orientation									
Gay	142	**19.4**	589	**80.6**	87	**11.9**	644	**88.1**	731
Bisexual/Straight	28	**19.0**	119	**81.0**	15	**10.2**	132	**89.8**	147
Relationship Status									
Single	97	**20.2**	384	**79.8**	61	**12.7**	420	**87.3**	481
Regular Male Partner	63	**19.4**	261	**80.6**	38	**11.7**	286	**88.3**	324
Regular Female Partner	8	**11.1**	64	**88.9**	3	**4.2**	69	**95.8**	72
Financial Worries									
No (Occasional/Never)	74	**14.7**	431	**85.3**	44	**8.7**	461	**91.3**	505
Yes (Sometimes/All of the time)	96	**25.7**	277	**74.3**	58	**15.5**	315	**84.5**	373

12.9.6 Recent Illicit Drug Use (Excluding Cannabis): By NHS Region

Chi^2 analysis (x^2=6.47, df=2, p<0.05) suggested that recent illicit drug use (excluding cannabis) was patterned by NHS Region (see Table 12.10), such that men in NHS GGC (14.9%) and NHS Lothian

(12.4%) were significantly more likely, and men in the RoS (8.6%) were significantly less likely, to report recent illicit drug use (excluding cannabis) than expected by chance.

12.9.7 Recent Illicit Drug Use (Excluding Cannabis): By Age

Chi^2 analysis (x^2=38.07, df=3, p<0.001) suggested that recent illicit drug use (excluding cannabis) was patterned by Age (see Table 12.10), such that men in all 3 younger age categories (16-25 years, 23.3%; and 26-35 years, 16.2%; were significantly more likely, and men in the oldest age categories (36-45 years, 9%; and 46+ years, 5.3%) significantly less likely to report recent illicit drug use (excluding cannabis) than expected by chance. In fact, those aged 16-25 years were almost five times more likely to report recent illicit drug use (excluding cannabis) than men aged 46+ (see Table 12.10).

12.9.8 Recent Illicit Drug Use (Excluding Cannabis): By Sexual Orientation

Chi^2 analysis (x^2=0.34, df=1, p=0.56) suggested that recent illicit drug use (excluding cannabis) was not patterned by sexual orientation (see Table 12.10).

12.9.9 Recent Illicit Drug Use (Excluding Cannabis): By Relationship Status

Chi^2 analysis (x^2=4.42, df=2, p=0.11) suggested that recent illicit drug use (excluding cannabis) was not patterned by relationship status (see Table 12.10).

12.910 Recent Illicit Drug Use (Excluding Cannabis): By Financial Worries

Chi^2 analysis (x^2=9.76, df=1, p<0.005) suggested that recent illicit drug use (excluding cannabis) was patterned by financial worries (see Table 12.10), such that men with financial worries were more likely (15.5%) to use illicit drugs compared to men with no financial worries (8.7%).

12.10 Sex And Illicit Drugs Amongst GBMSM: Chemsex

Crystal methamphetamine, mephedrone, GHB/GBL and ketamine are typically referred to as 'chemsex' drugs. They can be used to enhance sexual feelings, pleasure, appetite and reduce inhibitions and fuel long sexual sessions often with multiple partners. In total, 19.1% (n=170/891) of men in this study reported using at least one of these four chemsex drugs in their lifetime and 9.3% (n=83/891) reported using chemsex drugs in the last year.

We asked men who said they had used chemsex drugs in the last 12 months (n=83), how much of the sex they'd had was under the influence of chemsex drugs (see Table 12.11). Overall, we see that, for those men who used chemsex drug, most did so for sexual purposes, at least some of the time. As Table 12.11 shows, one third (33.6%) of chemsex drug users in this study reported that at least half of their sex was on chemsex drugs. A further 42.7% said that only a little of their sex was when on chemsex drugs and 15.7% (n=13) had no sex on chemsex drugs. In concert we see that GBMSM in Scotland use chemsex drugs for both sexual and non-sexual purposes, and only one third of users have most of their sex on chemsex drugs.

Table 12.11. Amount Of Sex Reported Whilst Using Chemsex Drugs

	Sex under all chemsex drugs	
	n	**%**
None of it	13	**15.7**
A little	35	**42.2**
Less than half	6	**7.2**
About half	9	**10.8**
More than half	8	**9.6**
Almost all	8	**9.6**
All of it	3	**3.6**
I don't know	1	**1.2**
Total	**83**	

Overall though, it is important to note that only 70 out of the 891 GBMSM (7.9%) who completed the drug use section of the SMMASH3 questionnaire reported sex under the influence of chemsex

drugs, meaning that within this sample of men in Scotland, the levels of chemsex use was relatively small.

12.11 Smoking

901 participants addressed the smoking section of the SMMASH3 questionnaire. As Table 12.12 shows, two-thirds of these men were non-smokers (67.3%, n=606) while another 7.8% (n=70) were ex-smokers or ex-vapers. 15.6% (n=15.6) were current smokers, 6.1% (n=55) were current vapers, and 3.2% (n=29) were smokers and vapers. As such, 18.9% of all men in our survey smoked; this percentage is slightly lower than the smoking rate of the adult male population (21%) smoking in Scotland in 2018 (Scottish Public Health Observatory, 2019).

Overall, 25% (n=225/901) of all men were current smokers or vapers and 75% (n=676/901) were non-smokers/vapers or ex-smokers/vapers. Next, we analyse smoking and vaping by our five key sociodemographic variables.

Table 12.12. Smoking Status of SGMSM

	Smoking Status of GBMSM	
	n	**%**
Non-smoker	606	**67.3**
Current smoker (tobacco)	141	**15.6**
Current vaper (e-cigarettes/vaporizer)	55	**6.1**
Current smoker (tobacco) and vaper	29	**3.2**
Ex-smoker and/or Ex-vaper	70	**7.8**
Total	**901**	

12.11.1 Smoking and Vaping by NHS region

Chi^2 analysis (x^2=1.75, df=2, p=0.42) suggested that smoking and vaping was not patterned by NHS region (see Table 12.13).

12.11.2 Smoking and Vaping by Age

Chi^2 analysis (x^2=7.49, df=3, p=0.058) suggested that smoking and vaping differed by age, such that older men (46 plus years, 19.9%) were less likely to smoke/vape compared to younger men (16-25 years, 27.1%; 26-35 years, 28.5%; 36-45 years, 28.1%) (see Table 12.13). However, this finding should be cautiously interpreted given that this association was a trend and did not quite reach statistical significance.

Table 12.13. Smoking Status: By Sociodemographic Variables

Sociodemographic variable	Smoker/Vaper		Non-smoker		Total
	n	%	n	%	N
Total	225	**25**	676	**75**	901
NHS Region					
GGC	71	**24.8**	215	**75.2**	286
Lothian	50	**22.0**	177	**78.0**	227
RoS	104	**26.8**	284	**73.2**	388
Age					
16-25 years	35	**27.1**	94	**72.9**	129
26-35 years	68	**28.5**	171	**71.5**	239
36-45 years	54	**28.1**	138	**71.9**	192
46+ years	68	**19.9**	273	**80.1**	341
Sexual Orientation					
Gay	193	**26.1**	546	**73.9**	739
Bisexual/Straight	30	**20.3**	118	**79.7**	148
Relationship Status					
Single	133	**27.5**	351	**72.5**	484
Regular Male Partner	78	**23.7**	251	**76.3**	329
Regular Female Partner	10	**13.7**	63	**86.3**	73
Financial Worries					
No (Occasional/Never)	107	**20.9**	405	**79.1**	512
Yes (Sometimes/All of the time)	116	**30.8**	261	**69.2**	377

12.11.3 Smoking and Vaping by Sexual Orientation

Chi^2 analysis (x^2=2.24, df=1, p=0.13) suggested that smoking and vaping was not patterned by sexual orientation (see Table 12.13).

12.11.4 Smoking and Vaping by Relationship Status

Chi^2 analysis (x^2=6.86, df=2, p<0.05) suggested that smoking and vaping was patterned by relationship status; single men (27.5%) and men with regular male partners (23.7%) were significantly more likely to smoke and vape compared to men with regular female partners (13.7%) (see Table 12.13).

12.11.5 Smoking and Vaping by Financial Worries

Chi^2 analysis (x^2=11.26, df=1, p<0.005) suggested that smoking and vaping was patterned by financial worries; men who had financial worries were significantly more likely to smoke and vape (30.8%) compared to those who had no financial worries (20.9%) (see Table 12.13).

