

Sexual identities and sexual health within the Celtic nations: an exploratory study of men who have sex with men recruited through social media

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Associations of sexual identity with a range of sexual and sexual health behaviours were investigated amongst men who have sex with men (MSM). Data from 1816 MSM recruited from four Celtic Nations (Scotland; Wales; Northern Ireland, NI; and the Republic of Ireland, ROI) were collected via a cross-sectional online survey advertised via social media. 18.3% were non-gay identified MSM (NGI MSM). In the last year, 30% of NGI MSM reported high risk unprotected anal intercourse, 45% reported never having had an STI test. When compared to MSM who were gay identified (GI MSM), NGI MSM were more likely to be older, have a female partner, fewer sex partners, fewer anal sex partners, STI diagnoses, and less likely to be HIV positive, more likely to never use the gay scene and be geographically further from a gay venue. NGI MSM were also less likely to report STI and HIV testing behaviours. The findings highlight variations in risk by sexual identities, and unmet sexual health needs amongst NGI MSM across Celtic nations. Innovative research is required regarding the utility of social media for reaching populations of MSM and developing interventions which target the heterogeneity of MSM and their specific sexual health needs.

Keywords: Gay, HIV, MSM, identity, sexual health

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Introduction

In much of the developed world men who have sex with men (MSM) are disproportionately affected by HIV and AIDS (Kilmarx, 2009; McDaid, Li, Knussen & Flowers, 2012; National Institute for Health and Clinical Excellence, 2011; Public Health England, 2013; World Health Organisation, 2011). However, MSM are not a homogenous group, with acknowledged variations in sexual identity, sexual preferences, and sexual behaviours. Despite this much of our knowledge of the health, behaviours and risks of MSM is drawn from research with gay identified MSM (GI-MSM); while relatively little is known about the sexual behaviours and sexual health behaviours of non-gay (bisexual or heterosexual) identified MSM (NGI-MSM) (Lorenc, et al, 2011; Lyons et al, 2012; Reback & Larkins, 2013). The existing evidence base has been impaired by long standing challenges relating to sampling biases in relation to heterogeneous samples of MSM (see Harry, 1986) and concomitant problems in generalizability of findings. These challenges are compounded by the fluid nature of identity across contexts, environments and social situations, particularly when potential for discrimination and stigma is present (D'Augelli, 1994). Moreover, epidemiological, social and technological change further influences the transferability of evidence within these populations in relation to sexual health. HIV for example, has been normalised, gay rights have significantly improved and new digital technologies are rapidly changing sexual networks and patterns of sexual mixing in ways which were not possible in the past. Digital forums also provide a new perspective for identity research, as they place control of self-representation information in the hands of the digital user, allowing them to construct an identity of their own choosing for consumption by the digital network (Postmes, Spears & Lea, 2002). Within the MSM population this may permit greater freedom in self-presentation, and present an opportunity for researchers to engage with previously hard to reach groups within the wider MSM population. Little research to date has examined how the digital revolution in regard to the sexual cultures of MSM has enabled new opportunities for MSM, new risks for their sexual health and new opportunities for sexual health promotion. Here we report an exploratory study which begins to detail for the first time key areas of emerging concern for public health with regard to non-gay identified MSM.

A recent meta-analysis by Friedman et al (2014) of research published between 1946 and 2012, investigated differences among groups of MSM defined by

their sexual partnering behaviours, identifying a distinct group of bisexually behaving MSM, men who have sex with both men and women (MSMW). They indicated that in comparison with men who have sex with men only, MSMW had decreased odds of a known HIV diagnosis, and reduced odds of participating in receptive, unprotected anal intercourse (UAI). In contrast however MSMW had significantly greater odds of a known HIV positive diagnosis in comparison to men who have sex with women only. Although MSMW is not directly analogous with NGI-MSM, this research highlights how behaviours and risk exposure may vary across different sub-groups within the larger MSM population, suggesting a need to explore and address variations in terms of behaviour and identity. There is little contemporary evidence available to gauge the impact of the social media upon the potential transformation of the sexual cultures of MSM. Arguably, new patterns of sexual mixing are facilitated and there may well be greater heterogeneity in samples of MSM than in earlier times; it is possible that recent communication technologies are decoupling identity from behaviour in new ways. Pre-social media evidence shows that comparisons of GI- and NGI-MSM have indicated that some risks and behaviours are less prevalent among NGI men (Goldbaum et al 1996), who report fewer sex partners than GI men (Myers et al, 1995; Pathela et al, 2006), are less likely to have ever had an STI (Pathela et al, 2006), and less likely to have a known HIV positive diagnosis (CDC, 2001). However, more recent research involving social media and telephone recruitment of MSM, has pointed to a greater prevalence of some risk behaviours, and different patterns of risk exposure than GI-MSM; while known HIV positive status is less prevalent, NGI-MSM are less likely to have ever been tested for HIV (Lyons et al, 2012; Margolis et al, 2012; Pathela et al, 2006).

Relatively recent research suggests that NGI-MSM have lower engagement in the commercial gay scene (Lyons, et al 2012; McLean, 2008) in part because they do not see themselves as gay identifying or as part of the gay community (Lyons, et al 2012). Historically, most interventions promoting safer sex and testing behaviours tend to be targeted within the gay scene this may present a barrier to service access and information sharing among NGI men (Lorenz et al 2011; Lyons et al, 2012). This is particularly important as Goldbaum et al (1998) indicated that while NGI-MSM are less likely to receive HIV prevention information or interventions, those who had were significantly more likely to have used a condom during their most recent sexual intercourse. Similarly, Lelutiu-Weinberger et al (2013), recruiting MSM both on- and

off-line reported a protective effect of gay scene identification, whereby higher identification was associated with lower HIV risk, particularly for younger men. Heterosexual and bisexual identifying MSM therefore may be excluded from effective health promotion, both in terms of access and in terms of the relevance of messages. Understanding how sexual identity influences sexual health behaviours is therefore a central public health problem, which brings with it opportunities to reconceptualise the heterogeneity of MSM and examine the complexity of the relationships between identity and behaviour.

While previous research has focused on identifying behaviours which expose MSM to risk, comparatively little research has addressed the heterogeneity in MSM identities and subsequent influences on behaviours and risk exposure. This analysis aims to investigate differences in the characteristics and behaviours of MSM who identify as gay (GI-MSM), and those who do not identify as gay, but rather as either heterosexual or bisexual (NGI-MSM), recruited from three countries of the UK and from Ireland as part of the SMMASH study.

Method

Design and Participants

The SMMASH (Social Media, MSM and Sexual Health) survey collected anonymous, self-complete questionnaires recruited online from November 2012 to February 2013 in Scotland, Wales, Northern Ireland (NI) and the Republic of Ireland (ROI). Pop up message 'blasts' and/or banner adverts invited men using gay-specific hook-up websites (Gaydar, Recon and Squirt), smartphone apps (Grindr and Gaydar) and Facebook to participate via Survey Monkey. Overall 2668 MSM completed questionnaires from men recruited across the four targeted countries as follows; Scotland (n=1326, 49.7%), Wales (n=459, 17.2%), NI (n=301, 11.3%) and ROI (n=582, 21.8%). Given the nature of online surveys and men's multiple profiles/use of multiple sites it is not possible to calculate a response rate. The effective sample for this analysis, selected on the basis of valid responses to the items of interest was 1816 men (Scotland, n=896, 49.3%; Wales, n=308, 16.9%; NI, n=207, 11.4%; ROI, n=408, 22.4%). Ethical approval was granted by GCU School of Community Health and Nursing Ethics Subcommittee.