12.12 Summary

- 72.3% of GBMSM in the SMMASH3 study are regular drinkers, that is, they consume alcohol on a weekly basis or more. According to the Fast Alcohol Screening Tool, one third of GBMSM (32.6%) in Scotland were assessed as 'hazardous' drinkers, who would therefore benefit from a brief intervention to reduce their alcohol intake. Younger (16-45 years) men were significantly more likely to report hazardous drinking compared to older men (46+ years).
- Lifetime recreational drug use (both legal and illicit) was relatively common amongst GBMSM in Scotland, however, this depended strongly on the type of drug considered. Most men had tried poppers (72.6%) and 42.4% had used erectile dysfunction medications. More than half (54.4%) of all men had used cannabis, one third (31.6%) had ever tried ecstasy and cocaine (33.4%), one in five men (23.2%) have ever used amphetamines. In contrast, a very small number of all SMMASH3 participants (3.9%) had ever injected illicit drugs.
- Legal and illicit drug use in the last year was less widespread, although cannabis (24.9%), Ecstasy (12.7%), Cocaine (16.5%) were reported by sizeable proportions of participants. In

contrast, far fewer men had used amphetamines (4.2%) or injected drugs (2.7%) in the last year

- Combining these data, we calculated the proportion of men who reported recent (within the last 4 weeks) illicit drug use. Since exclusive cannabis use accounted for almost half of those men who reported recent illicit drug use, we calculated two measures of recent illicit drug use; 1) Recent illicit drug use (all drugs) and 2) Non-cannabis recent illicit drug use. 19.3% of all men in Scotland reported recent illicit drug use, but only 11.6% reported non-cannabis recent illicit drug use. As such, 7.3% of all men in this study report recent cannabis use but no other illicit drugs.
- Younger men (16-45 years) and men with financial worries (16.3%) were significantly more likely to report taking any illicit drug(s) in the last 4 weeks. Men in NHS GGC and NHS Lothian, younger men (16-45 years) and men with financial worries were significantly more likely to report taking illicit drug(s) other than cannabis in the last 4 weeks
- Crystal methamphetamine, mephedrone, GHB/GBL and ketamine are typically referred to as 'chemsex' drugs. They can be used to enhance sexual feelings, pleasure, appetite and reduce inhibitions and fuel long sexual sessions often with multiple partners. In total, 32.6% (n=170/530) of men in this study reported using at least one of these four chemsex drugs in their lifetime and 15.4% (n=83/530) reported using chemsex drugs in the last year.
- We asked men who said they had used chemsex drugs in the last 12 months (n=83), how much of the sex they'd had was under the influence of chemsex drugs. Only 3.6% reported having all of their sex under the influence of chemsex drugs whilst 15.7% had no sex under chemsex drugs. As such, overall, only 8% of all men had sex under the influence of chemsex drugs, meaning that within this sample of men in Scotland, the levels of chemsex use was small. In addition, just 2% (19/891) of all SMMASH3 participants said that they took part in a sex party and injected drugs within the last year.

- 25% of all men were current smokers or vapers whilst 75% were non-smokers or vapers or ex-smokers and vapers. Younger men (16-25 years), single men and men with regular male partners, and men with financial worries were more likely to smoke and vape.

Chapter 13 - Social And Sociosexual Media Use

13.1 Introduction

This chapter describes social media use amongst GBMSM in Scotland. Herein, this is divided into social media (including Facebook, YouTube, Instagram) which are primarily used for social means, and gay specific sociosexual media (including Gaydar, Grindr, Recon etc.) which are primarily used for sexual and romantic means. These questions were derived from the original SMMASH studies (Frankis et al, 2013; Frankis et al., 2016b). We present the basic descriptive statistics (frequency and percentages) for these items and subsequently use inferential statistics to determine if significant differences were observed for each of the following variables;

1. Across the 3 NHS regions of NHS Greater Glasgow and Clyde (GGC), NHS Lothian and the Rest of Scotland (RoS).

2. By age category, grouped as aged 16-25 years, 26-35 years, 36-45 years and 46 years and over.

3. By sexual orientation, either gay or bisexual/straight.

4. By relationship status, either single, regular male partner or regular female partner.

5. By financial status, reporting financial worries either ‘occasionally/never’ or ‘sometimes/all of the time’.

13.2 Social media use

Men were asked *'Which of the following social media they had used in the previous 12 months (Click as many as apply)'* and provided with the first 12 options in Table 13.1 to choose from. As Table 13.1 shows, from the 887 men who completed this section, only 2.9% (n=26) said that they did not use any social media at all. Given that the SMMASH3 sample were entirely recruited via gay-specific and generic social media, this is unsurprising. Facebook was the most popular social media site among the men taking part in the SMMASH3 survey, with 84.7% (n=751) of all survey participants report Facebook use in the last 12 months. YouTube was the second most popular option with 80.7% (n=716) of all men selecting this option. However, one limitation with this question is that participants were not asked to distinguish between consuming and producing content for YouTube, which means that many users may not be using the media in a social way relating to themselves. Instagram (63.8%, n=566) and Twitter (60.2%, n=534) were used by two thirds of the survey participants whilst 4 in 10 men also used Snapchat (41.1%, n=365) and LinkedIn (37.4%, n=332). Google+ (12%, n=106), Pinterest (16.6%, n=147) and Reddit (17.7%, n=157) were less popular options for all men compared to the social media sites described above. The least popular social media site was Goodreads with only 3.8% of all men selecting this option. Finally, some 'other' types of social media were also mentioned by users none of them was used by a sizeable number of users (3.4%, n=30).

Table 13.1. Which Of The Following Social Media Have You Used In The Last 12 Months?

	n	%
None	26	**2.9**
Facebook	751	**84.7**
YouTube	716	**80.7**
Instagram	566	**63.8**
Twitter	534	**60.2**
Google+	106	**12.0**
Pinterest	147	**16.6**
LinkedIn	332	**37.4**
Snapchat	365	**41.1**

Reddit	157	**17.7**
Goodreads	34	**3.8**
TikTok	65	**7.3**
Other	30	**3.4**
Total	**887**	

13.3 Social media use – Frequency

We asked men 'How often do you use these social media' in order to examine social media use frequency. As Table 13.2 shows, 25.8% (n=227) of men said they use social media daily, with a further third (35.9%, n=316) using them several times a day. Interestingly, 1 in 5 men (17.7%) said that they used social media all the time. Unsurprisingly, given our sample was recruited through gay-specific and generic social media, only a small proportion of men (4.8%, n=42) said that they either never, or no longer use social media websites. We now analyse these data to examine whether they are patterned by our key sociodemographic variables.

Table 13.2. How often do you use these social media?

	n	%
I used to use them but have stopped	19	**2.2**
I never use them	23	**2.6**
Every few months or longer	9	**1.0**
About once a month	6	**0.7**
About once a week	30	**3.4**
Every few days	94	**10.7**
At least once a day	227	**25.8**
Several times a day	316	**35.9**
All the time	156	**17.7**
Total	**880**	

13.3.1 Social Media Use: By NHS Region

Chi^2 analysis (x^2=0.58, df=2, p=0.75) suggested that social media use was not patterned by NHS Region (see Table 13.3).

13.3.2 Social Media Use: By Age

Chi^2 analysis (x^2=9.17, df=3, p<0.05) suggested that social media use was patterned by age. Younger men (16-25 years, 98.4%; 26-35 years, 94.5%; 36-45 years, 93.6%) were significantly more likely, and older men (46+ years, 90.9%) were significantly less likely, to report weekly social media use than expected by chance (see Table 13.3).

Table 13.3. Social Media Use: By Sociodemographic Variables

Sociodemographic variable	Monthly or less		Weekly or more		Total
	n	%	n	%	N
Total	57	**6.5**	823	**93.5**	880
NHS Region					
GGC	16	**5.7**	264	**94.3**	280
Lothian	14	**6.3**	209	**93.7**	223
RoS	27	**7.2**	350	**92.8**	377
Age					
16-25 years	2	**1.6**	126	**98.4**	128
26-35 years	13	**5.5**	222	**94.5**	235
36-45 years	12	**6.4**	175	**93.6**	187
46+ years	30	**9.1**	300	**90.9**	330
Sexual Orientation					
Gay	48	**6.6**	674	**93.4**	722
Bisexual/Straight	9	**6.2**	136	**93.8**	145
Relationship Status					
Single	36	**7.6**	439	**92.4**	475
Regular Male Partner	15	**4.7**	304	**95.3**	319
Regular Female Partner	5	**6.9**	67	**93.1**	72
Financial Worries					
No (Occasional/Never)	39	**7.8**	464	**92.2**	503
Yes (Sometimes/All of the time)	15	**4.1**	350	**95.9**	365

13.3.3 Social Media Use: By Sexual Orientation

Chi^2 analysis (x^2=0.38, df=1, p=0.84) suggested that social media use was not patterned by sexual orientation (see Table 13.3).

13.3.4 Social Media Use: By Relationship Status

Chi^2 analysis (x^2=2.64, df=2, p=0.27) suggested that social media use was not related to relationship status (see Table 13.3).

13.3.5 Social Media Use: By Financial Worries

Chi^2 analysis (x^2=4.81, df=1, p<0.05) suggested that social media use was patterned by financial worries, such that men with financial worries were more likely (95.9%) to use social media weekly or more often compared to those who had no financial worries (92.2%) (see Table 13.3).

13.4 Gay Sociosexual Media Use

We asked participants about their use of gay sociosexual media, distinguishing between gay sociosexual media websites (like Gaydar, Grindr, Recon, Squirt etc.) and gay sociosexual media smartphone apps (like Grindr, Growlr, Scruff etc.). It is recognized that there is not a clear delineation between these two types, such that several websites (e.g. Gaydar, Recon etc.) also have smartphone apps, but we theorized that there may be differences between men who use websites and smartphone apps, primarily due to the more advanced geospatial technological facilities the latter more explicitly offer and potentially the form factor (smartphone vs laptop access).

13.5 Which Websites Have You Used To Meet Male Sex Partners In The Last 12 Months?

Men were asked to specify *'Which of the following WEBSITES have you used to meet male sex partners in the last 12 months? (Click as many as apply)*'. These data (from n=887 participants), and the 17 websites which men were able to choose from, are shown in Table 12.8. This selection of websites was chosen as a combination of the most often mentioned in the SMMASH2 study, the EMIS study and those which purported to have the largest user group in 2019, based on their online claims, alongside the most prominent gay specific websites operating in the UK.

Fabguys (31.5%, n=279), Squirt (24.4%, n=216), Gaydar (21.1%, n=127) and Recon (21%, n=186) were the most frequently reported websites used to meet male sex partners in the previous year. FabSwingers (14.3%, n=127) was also reported by over 1 in 8 men. As participants were recruited through Gaydar, Squirt and Recon, it is unsurprising that these were most frequently cited but it is notable that almost one third of participants mentioned FabGuys although we did not recruit through this website (although the research team contacted FabGuys for advertising purposes, the advertising team did not reply). Of the bareback websites, BareBackRT (8.6%, n=76) was used by a sizeable proportion of participants whilst BareBackHookup (0.5%, n=4) and BareBackCom (2.5%, n=22) were used by relatively small numbers of participants. Heterosexually oriented websites POF (Plenty of Fish – 3.9%n =35) and Zoosk (0.8%, n=7) were used by sizable numbers of men to source male sex partners. Men were also asked to list which 'other' gay sociosexual media websites they used to meet sex partners, however, of the multiple sites suggested, only one, Bearwww.com, was cited by >=5 men (0.6%) in Scotland and therefore included in Table 13.4.

Table 13.4. Which Of The Following WEBSITES Have You Used To Meet Male Sex Partners In The Last 12 Months?

	n	%
FabGuys	279	**31.5**
Squirt	216	**24.4**
Gaydar	127	**21.1**
Recon	186	**21.0**
FabSwingers	127	**14.3**
BareBackRealTime	76	**8.6**
FitLads	59	**6.7**
PlanetRomeo	48	**5.4**
POF (Plenty of Fish)	35	**3.9**
Manhunt	27	**3.0**
Bareback.com	22	**2.5**
Caffmos	19	**2.1**
Zoosk	7	**0.8**
Bearwww.com	5	**0.6**
BareBackHookup	4	**0.5**

Out Everywhere	2	**0.2**
Total	**887**	

13.6 Gay Social Networking Websites – Frequency

As this sample of men was recruited primarily through gay sociosexual media, we would expect their use of such media to be higher than in the wider GBMSM population. These data are presented in Table 13.5. Accordingly, 33.2% (n=294) of men said they used gay sociosexual media websites on a daily basis (at least once a day/several times a day/all the time), with a 20% (n=213) using gay sociosexual media websites weekly or every few days. However, a third (32.9%, n=291) said they either never, or have stopped using gay sociosexual media websites; this finding might be explained by the fact that over the past few years all the gay sociosexual websites have introduced mobile applications that might be more frequently used by the men taking part in our survey. This issue is further examined in the next section of this chapter. We now analyse these data to examine whether they are pattered by our key sociodemographic variables.

Table 13.5. How Often Do You Use Gay Social Networking Websites?

	n	**%**
I used to use them but have stopped	115	**13.0**
I never use them	176	**19.9**
Every few months or longer	40	**4.5**
About once a month	48	**5.4**
About once a week	71	**8.0**
Every few days	142	**16.0**
At least once a day	132	**14.9**
Several times a day	100	**11.3**
All the time	62	**7.0**
Total	**886**	

13.6.1 Gay Sociosexual Media Website Use: By NHS Region

Chi^2 analysis (x^2=6.76, df=2, p<0.05) suggested that gay sociosexual media website use was patterned by NHS Region, such that men in the RoS (61.8%) used gay sociosexual media websites more often compared to those residing in NHS GGC (55.7%) and Lothian (51.3%) (see Table 13.6).

Table 13.6. Gay Sociosexual Media Website Use: By Sociodemographic Variables

Sociodemographic variable	Monthly or less		Weekly or more		Total
	n	%	n	%	N
Total	379	**42.8**	507	**57.2**	886
NHS Region					
GGC	125	**44.3**	157	**55.7**	282
Lothian	109	**48.7**	115	**51.3**	224
RoS	145	**38.2**	235	**61.8**	380
Age					
16-25 years	83	**64.8**	45	**35.2**	128
26-35 years	121	**51.5**	114	**48.5**	235
36-45 years	75	**39.7**	114	**60.3**	189
46+ years	100	**29.9**	234	**70.1**	334
Sexual Orientation					
Gay	313	**43.1**	414	**56.9**	727
Bisexual/Straight	59	**40.4**	87	**59.6**	146
Relationship Status					
Single	197	**41.0**	283	**59.0**	480
Regular Male Partner	155	**48.4**	165	**51.6**	320
Regular Female Partner	23	**31.9**	49	**68.1**	72
Financial Worries					
No (Occasional/Never)	206	**40.6**	301	**59.4**	507
Yes (Sometimes/All of the time)	169	**46.0**	198	**54.0**	367

13.6.2 Gay Sociosexual Media Website Use: By Age

Chi^2 analysis (x^2=55.97, df=3, p<0.001) suggested that gay sociosexual media website use was patterned by age. Younger men (16-25 years, 35.2%; 26-35 years, 48.5%) were significantly less likely, and older men (36-45 years, 60.3%; 46+ years, 70.1%) were significantly more likely, to report weekly gay sociosexual media website use than expected by chance (see Table 13.6).

13.6.3 Gay Sociosexual Media Website Use: By Sexual Orientation

Chi^2 analysis (x^2=0.35, df=1, p=0.56) suggested that gay sociosexual media website use was not patterned by sexual orientation (see Table 13.6).

13.6.4 Gay Sociosexual Media Website Use: By Relationship Status

Chi^2 analysis (x^2=8.20, df=2, p<0.05) suggested that men with a regular female partner (68.1%) were significantly more likely to report weekly gay sociosexual media website use than single men (59%) and men with a regular male partner (51.6%) (see Table 13.6).

13.6.5 Gay Sociosexual Media Website Use: By Financial Worries

Chi^2 analysis (x^2=2.55, df=1, p=0.11) suggested that gay sociosexual media website use was not patterned by financial worries (see Table 13.6).

13.7 Which Apps Have You Used To Meet Male Sex Partners In The Last 12 Months?

Men were asked to specify *'Which of the following SMARTPHONE APPS have you used to meet male sex partners in the last 12 months? (Click as many as apply)'*. These data (from n=887 participants), and the 18 apps which men were able to choose from, are shown in Table 12.13. This selection of apps was chosen as a combination of those most often mentioned in the SMMASH2 study, the EMIS study and in consultation with GBMSM. Companies which provide App market spaces (e.g. Apple, Microsoft) tend to reject sexually explicit apps, meaning that there appear to be no bareback-specific apps, in contrast to the very explicit nature of certain sociosexual networking websites. Given the efficacy of 'treatment as prevention' and the availability of PrEP ins Scotland, condomless anal intercourse no longer necessarily represents a high risk for HIV transmission. Therefore, in contrast to previous SMMASH studies, the research team and funders decided it was appropriate to attempt to advertise the survey via 'barebacking' apps and websites. However, survey advertisement was rejected by the barebacking applications contacted by the research team; with

app managers explaining that survey recruitment was incompatible with the advertising policy of their companies.

Grindr (66.5%, n=590) was by far the most frequently used sociosexual media app used by men in this study, followed by Scruff (38.7%, n=343) and FabGuys (22.3%, n=198). About 1 in 6 participants said they used Recon (19.3%, n=157), Growlr (16.6 %, n=147), Squirt (15.9%, n=141) in the last 12 months while 1 in 10 used Gaydar (10.6%, n=94) and FabSwingers (9.8%n =87). The popularity of FabGuys/FabSwingers is again interesting since we did not recruit through this app and again is likely to be underpinned, at least partly, by the free nature of app use. 'Heterosexual' apps were also reported by a sizeable proportion of men, although Tinder (20.1%, n=178) was substantially more popular than POF (4.4%, n=39). Again, although participants mentioned various 'other' apps, only one (BiggerCity, 0.5%) was used by >=4 participants in Scotland.

Table 13.7. Which Of The Following SMARTPHONE APPS Have You Used To Meet Male Sex Partners In The Last 12 Months?

	n	%
Grindr	590	**66.5**
Scruff	343	**38.7**
FabGuys	198	**22.3**
Tinder	178	**20.1**
Recon	157	**17.7**
Growlr	147	**16.6**
Squirt	141	**15.9**
Gaydar	94	**10.6**
FabSwingers	87	**9.8**
Hornet	75	**8.5**
PlanetRomeo	47	**5.3**
Chappy	45	**5.1**
Jack'd	40	**4.5**
POF (Plenty of Fish)	39	**4.4**
Fitlands	32	**3.6**
Manhunt	19	**2.1**
Surge	15	**1.7**
Blued	14	**1.6**
Bender	9	**1.0**

Wapo	1	**0.1**
BiggerCity	4	**0.5**
Total	**887**	

13.8 Gay Sociosexual Media Smartphone App Use-frequency

Participants were also asked about their use of gay sociosexual media smartphone app use, like Grinder, Scruff, Growlr etc. Again, the recruitment strategy of this sample means we would expect their use of these media to be higher than the wider population of GBMSM. These data are presented in Table 13.8. Half of participants (49.5%, n=436) said they used gay sociosexual media apps on a daily basis, with a further fifth (20.5%, n=181) using them weekly or more. Again, there is a relatively large number of men who say they never (13.3%, n=117) or no longer (8.2%, n=72) use smartphone sociosexual networking apps, which reflects that this sample was probably recruited through Facebook and Twitter. Moreover, the number of men who used to or never use websites (32.9%) is almost 10% lower than the number of men who used to or never use apps (21.5%). Similarly, more men are *regular* (i.e. at least weekly) sociosexual media app users (70%, n=617/882) than website users (57.7%, n=507/886), meaning probably that nowadays gay sociosexual websites are less popular than gay sociosexual apps.

Table 13.8. How Often Do You Use Gay Social Networking APPS On Your SMARTPHONE (Like Grindr, Scruff, Growlr Etc.)?

	n	**%**
I used to use them but have stopped	72	**8.2**
I never use them	117	**13.3**
Every few months or longer	45	**5.1**
About once a month	31	**3.5**
About once a week	46	**5.2**
Every few days	135	**15.3**
At least once a day	162	**18.4**
Several times a day	177	**20.1**
All the time	97	**11.0**
Total	**882**	

13.8.1 Gay Sociosexual Media Smartphone App Use: By NHS Region

Chi^2 analysis (x^2=3.24, df=2, p=0.20) suggested that weekly gay sociosexual media app use was not patterned by NHS region (see Table 13.9).