Measures

Questionnaires surveyed socio-demographics (country of residence, age, relationship status, education, employment, proximity to and frequency of gay scene use within the last month, degree of 'outness'), sexual health (HIV/STI testing and diagnoses) and sexual behaviours in the previous 12 months. Sexual identity was assessed with a single measure ('What is your sexual orientation?' with the options of Gay, Bisexual, Straight, Other) and so is identity, rather than behaviourally derived. A measure of unprotected anal intercourse (UAI) with higher risk for HIV infection was created to include men who reported UAI with ≥ 2 , casual, and/or with unknown/discordant partners in the previous 12 months (compared with men reporting UAI with 0/1, regular and/or known/concordant partners only). Regularity of HIV testing was determined by combining responses to two questions which assessed current HIV status and frequency of HIV testing; to account for the absence of further testing once an HIV positive diagnosis is received. Responses for this variable were 'Don't require testing', indicating a known HIV positive status; and for those with a Negative status, or unknown status ; 'testing at least yearly'; 'testing less often than yearly' and 'never been tested'.

Data Analyses

Data were analysed with IBM SPSS 21 by the first and last authors. Men with missing data on any of the regression variables were excluded from this analysis, leaving a sample size of $n=1816$ participants across Scotland ($n=896$, 49.3%), Wales ($n=308$, 16.9%), NI ($n=207$, 11.4%) and ROI ($n=408$, 22.4%). Chi-square tests were used for bivariate comparisons. Variables significant at the bivariate level ($p<0.05$) were entered into logistic regression models used to estimate odds ratios (OR) and 95% confidence intervals (CI) of NGI or GI for demographics, sexual risk behaviours, HIV/STI testing/results and gay community engagement.

Results

Bivariate Analyses

A sizeable minority of the 1816 participants reported a NGI (18.3%; $n=333$), the majority of whom (94.6%, $n = 315$) reported a bisexual identity, with the remaining 5.4% ($n = 18$) indicating a heterosexual identity. Table 1 reports the prevalence of each of the variables among the GI and NGI participants. Considering these analyses ,relatively fewer NGI men were recruited in the Scottish sample than elsewhere (16% of those recruited from Scotland, 18.8% of those recruited from

Wales, 23.2% of those recruited from Northern Ireland, and 20.6% of those recruited from the Republic of Ireland). Although participant age profiles were broadly similar, there was a larger proportion of men aged ≥ 46 in the NGI group. NGI men were significantly more likely to report having a regular female partner than GI men. The majority of both GI and NGI men reported fewer than 10 male sex partners, but this prevalence was significantly higher among NGI men; this same pattern emerged with anal sex partners. Significantly fewer NGI men (5.7%) had ever been diagnosed with an STI than GI men (12.8%). NGI men were more likely to have never undergone an STI or HIV test, and were less likely to have a known HIV positive status.

While the majority of GI men reported having used the gay scene in the last month, the majority of NGI men reported no such engagement, and were significantly more likely to be further away from the nearest gay scene. GI men reported significantly higher feelings of being 'out' than NGI men.

[Insert Table 1]

Multivariate Logistic Regression Analyses

A series of logistic regression models were estimated to separately investigate the relationship between NGI or GI with socio-demographics, sexual risk behaviours, HIV/STI testing and gay community engagement respectively (table 2, Models 1 – 4). The first model indicated that men targeted in the Northern Ireland and the Republic of Ireland surveys had significantly higher odds of identifying as NGI, as did men aged 46 years and older. Model 2 indicated that greater numbers of anal sex partners (10 or more) was associated with lower odds of NGI. Model 3 indicated that men who had never been diagnosed with an STI had 1.8 times the odds of being NGI, but there were no significant associations with regularity of STI testing. Compared to those individuals who undertook HIV testing in line with BHIVA/BASH recommendations (i.e. yearly or more frequently; Clutterbuck et al, 2011), those who had never been tested had higher odds of reporting as NGI; additionally, men with a known HIV positive status were less likely to report as NGI. In the fourth model individuals who had not used the gay scene in the last month had significantly lower odds of reporting a NGI.