13.8.2 Gay Sociosexual Media Smartphone App Use: By Age

Chi^2 analysis (x^2=9.24, df=3, p<0.05) suggested that gay sociosexual media app use was patterned by age. Men in each of the 3 younger age categories (16-25 years, 72.4%; 26-35 years, 73.9%; 36-45 years, 73.9%) were significantly more likely, and older men (46+ years, 64%) were significantly less likely, to report weekly gay sociosexual media app use than expected by chance (see Table 13.9). Note this is a reversal of the pattern observed for gay sociosexual website use. As such, it suggests that, whilst most men used both apps and websites for sociosexual networking, younger men use Apps more whereas older men favour websites, despite the fact that smartphones and app use has become increasingly popular over the past years.

Table 13.9. Gay Sociosexual Media Smartphone App Use: By Sociodemographic Variables

Sociodemographic variable	Monthly or less		Weekly or more		Total
	n	%	n	%	N
Total	265	**30**	617	**70**	882
NHS Region					
GGC	73	**26.1**	207	**73.9**	280
Lothian	69	**30.9**	154	**69.1**	223
RoS	123	**32.5**	256	**67.5**	379
Age					
16-25 years	35	**27.6**	92	**72.4**	127
26-35 years	61	**26.1**	173	**73.9**	234
36-45 years	49	**26.1**	139	**73.9**	188
46+ years	120	**36.0**	213	**64.0**	333
Sexual Orientation					
Gay	193	**26.7**	530	**73.3**	723
Bisexual/Straight	70	**47.9**	76	**52.1**	146
Relationship Status					
Single	89	**18.7**	387	**81.3**	476
Regular Male Partner	131	**40.9**	189	**59.1**	320
Regular Female Partner	43	**59.7**	29	**40.3**	72

Financial Worries					
No (Occasional/Never)	176	**34.8**	330	**65.2**	506
Yes (Sometimes/All of the time)	84	**23.1**	280	**76.9**	364

13.7.3 Gay Sociosexual Media Smartphone App Use: By Sexual Orientation

Chi^2 analysis (x^2=25.99, df=1, p<0.001) suggested that gay men (73.3%) were significantly more likely to report weekly gay sociosexual media app use than bisexual/straight identified men (52.1%) (see Table 13.9).

13.8.4 Gay Sociosexual Media Smartphone App Use: By Relationship Status

Chi^2 analysis (x^2=77.0, df=2, p<0.001) suggested that single men (81.3%) were significantly more likely, and men with a regular male (59.1%) or female partner (40.3%) significantly less likely to report weekly gay sociosexual media app use than expected by chance (see Table 13.9). This difference between single men and those with a regular female partner is particularly marked, with over twice as many weekly users amongst single men. Again, this is a reversal of the pattern observed for gay sociosexual website use. As such, it suggests that, whilst most men used both apps and websites for sociosexual networking, single men use Apps more whereas men with female partners favour websites. However, this finding might be better attributed to age rather than relationship status differences; a Chi^2 analysis (x^2= 38.02, df=6, p<0.001) showed that men who were married to women were significantly more likely to belong to older age groups whilst single men were more likely to ne younger.

13.8.5 Gay Sociosexual Media Smartphone App Use: By Financial Worries

Chi^2 analysis (x^2=13.8, df=1, p<0.005) suggested that men with financial worries (76.9%) were significantly more likely to report weekly gay sociosexual media app use compared to men with no financial worries (65.2%) (see Table 13.9).

13.9 Summary

- Participants in the SMMASH3 study were recruited via gay-specific sociosexual media and generic social media. As such it is likely that the social media use of this sample is not reflective of the wider community of gay and other GBMSM. Unsurprisingly, this sample of GBMSM are highly active social media users.
- One quarter (25.8%) of all men used generic social media daily, with a further third using them several times a day. Interestingly, 1 in 5 men said that they used social media all the time. Only a small proportion of men (4.8%) said that they either never, or no longer use social media websites. Younger men (16-45 years) and those with financial worries were significantly more likely to report weekly social media.
- Facebook was the most popular social media site among the men taking part in the SMMASH3, with 84.7% of all survey participants reporting Facebook use in the last 12 months. YouTube was the second most popular option followed by Instagram (63.8%) and Twitter (60.2%) which were used by about two thirds of the survey participants.
- 33.2% of men used gay sociosexual media websites on a daily basis and 20% weekly or every few days. Older men (46+ years), men residing in the RoS, and those with a regular female partner were significantly more likely to report frequent gay sociosexual media website use.
- Half of participants (49.5%) used gay sociosexual media apps on a daily basis, with a further fifth (20.5%) using them weekly or more; a relatively large number of men never (13.3%) or no longer (8.2%) used smartphone sociosexual networking apps.
- Younger (16-45 years), gay identified and single men, alongside those with financial worries were significantly more likely to report weekly gay sociosexual media app use.
- FabGuys (31.5%), Squirt (24.4%), Gaydar (21.1%) and Recon (21%) were the most frequently reported gay specific websites used to meet male sex partners in the previous year. Grindr (66.5%) was by far the most frequently used sociosexual media app used by men in this

study, followed by Scruff (38.7%) and FabGuys (22.3%). About 1 in 6 men had used Recon (19.3%), Growlr (16.6 %) and Squirt (15.9%) in the last 12 months, reflecting the recruitment strategy of this survey. 'Heterosexual' apps were also reported by a sizeable proportion of men, although Tinder (20.1%) was substantially more popular than POF (4.4%).

- In concert, whilst social media, sociosexual media websites and apps use is common amongst this group of GBMSM, this is patterned by certain sociodemographic differences, primarily age, partner type and financial worries.

Chapter 14 - Blood donation

14.1 Introduction

This chapter describes blood donation amongst GBMSM in Scotland. In particular, this section describes 1) the proportion of men who have donated blood over time; 2) the intention of GBMSM to donate blood in the future; and 3) GBMSM's knowledge around blood donation and attitudes towards blood donation policy. These questions were derived from the 2019 Sex Now! Canadian survey (Sex Now Online Survey, 2019) and were further piloted and adapted to the Scottish context from a group of GBMSM. Herein, we present the basic descriptive statistics (frequency and percentages) for these items and subsequently use inferential statistics to determine if significant differences were observed for each of the following variables;

2. Across the 3 NHS regions of NHS Greater Glasgow and Clyde (GGC), NHS Lothian and the Rest of Scotland (RoS).
3. By age category, grouped as aged 17-25 years, 26-35 years, 36-45 years and 46 years and over.
4. By sexual orientation, either gay or bisexual/straight.
5. By relationship status, either single, regular male partner or regular female partner.
6. By financial status, reporting financial worries either 'occasionally/never' or 'sometimes/all of the time'.

14.2 Blood Donation among GBMSM

In Scotland, blood donation policies for GBMSM have evolved over time; before 2011 GBMSM were not able to give blood. In 2011, a 12-month deferral period was introduced, such that GBMSM who did not have any sexual activity in the last 12 months were able to give blood. In November 2017, the deferral period changed to 3-months, and this policy is in place until today (Scottish National Blood Transfusion Service, 2017). The SMMASH3 survey explored whether deferral policy changes

over time have affected blood donation in GBMSM. As Table 14.1 shows, the vast majority (60.8%, n=486) of SMMASH3 participants aged at least 17 years (minimum age of blood donation in Scotland) who completed the blood donation questionnaire section (n=800) have never donated blood. Interestingly, a quarter of all men donated blood pre-2011 (>=10 years ago), when the blood donation ban for GBMSM was in place. This finding should be carefully interpreted; it might well be that these men did not identify themselves as gay or bisexual or had no sexual activity with men when they donated blood pre-2011. It might also be that recall bias has affected men's accurate selection of a certain period. However, this finding is worth of further exploration, ideally, within a qualitative study. Between 2011 and 2017, when the 12-month deferral period was in place, 7.4% (n=59) of men donated blood. Since 2017, when the blood donation deferral period for GBMSM changed to 3 months, 7.7% (n=61) of all men aged at least 17 years have donated blood.

Overall, 60.8% (n=486) of all SMMASH3 participants have never donated blood whilst 39.2% (n=314) have donated blood at some point in their lives. Next, we discuss blood donation according to each of the five key sociodemographic variables.

Table 14.1. Blood donation among SMMASH3 participants

Have you ever donated blood?	**n**	**%**
No, I have never donated blood	486	**60.8**
Yes, in the last month	14	**1.8**
Yes, in the last year	16	**2.0**
Yes, in the last 2 years	14	**1.8**
Yes, in the last 3 years	17	**2.1**
Yes, in the last 9 years	59	**7.4**
Yes, 10 or more years ago	194	**24.3**
Total	**800**	

14.2.1 Blood Donation: By NHS Region

Chi^2 analysis (x^2=0.602, df=2, p=0.74) suggested that blood donation was not patterned by NHS region (see Table 14.2).

14.2.2 Blood Donation: By Age

Chi^2 analysis (x^2=47.92, df=3, p<0.001) suggested that blood donation was associated to age, such that older men (46+ years) were significantly more likely (53.6%) to have ever donated blood compared to younger men (17-25 years, 21.9%; 26-35 years, 31.1%; 36-45 years, 35.4%). Those aged 46+ years were more than twice as likely to have donated blood compared to those aged 17-25 years (see Table 14.2).

Table 14.2. Blood donation: By Sociodemographic Variables

Sociodemographic variable	Never Donated Blood		Ever Donated Blood		Total
	n	%	n	%	N
Total	486	**60.8**	314	**39.2**	800
NHS Region					
GGC	158	**62.0**	97	**38.0**	255
Lothian	123	**58.6**	87	**41.4**	210
RoS	205	**61.2**	130	**38.8**	335
Age					
17-25 years	89	**78.1**	25	**21.9**	114
26-35 years	151	**68.9**	68	**31.1**	219
36-45 years	104	**64.6**	57	**35.4**	161
46+ years	142	**46.4**	164	**53.6**	306
Sexual Orientation					
Gay	404	**61.5**	253	**38.5**	657
Bisexual/Straight	73	**55.7**	58	**44.3**	131
Relationship Status					
Single	278	**64.7**	152	**35.3**	430
Regular Male Partner	174	**59.2**	120	**40.8**	294
Regular Female Partner	30	**47.6**	33	**52.4**	63
Financial Worries					
No (Occasional/Never)	254	**55.9**	200	**44.1**	454
Yes (Sometimes/All of the time)	225	**67.0**	111	**33.0**	336

14.2.3 Blood Donation: By Sexual Orientation

Chi^2 analysis (x^2=1.52, df=1, p=0.21) suggested that blood donation was not patterned by sexual orientation (see Table 14.2).

14.2.4 Blood Donation: By Relationship Status

Chi^2 analysis (x^2=7.55, df=2, p<0.05) suggested that blood donation was patterned by relationship status, such that men with regular female partner (52.4%) were significantly more likely to donate blood compared to those with regular male partner (40.8%) and single men (35.3%) (see Table 14.2).

14.2.5 Blood Donation: By Financial Worries

Chi^2 analysis (x^2=9.82, df=1, p<0.005) suggested that blood donation was patterned by financial worries, such that men with no financial worries (44.1%) were more likely to donate blood compared to men with financial worries (33%) (see Table 14.2).

14.3 Intention to Donate Blood

SMMASH3 participants' intention to donate blood was examined by asking *'Did you ever want to donate blood but were REFUSED because of your sexual orientation?',* taken from the Canadian Sex Now! Survey. Among those men who have never donated blood (n=469), one third (33.7%) were keen to donate blood but had been refused due to their sexual orientation (see Table 14.3). With regards to the 63.3% who responded negatively to this question, it might well be that either those men were not interested in donating blood or they donated blood because they met the blood donation screening criteria. However, given the observational nature of this survey, any safe conclusions regarding to those men's intention to donate blood cannot be generated.

Table 14.3. Did you ever want to donate blood but were REFUSED because of your sexual orientation'?

	n	**%**
No	297	**63.3**
Yes	158	**33.7**
Don't know	14	**3.0**
Total	**469**	

14.4 Knowledge around Blood Donation

The SMMASH3 survey also examined GBMSM's knowledge around blood donation and the existence of a 3-month blood donation deferral policy for GBMSM in Scotland. In doing so, we adapted four questions from the Sex Now! Canadian survey (Sex Now Online Survey, 2019) by piloting them among a sample of GBMSM and, when necessary, adapting them for the Scottish context.

Table 14.4. Knowledge about Blood Donation and Blood Donation Policies

	Already Knew this		Did not know this		Total
	n	%	n	%	n
1. In the UK, all blood donations are tested for HIV. These tests can detect HIV about 9 days after infection, known as the tests window period.	384	**48.1**	415	**51.9**	799
2. Blood donor screening aims to reduce the risk of window period infections when current tests would not pick up those infections.	355	**44.5**	442	**55.5**	797
3. As a group, men who have sex with men are at a much higher risk of getting HIV than other men.	765	**96.2**	30	**3.8**	795
4. Currently in Scotland, Wales and England, if you are a man who had any kind of sex with a man in the last 3 months you are not allowed to donate blood. This is called a deferral policy.	631	**79.1**	167	**20.9**	798

As Table 14.4 shows, more than half of the men addressing the blood donation section of the SMMASH3 questionnaire (those aged 16 years were included in this analysis) were not aware of the procedures around the HIV screening procedures completed when donating blood. In particular, 51.9% (n=415/799) of the SMMASH3 respondents did not know that certain HIV tests can detect HIV about 9 days after infection. Similarly, 55.5% (n=442/797) of all men did not know that blood donor screening aims to reduce the risk of window period infections when the most accurate tests would not pick up those infections. On the other hand, almost all men (96.2%, n=765/795) knew that GBMSM, as a group, are at a much higher risk of getting HIV than other men whilst 8 in 10 men

(79.1%, n=631/798) knew that, in Scotland, GBMSM who had any kind of sexual activity in the last 3 months are not allowed to donate blood.

14.5 Attitudes towards Blood Donation Deferral Policy for GBMSM

The SMMASH3 survey explored GBMSM's attitudes towards blood donation and blood donation policy for GBMSM in Scotland. In doing so, we adapted seven questions drawn from the Sex Now! Canadian survey (Sex Now Online Survey, 2019), piloted and revised by a group of GBMSM experts.

Table 14.5. Attitudes towards Blood Donation and Blood Donation Policies

	Strongly Agree		Agree		Strongly Disagree		Disagree		Total
	n	%	n	%	n	%	n	%	N
1. The current deferral policy for gay, bisexual and other men who have sex with men is justified	80	**10.2**	193	**24.5**	267	**33.9**	248	**31.5**	**788**
2. The current deferral policy for gay, bisexual and other men who have sex with men is discriminatory	298	**37.7**	276	**34.9**	146	**18.5**	71	**9.0**	**791**
3. I support a much shorter deferral period for gay, bisexual and other men who have sex with men (i.e. 9 DAYS instead of 3 months)	294	**37.6**	293	**37.5**	143	**18.3**	52	**6.6**	**782**
4. I support a policy that screens all potential donors based on number of sexual partners regardless of their gender	406	**51.7**	279	**35.5**	72	**9.2**	28	**3.6**	**785**
5. I support a policy that screens all potential donors based on recently having a new sexual partner(s)	362	**46.0**	310	**39.4**	82	**10.4**	33	**4.2**	**787**
6. I support a policy that screens potential donors based on specific sex practices with higher risk for HIV transmission	338	**42.8**	315	**39.9**	96	**12.2**	41	**5.2**	**790**
7. If I were allowed, I would donate blood in the future	413	**52.1**	275	**34.7**	64	**8.1**	41	**5.2**	**793**

As Table 14.5 shows, most men agreed (agreed and strongly agreed) that the current blood donation deferral policy for GBMSM is unjustifiable (65.4%, n=515/788) and discriminatory (72.6%, 217/791). Most also supported changes in the current deferral policy such that it is based upon sexual risk criteria. In particular, three-quarters (75.1%, n=587/782) supported a much shorter deferral period and almost 9 in 10 men (87.2%, n=685/785) supported a policy that screens all potential donors based on their number of sexual partners regardless of their gender. Similarly, 85.9% (n=672/787) agreed with a policy that screens all potential donors based on recently having a new sexual partner(s) and 82.7% (n=653/790) with a policy that screens potential donors based on specific sex practices that increase HIV risk. Finally, almost 9 in 10 (86.8%, n=688/793) men said that if allowed, they would donate blood in the future. Clearly, these findings warrant consideration by health service providers and the Scottish National Blood Transfusion service, in order to better allow GBMSM to contribute to blood donation, as safely as current testing technologies allow.

14.6 Summary

- 60.8% of all GBMSM have never donated blood whilst 39.2% have donated blood at some point in their lives.
- Among blood donors, a quarter donated blood pre 2011, (>=10 years ago), when the blood donation ban for GBMSM was in place. This finding should be carefully interpreted; it might well be that these men did not identify themselves as gay or bisexual or had no sexual activity with men when they donated blood 10 years ago. It might also be that recall bias has affected men's accurate selection of a certain period. However, this finding is worth of further exploration, ideally, within a qualitative study. Between 2011 and 2017, when the 12-month wait period was in place, 7.4% donated blood whilst since 2017, when the blood donation deferral period for GBMSM changed to 3 months, 7.7% of all men have donated

blood. As such, proportionally a higher number of men has donated blood after the introduction of a shorter deferral period.

- Older men (46+ years), those with a regular female partner, and men with no financial worries were significantly more likely to donate blood.
- Among those men who have never donated blood (n=469), one third (33.7%) were keen to donate blood but they were refused to do so due to their sexual orientation. With regards to the 63.3% who responded negatively to this question, it might well be that either those men were not interested in donating blood or they did not donate blood because they knew that they did not meet the blood donation screening criteria. However, given the observational nature of this survey, any safe conclusions regarding to those men's intention to donate blood cannot be generated.
- About half of the SMMASH3 respondents did not know that the most accurate HIV tests can detect HIV about 9 days after infection, or that blood donor screening aims to reduce the risk of window period infections when current tests would not pick up those infections. On the other hand, almost all men (96.2%) knew that GBMSM, as a group, are at a much higher risk of getting HIV than other men whilst 8 in 10 men knew that, in Scotland, GBMSM who had any kind of sexual activity in the last 3 months are not allowed to donate blood.
- Most men agreed that the current blood donation deferral policy for GBMSM is unjustifiable (65.4%) and discriminatory (72.6%) and supported a much shorter deferral period for GBMSM (75.1%). About 9 in 10 men supported a policy that screens all potential donors based on the number of sexual partners regardless of their gender or based on recently having a new sexual partner(s). Similarly, most men (82.7%) supported a policy that screens potential donors based on specific high HIV-risk sex practices. Finally, almost 9 in 10 men said that If they were allowed, they would donate blood in the future.

Chapter 15 – Body Mass Index and Exercise

15.1 Introduction

This chapter describes Body Mass Index (BMI) and levels of exercise amongst GBMSM in Scotland. In particular, this section describes the proportion of men who are underweight, have a normal weight and those who are overweight or obese, based on their BMI score. Moreover, this section also examines the proportion of men meeting weekly optimal levels of three different types of exercise; moderate aerobic exercise, vigorous aerobic exercise, and muscle strengthening exercise. Herein, we present the basic descriptive statistics (frequency and percentages) for these items and subsequently use inferential statistics to determine if significant differences were observed for each of the following variables;

1. Across the 3 NHS regions of NHS Greater Glasgow and Clyde (GGC), NHS Lothian and the Rest of Scotland (RoS).
2. By age category, grouped as aged 16-25 years, 26-35 years, 36-45 years and 46 years and over.
3. By sexual orientation, either gay or bisexual/straight.
4. By relationship status, either single, regular male partner or regular female partner.
5. By financial status, reporting financial worries either 'occasionally/never' or 'sometimes/all of the time'.

15.2 BMI

830 men provided sufficient information about their weight and height in order to calculate their Body Mass Index (BMI). According to the WHO, BMI is a measure for indicating nutritional status in adults. It is defined as a person's weight in kilograms divided by the square of the person's height in metres (kg/m^2) (WHO, 2020). Table 15.1 below provides a description of the three main categories that the BMI of an adult can fall into.

Table 15.1. The three main BMI categories for adults

BMI	Nutritional Status
Below 18.5	Underweight
Between 18.5-24.9	Normal weight
25 or above	Overweight or obese

Note. Table guided from WHO, 2020. Retrieved from https://www.euro.who.int/en/health-topics/disease-prevention/nutrition/a-healthy-lifestyle/body-mass-index-bmi.

In the SMMASH3 survey, the median BMI of the survey respondents was 26.3 kg/m^2 (IQR [23.3-30.7]) meaning that half of the men taking part in the SMMASH3 survey were overweight or obese. In particular, as Table 15.2 shows, most men (61.8%, n=513) were classified as overweight or obese, 35.7% (n=296) as having normal weight, and 2.5% (n=21) as underweight. Given the social desirability around reporting one's weight, it is likely that this is an under-estimate, even within an anonymous, self-complete survey.

Table 15.2. BMI categories for SMMASH3 participants

BMI	n	%
Underweight (BMI<18.5)	21	**2.5**
Normal Weight (BMI 18.5-24.9)	296	**35.7**
Overweight (BMI ≥25)	513	**61.8**
Total	**830**	

15.2.1 BMI: By NHS Region

One-way ANOVA (F=0.69, df(2,827), p=0.50) suggested that there were no significant differences in men's BMI scores across the 3 NHS Regions.

15.2.2 BMI: By Age

One-way ANOVA (F=15.7, df(3,826), p<0.001) suggested that age was significantly related to BMI score. Post hoc analyses suggested that younger men (16-25 years; mean BMI=23.9) had a significantly lower BMI than men aged 25-36 years (mean BMI=27.3), 36-45 years (mean BMI=28.2)

and those aged 46+ (Mean BMI=28.5). No significant differences were identified between the BMI scores of the men aged 26-35 years, 36-45 years and those aged 46 plus years.

15.2.3 BMI: By Sexual Orientation

An independent samples T-test (t(815)=0.46, p=0.96) suggested that sexual orientation was not related to BMI.

15.2.4 BMI: By Relationship Status

One-way ANOVA (F=0.95, df(2,814), p=0.39) suggested that men's relationship status was not related to their BMI score.

15.2.5 BMI: By Financial Worries

Independent Samples T-test (t(816)=0.21, p=0.86) suggested that the BMI score of the men reporting financial worries was not significantly different than the BMI score of men with no financial worries.

15.3 Exercise

We examined three different types of exercise; moderate intensity exercise per week; vigorous intensity exercise per week; and muscle strengthening. According to the UK guidelines for optimal exercise, adults should take 150 minutes of moderate intensity or muscle strengthening exercise per week or 75 minutes of vigorous exercise. The existing NHS physical activity guidelines for adults were utilized to explain each of the three types of physical activity to the SMMASH3 participants (NHS, 2019), who where they asked to estimate the amount of each exercise type they did per week, as follows;

We'd like to find out how much exercise you do, per week:

Moderate aerobic exercise, such as walking, dancing and gardening will raise your heart rate, make you breathe faster and feel warmer - How much 'moderate aerobic exercise' do you do on average, per week?

Vigorous aerobic exercise, such as running, riding a bike or playing sports will make you breathe hard and fast - How much 'vigorous aerobic exercise' do you do on average, per week?

Muscle strengthening exercise includes carrying heavy loads, digging in the garden or resistance exercise (like push-ups or lifting weights) - How much 'muscle strengthening exercise' do you do on average, per week?

15.4 Moderate aerobic exercise

847 men completed the moderate aerobic exercise question of the questionnaire. As Table 15.3 shows, levels of exercise were suboptimal in that 53.6% (n=454) took 2 hours or less moderate exercise per week, whilst 46.4% (n=393) reported at least 2 to 3 hours of moderate aerobic exercise per week, in line with the UK guidelines. Next, we examine levels of moderate aerobic exercise by each key sociodemographic variable.

Table 15.3. Weekly Moderate Aerobic Exercise

	n	%
None	108	**12.8**
Less than 30 minutes	88	**10.4**
30 minutes - 1 hour	105	**12.4**
1 - 2 hours	153	**18.1**
2 - 3 hours	142	**16.8**
3 - 4 hours	101	**11.9**
4 - 7 hours	71	**8.4**
more than 7 hours	79	**9.3**
Total	**847**	

15.4.1 Moderate Aerobic Exercise: by NHS Region

Chi^2 analysis (x^2=2.79, df=2, p=0.25) suggested that moderate aerobic exercise was not patterned by NHS region (see Table 15.4).

15.4.2 Moderate Aerobic Exercise: By Age

Chi^2 analysis (x^2=1.56, df=3, p=0.66) suggested that moderate aerobic exercise was not associated to age (see Table 15.4).

Table 15.4. Moderate Aerobic Exercise: by Key Sociodemographics

Sociodemographic variable	Suboptimal moderate exercise		Optimal moderate exercise		Total
	n	%	n	%	N
Total	454	**53.6**	393	**46.4**	847
NHS Region					
GGC	141	**52.0**	130	**48.0**	271
Lothian	110	**50.2**	109	**49.8**	219
RoS	203	**56.9**	154	**43.1**	357
Age					
16-25 years	61	**49.6**	62	**50.4**	123
26-35 years	122	**53.0**	108	**47.0**	230
36-45 years	100	**56.8**	76	**43.2**	176
46+ years	171	**53.8**	147	**46.2**	318
Sexual Orientation					
Gay	370	**53.2**	325	**46.8**	695
Bisexual/Straight	78	**56.1**	61	**43.9**	139
Relationship Status					
Single	252	**55.1**	205	**44.9**	457
Regular Male Partner	157	**50.6**	153	**49.4**	310
Regular Female Partner	39	**58.2**	28	**41.8**	67
Financial Worries					
No (Occasional/Never)	254	**52.2**	233	**47.8**	487
Yes (Sometimes/All of the time)	194	**55.7**	154	**44.3**	348

15.4.3 Moderate Aerobic Exercise: By Sexual Orientation

Chi^2 analysis (x^2=0.39, df=1, p=0.53) suggested that moderate aerobic exercise was not patterned by sexual orientation (see Table 15.4).

15.4.4 Moderate Aerobic Exercise: By Relationship Status

Chi^2 analysis (x^2=2.09, df=2, p=0.35) suggested that moderate aerobic exercise was not patterned by relationship status (see Table 15.4).

15.4.5 Moderate Aerobic Exercise: By Financial Worries

Chi^2 analysis (x^2=1.05, df=1, p=0.31) suggested that moderate aerobic exercise was not patterned by financial worries (see Table 15.4).

15.5 Vigorous Aerobic Exercise

823 participants addressed the vigorous aerobic exercise section of the SMMASH3 questionnaire. As Table 15.5 shows, 68.9% (n=567) did not undertake the recommended 75 minutes of vigorous aerobic exercise per week, with 35.4% (n=291) reporting no vigorous aerobic exercise at all. Less than one third (31.1%, n=256) said that they undertook at least one to two hours of vigorous aerobic exercise per week. Next, we examine vigorous aerobic exercise by the five key sociodemographic variables.

Table 15.5. Weekly Vigorous Aerobic Exercise

	n	%
None	291	**35.4**
Less than 30 minutes	157	**19.1**
30 minutes - 1 hour	119	**14.5**
1 - 2 hours	124	**15.1**
2 - 3 hours	58	**7.0**
3 - 4 hours	36	**4.4**
4 - 7 hours	24	**2.9**
more than 7 hours	14	**1.7**
Total	**823**	

15.5.1 Vigorous Aerobic Exercise: by NHS region

Chi^2 analysis (x^2=0.39, df=2, p=0.83) suggested that vigorous aerobic exercise was not patterned by NHS region (see Table 15.6).

15.5.2 Vigorous Aerobic Exercise: By Age

Chi^2 analysis (x^2=3.81, df=3, p=0.28) suggested that vigorous aerobic exercise was not associated to age (see Table 15.6).

Table 15.6. Vigorous Aerobic Exercise: by Key Sociodemographic

Sociodemographic variable	Suboptimal vigorous exercise		Optimal vigorous exercise		Total
	n	%	n	%	N
Total	567	**68.9**	256	**31.1**	823
NHS Region					
GGC	180	**69.0**	81	**31.0**	261
Lothian	142	**67.3**	69	**32.7**	211
RoS	245	**69.8**	106	**30.2**	351
Age					
16-25 years	84	**70.0**	36	**30.0**	120
26-35 years	145	**65.3**	77	**34.7**	222
36-45 years	114	**66.3**	58	**33.7**	172
46+ years	224	**72.5**	85	**27.5**	309
Sexual Orientation					
Gay	460	**68.4**	213	**31.6**	673
Bisexual/Straight	99	**71.7**	39	**28.3**	138
Relationship Status					
Single	311	**70.5**	130	**29.5**	441
Regular Male Partner	198	**65.6**	104	**34.4**	302
Regular Female Partner	47	**70.1**	20	**29.9**	67
Financial Worries					
No (Occasional/Never)	311	**65.8**	162	**34.2**	473
Yes (Sometimes/All of the time)	250	**73.5**	90	**26.5**	340

15.5.3 Vigorous Aerobic Exercise: By Sexual Orientation

Chi^2 analysis (x^2=0.61, df=1, p=0.43) suggested that vigorous aerobic exercise was not patterned by sexual orientation (see Table 15.6).

15.5.4 Vigorous Aerobic Exercise: By Relationship Status

Chi^2 analysis (x^2=2.16, df=2, p=0.35) suggested that vigorous aerobic exercise was not patterned by relationship status (see Table 15.6).

15.5.5 Vigorous Aerobic Exercise: By Financial Worries

Chi^2 analysis (x^2=5.60, df=1, p<0.05) suggested that men with no financial worries (34.2%) were more likely to undertake optimal levels of vigorous aerobic exercise per week compared to men with financial worries (26.5%) (see Table 15.6).

15.6 Muscle Strengthening

851 men addressed the muscle strengthening section of the questionnaire. As Table 15.7 shows, only 16.9% of all men (n=144) undertook muscle strengthening exercise for at least 2-3 hours per week whilst 83.1% (n=707) undertook muscle strengthening exercises for less than 2 hours per week.

Table 15.7. Weekly Muscle Strengthening Exercise

	n	%
None	362	**42.5**
Less than 30 minutes	146	**17.2**
30 minutes - 1 hour	96	**11.3**
1 - 2 hours	103	**12.1**
2 - 3 hours	57	**6.7**
3 - 4 hours	39	**4.6**
4 - 7 hours	35	**4.1**
more than 7 hours	13	**1.5**
Total	**851**	

15.6.1 Muscle Strengthening Exercise: by NHS region

Chi^2 analysis (x^2=7.30, df=2, p<0.05) suggested that muscle strengthening was patterned by NHS region, such that men living in NHS GGC region (21.2%) and NHS Lothian (17.8%) were significantly more likely to undertake optimal weekly muscle strengthening exercise levels compared to those living in the RoS (13.1%) (see Table 15.8).

15.6.2 Muscle Strengthening Exercise: By Age

Chi^2 analysis (x^2=7.14, df=3, p=0.70) suggested that muscle strengthening was not associated to age (see Table 15.8).

Table 15.8. Levels of Weekly Muscle Strengthening Exercise: by Key Sociodemographics

Sociodemographic variable	Suboptimal muscle strengthening		Optimal muscle strengthening		Total
	n	%	n	%	N
Total	707	**83.1**	144	**16.9**	851
NHS Region					
GGC	216	**78.8**	58	**21.2**	274
Lothian	180	**82.2**	39	**17.8**	219
RoS	311	**86.9**	47	**13.1**	358
Age					
16-25 years	107	**87.7**	15	**12.3**	122
26-35 years	184	**80.3**	45	**19.7**	229
36-45 years	140	**78.7**	38	**21.3**	178
46+ years	276	**85.7**	46	**14.3**	322
Sexual Orientation					
Gay	579	**82.8**	120	**17.2**	699
Bisexual/Straight	117	**83.6**	23	**16.4**	140
Relationship Status					
Single	385	**83.7**	75	**16.3**	460
Regular Male Partner	249	**80.3**	61	**19.7**	310
Regular Female Partner	60	**88.2**	8	**11.8**	68
Financial Worries					
No (Occasional/Never)	409	**83.5**	81	**16.5**	490
Yes (Sometimes/All of the time)	291	**83.4**	58	**16.6**	349

15.6.3 Muscle Strengthening Exercise: By Sexual Orientation

Chi^2 analysis (x^2=0.45, df=1, p=0.83) suggested that muscle strengthening exercise was not patterned by sexual orientation (see Table 15.8).

15.6.4 Muscle Strengthening Exercise: By Relationship Status

Chi^2 analysis (x^2=3.00, df=2, p=0.22) suggested that muscle strengthening exercise was not patterned by relationship status (see Table 15.8).

15.6.5 Muscle Strengthening Exercise: By Financial Worries

Chi^2 analysis (x^2=0.01, df=1, p=0.97) suggested that muscle strengthening exercise was not patterned by financial worries (see Table 15.8).

15.7 Summary

- In the SMMASH3 survey, most men (61.8%) were classified as overweight or obese, 35.7% as having normal weight, and 2.5% as underweight. Younger men (16-25 years) had a significantly lower BMI score than men aged 25-36 years, 36-45 years, and those aged 46+ years.
- Moderate aerobic exercise was suboptimal, in that 53.6% took 2 hours or less moderate exercise per week, whilst 46.4% reported at least 2 to 3 hours of moderate aerobic exercise per week, in line with the UK guidelines. Moderate aerobic exercise was not patterned by any of the key sociodemographic variables.
- Six in ten men (68.9%) did not undertake the recommended 75 minutes of vigorous aerobic exercise per week, with 35.4% reporting no aerobic exercise at all. Men with no financial worries were significantly more likely to undertake optimal levels of vigorous aerobic exercise per week compared to men with financial worries.
- Only 16.9% of all SMMASH3 participants undertook muscle strengthening exercise for at least 2 hours per week whilst 83.1% undertook muscle strengthening exercises for less than 2 hours per week. Men in NHS GGC and Lothian were significantly more likely to undertake optimal weekly levels of muscle strengthening compared to men living in the RoS.

- As such, most GBMSM in Scotland are overweight or obese and most do not meet the optimal recommendations for physical activity. This finding highlights the need for the development of effective interventions that target physical health among GBMSM in Scotland and to ensure that those aimed at the general population do not disenfranchise GBMSM.

Chapter 16 – Use of online sexual and other health services

16.1 Introduction

This chapter describes the use of online sexual health and other health information and services among GBMSM in Scotland in the last 12 months alongside their views of using online sexual health services in the future. A group of experts (clinicians and researchers) developed the questions presented in this chapter, based on their expertise and on past literature, which were then piloted with a group of GBMSM experts before further adaptation. Herein, we present the basic descriptive statistics (frequency and percentages) for these items and subsequently use inferential statistics to determine if significant differences were observed for each of the following variables;

1. Across the 3 NHS regions of NHS Greater Glasgow and Clyde (GGC), NHS Lothian and the Rest of Scotland (RoS).
2. By age category, grouped as aged 16-25 years, 26-35 years, 36-45 years, and 46 years and over.
3. By sexual orientation, either gay or bisexual/straight.
4. By relationship status, either single, regular male partner or regular female partner.
5. By financial status, reporting financial worries either 'occasionally/never' or 'sometimes/all of the time'.

16.2 Use of online health services in the last year

800 men in total addressed the online health services section of the SMMASH3 questionnaire. Herein, we examined the use of online health services such as seeking online health information and booking online clinical appointments (see Table 16.1). In the last 12 months, most men (75.8%, n=606) had used the internet to search for health-related information. Over half (53.9%, n=431)

searched online for the location of a clinic whilst 47% (n=376) had googled the phone number of a health clinic or service. In addition, more than one third had booked a clinical appointment online (37.5%, n=300) or ordered a repeat medical prescription online (33.5%, n=268) respectively. One in six (16.4%, n=131) had purchased medication via an online pharmacy or medical service and one in eight (11.6%; n=93) accessed the results of their medical tests online. A smaller group had communicated directly with a health professional via email, Facetime or Skype (9.8%, n=78), whilst 8.8% (n=70) had ordered a medical test online. Finally, only 1 in 10 men (9.9%, n=79) said that they have used none of the online health services listed in Table 16.1. We now examine the use of online health services by the five key sociodemographic variables.

Table 16.1. In the last 12 months which of the following have you done online?

	n	%
Searched for health-related information	606	**75.8**
Searched for the location of a clinic or health service	431	**53.9**
Searched for the phone number of a clinic or health service	376	**47.0**
Booked a GP/clinic/hospital appointment online	300	**37.5**
Communicated directly with a health professional (e.g. via email, FaceTime, Skype)	78	**9.8**
Ordered a medical test	70	**8.8**
Accessed medical test results	93	**11.6**
Ordered a repeat prescription	268	**33.5**
Purchased medication via an online pharmacy or medical service	131	**16.4**
None of the above	79	**9.9**
Total	**800**	

16.2.1 Use of online health services in the last 12 months: by NHS Region

Chi^2 analysis (x^2=1.2, df=2, p=0.53) suggested that the of online health services in the last 12 months among GBMSM was not patterned by NHS region (see Table 16.2).

16.2.2 Use of online health services in the last 12 months: By Age

Chi^2 analysis (x^2=6.10, df=3, p=0.11) suggested that the use of online health services in the last 12 months was not associated to age (see Table 16.2).

Table 16.2. Use of Online Health Services in the Past 12 months: by Key Sociodemographics

Sociodemographic variable	No Use of online health services		Use of online health services		Total
	n	%	n	%	N
Total	79	**10.1**	706	**88.9**	785
NHS Region					
GGC	23	**9.2**	227	**90.8**	250
Lothian	25	**12.1**	182	**87.9**	207
RoS	31	**9.5**	297	**90.5**	328
Age					
16-25 years	8	**7.1**	104	**92.9**	112
26-35 years	17	**7.8**	200	**92.2**	217
36-45 years	14	**8.9**	143	**91.1**	157
46+ years	40	**13.4**	259	**86.6**	299
Sexual Orientation					
Gay	58	**9.0**	589	**91.0**	647
Bisexual/Straight	20	**16.0**	105	**84.0**	125
Relationship Status					
Single	43	**10.2**	378	**89.8**	421
Regular Male Partner	21	**7.3**	268	**92.7**	289
Regular Female Partner	13	**21.3**	48	**78.7**	61
Financial Worries					
No (Occasional/Never)	50	**11.2**	397	**88.8**	447
Yes (Sometimes/All of the time)	28	**8.6**	299	**91.4**	327

16.2.3 Use of online health services in the last 12 months: By Sexual Orientation

Chi^2 analysis (x^2=5.7 df=1, p<0.05) suggested that men who identified themselves as gay (91%) were significantly more likely to use online health services compared to those who were bisexual or straight (84%) (see Table 16.2).

16.2.4 Use of online health services in the last 12 months: By Relationship Status

Chi^2 analysis (x^2=11.10 df=2, p<0.05) suggested that the use of online health services was patterned by relationship status, such that men with a regular male partner (92.7%) and single men (89.8%) were significantly more likely to use online health services compared to men with a regular female partner (78.7%)(see Table 16.2).

16.2.5 Use of online health services in the last 12 months: By Financial Worries

Chi^2 analysis (x^2=0.01, df=1, p=0.43) suggested that the use of online health services was not patterned by financial worries (see Table 16.2).

16.3 Providing Information Online in order to Access Health Services

We examined the type of health information that men had provided online in order to access health services. As Table 16.3 shows, in the last 12 months, 27.5% (n=220) of all survey respondents who completed this section (total n=800), provided information on symptoms they had experienced to healthcare providers online in order to access health services, while 23.8% (n=190) said they had provided information online about the medication they were using in order to access health services. One in six men (18.1%, n=145) provided information about their sexual behaviour to healthcare professionals online and 1 in 8 (11.3%, n=90) provided information online about medical side effects they were experiencing to access health services. Finally, almost 6 in 10 participants (57%, n=446) said that they had not provided information about any of the four issues listed in Table 16.3 online in order to access health services. Next, we examine provision of health information online by the five key sociodemographic variables.

Table 16.3. In the past 12 months, which of the following have you provided information about online in order to access health services?

	n	%
Your sexual behaviour	145	**18.1**
Symptoms you have experienced	220	**27.5**
Medications you are taking	190	**23.8**
Side effects of medicines	90	**11.3**
None of the above	446	**57.0**
Total	**800**	

16.3.1 Providing health information online in the last 12 months: by NHS Region

Chi^2 analysis (x^2=0.45, df=2, p=0.79) suggested that providing online health information in the last 12 months was not patterned by NHS region (see Table 16.4).

16.3.2 Providing health information online in the last 12 months: By Age

Chi^2 analysis (x^2=3.89, df=3, p=0.27) suggested that providing online health information in the last 12 months was not associated to age (see Table 16.4).

16.3.3 Providing health information online in the last 12 months: By Sexual Orientation

Chi^2 analysis (x^2=0.14, df=1, p=0.71) suggested that providing health information online was not related to sexual orientation (see Table 16.4).

16.3.4 Providing health information online in the last 12 months: By Relationship Status

Chi^2 analysis (x^2=1.36 df=2, p=0.50) suggested that providing health information online was not patterned by relationship status (see Table 16.4).

16.3.5 Providing health information online in the last 12 months: By Financial Worries

Chi^2 analysis (x^2=0.17, df=1, p=0.68) suggested that searching online health information was not patterned by financial worries (see Table 16.4).

Table 16.4. Providing health information online in the past 12 months: by key sociodemographics

Sociodemographic variable	No Search of health Information		Search of health Information		Total
	n	%	n	%	N
Total	446	**57.0**	336	**43.0**	782
NHS Region					
GGC	140	**55.6**	112	**44.4**	252
Lothian	121	**58.7**	85	**41.3**	206
RoS	185	**57.1**	139	**42.9**	324
Age					
16-25 years	54	**48.6**	57	**51.4**	111
26-35 years	129	**59.4**	88	**40.6**	217
36-45 years	92	**58.6**	65	**41.4**	157
46+ years	171	**57.6**	126	**42.4**	297
Sexual Orientation					
Gay	366	**56.9**	277	**43.1**	643
Bisexual/Straight	74	**58.7**	52	**41.3**	126
Relationship Status					
Single	238	**56.4**	184	**43.6**	422
Regular Male Partner	164	**57.1**	123	**42.9**	287
Regular Female Partner	38	**64.4**	21	**35.6**	59
Financial Worries					
No (Occasional/Never)	257	**57.8**	188	**42.2**	445
Yes (Sometimes/All of the time)	184	**56.3**	143	**43.7**	327

16.4 Views around using online sexual health services

We examined men's views around using online sexual health services, with the use of two case scenarios: 1) men were asked whether they would prefer to arrange a routine STI screening online, face-to-face, or by phone, when they experienced no symptoms; 2) men were asked how they would prefer to arrange an STI screening online, face-to-face, or by phone, when they were worried about a new symptom or concerned they had been at risk of STI infection.

As Table 16.5 shows, regarding routine STI screening, in the absence of symptoms, most participants preferred the internet over face-to face and telephone to access all services around STI testing we

assessed. Interestingly, a sizeable proportion of our sample (11% -35.6%) said that they do not have a preference around the provision of routine STI screening.

Table 16.5. Men's preferences around the provision of routine STI screening related services

STI screening related service	Online	Face-to-face	Phone	No Preference	Would never do this	Total
	% (n)	% (n)	% (n)	% (n)	% (n)	N
Booking a clinical appointment	68.8 (528)	3.7 (28)	15 (115)	11 (84)	1.6 (12)	767
Providing information about their sexual behaviour	51.2 (390)	24.7 (188)	5.1 (39)	17.5 (133)	1.6 (12)	762
Providing information about any symptoms you have experienced	41.4 (315)	33.9 (258)	6 (46)	18.3 (139)	0.4 (3)	761
Providing any information about medicines they are taking	48.1(365)	21.7 (165)	6.2 (47)	23.6 (179)	0.4 (3)	759
Receiving HIV test results	44.0 (313)	28.4 (202)	10.4 (74)	16.7 (119)	0.6 (4)	712
Receiving results for STIs other than HIV (e.g. gonorrhoea)	48.7 (370)	19.2 (146)	12.6 (96)	19.3 (147)	0.1 (1)	760
Ordering a repeat prescription	72.8 (551)	3.7 (28)	6.1 (46)	17.2 (130)	0.3 (2)	757
Receive HIV viral load results	40 (18)	15.6 (7)	8.9 (4)	35.6 (16)	0	45

Similarly, as Table 16.6 shows, when our participants were worried about a new symptom or concerned they were had been at risk of STI infection, they preferred to access most services online. However, in this situation, most men preferred to i) provide information about their symptoms

(40.3%, n=322) and ii) receive HIV test results (41.9%, n=297) face-to-face with a sexual health provider rather than online.

Table 16.6. Men's preferences around the provision of STI screening related services when experiencing symptoms/at risk for infection

STI screening related service	Online	Face-to-face	Phone	No Preference	Would never do this	Total
	% (n)	% (n)	% (n)	% (n)	% (n)	N
Booking a clinical appointment	59.8 (457)	6.4 (49)	21.1 (161)	11.8 (90)	10.9 (7)	764
Providing information about their sexual behaviour	38.7 (292)	36.1 (272)	7.8 (59)	16.6 (125)	0.8 (6)	754
Providing information about any symptoms you have experienced	32.4 (244)	40.3 (322)	8.4(63)	16.3 (123)	0.3 (2)	754
Providing any information about medicines they are taking	40.3(307)	29.9 (226)	7.8 (59)	21.5 (163)	0.3(2)	757
Receiving HIV test results	33.6 (238)	41.9 (297)	10.2 (72)	14.0 (99)	0.3 (2)	708
Receiving results for STIs other than HIV (e.g. gonorrhoea)	38.2 (288)	32.1 (242)	12.1 (91)	17.3 (130)	0.3 (2)	753
Ordering a repeat prescription	65.7 (497)	8.2 (62)	7.3 (55)	18.3 (138)	0.5 (4)	756
Receive HIV viral load results	37.8(17)	15.6 (7)	11.1 (5)	35.6 (16)	0	45

16.5 Summary

- SMMASH3 examined the use of online health services such as seeking online health information and booking online clinical appointments in the last 12 months.

- Most men (75.8%) had used the internet to search for health-related information and had (53.9%) searched online for the location of a clinic. A large proportion of SMMASH3 participants had googled the phone number of a health clinic or service (47%), booked a clinical appointment online (37.5%), ordered a repeat medical prescription online (33.5%) or purchased medication via an online pharmacy or medical service (16.4%). Fewer men had accessed the results of their medical tests online (11.6%), communicated directly with a health professional via email, Facetime, or Skype (9.8%) or ordered a medical test online (8.8%).
- Although most participants (57%) had not provided information about their own health online in order to access a health service, a sizeable proportion of men had disclosed symptoms they had experienced (27.5%); medication they were using on the internet (23.8%); and their sexual behaviour (18.1%). Fewer men (11.3%) had searched online for side effects of medicines taking to access health services.
- We examined men's views around using online sexual health services, with the use of two case scenarios: 1) men were asked to address whether they would prefer to arrange a routine STI screening online, face-to-face, or by phone, when they experienced no symptoms 2) men were asked to address when they would prefer to arrange an STI screening online, face-to-face, or by phone, when they were worried about a new symptom or concerned they had been at risk of STI infection.
- Regarding routine STI screening, when men were not experiencing any symptoms, most participants preferred the internet over face-to face and telephone to access all services around STI testing. When our participants were worried about a new symptom, although most men preferred to access most STI screening services online, most men preferred to i) provide information about their symptoms (40.3%) and ii) receive HIV test results (41.9%) face to face with a sexual health provider than online.

- In sum, a high number of men use online health services and have provided information about their health in order to access online health services. Also, online routes of accessing routine sexual healthcare are preferred over traditional methods; however, a large number of men prefer the provision of sexual health services in person, when they experienced symptoms.

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End of SMMASH3 Report.