Finally all indicator variables were included simultaneously in a fifth regression model to investigate their relative association with identity. In this model, significant

associations emerged with country, age, number of anal sex partners, regularity of HIV testing, and engagement with the gay scene. Men from Northern Ireland and the Republic of Ireland had higher odds of reporting NGI, as did men aged 46 years and older. Men with greater numbers of anal sex partners in the previous 12 months (10 or more) had lower odds of identifying as NGI, as did those men who reported engagement with the gay scene in the previous month. Men who had never had an HIV test had twice the odds of reporting a NGI, compared with those testing yearly; and men with a known HIV positive diagnosis had lower odds of reporting as NGI.

[Insert Table 2]

Discussion

The findings reveal a small but notable proportion of MSM have non-gay identities, reporting either bisexual or heterosexual identity, with heterosexual identity the least frequently reported. In line with previous research (Myers et al, 1995; Pathela, et al, 2006) the bivariate analyses indicated lower numbers of sexual partners and lower prevalence of risky sexual partnering practices among NGI men. Additionally NGI men had lower rates of STI and HIV diagnoses, but also of testing, which confirms previous findings in this area (Lyons et al, 2012; Margolis et al, 2012; Pathela et al, 2006). NGI men were also less likely to be engaged in the gay scene, or to identify with the gay community, a consistent trend in literature (Lyons et al, 2012; McLean, 2008). The final logistic regression model indicated that of all the variables considered, those most influential in distinguishing between NGI and GI men were country, age, number of anal sex partners in the previous 12 months, regularity of HIV testing and engagement with the gay scene in the previous month.

Older men, and those from Northern Ireland and the Republic of Ireland were more likely to be NGI which may reflect more traditional conceptualisations of the acceptability of homosexuality among these groups. For example, homosexuality has become increasingly acceptable in the last 50 years, with legalisation (1967), equal age of consent (2001), civil partnerships (2013) and now equal marriage (2014) reflecting increasing approval amongst wider British society (BSA, 2013). In contrast Northern Ireland is a highly religious, Christian society (Mitchell, 2006), and this is reflected in historically traditional and conservative attitudes towards sexual

relations (Sneddon & Kremer, 1992), with a majority of respondents in the 1998 Northern Ireland Life and Times Survey indicating that they viewed homosexual sex as morally wrong (Dowds, Robinson, Gray & Heenan, 1999). Homosexual individuals in Northern Ireland are particularly vulnerable to discrimination and homophobic violence both at an interpersonal and institutional level, and at greater levels than in Great Britain (Jarman & Tennant, 2003). Furthermore Berg, Ross, Weatherburn and Schmidt (2013) reported that societal stigmatisation of homosexuality can increase internalisation of homo-negativity among MSM. Within this context, lower rates of GI in Northern Ireland and the Republic of Ireland may partially reflect heightened concerns about social censure and retaliation, or increased internalised homo-negativity in comparison with MSM from other areas.

Men with 10 or more anal sex partners were less likely to be NGI, suggesting lower sexual risk in terms of multi-partnering among NGI men. MSM who had a known HIV positive status, were significantly less likely to report as NGI. This appears to imply that NGI men are less likely to be HIV positive than their GI counterparts, however this must be interpreted carefully as NGI men were also much less likely to have ever been tested for HIV. Therefore rather than reflecting a lower likelihood of a positive diagnosis, this may indicate potential for higher rates of undiagnosed infection amongst NGI men. Indeed, NGI men were also less likely to be engaged with the gay scene, this has been linked with greater HIV risk (Lelutiu-Weinberger et al, 2013). As safer sex and testing interventions are traditionally directed towards the gay scene (Lorenc et al, 2011), MSM who do not engage with these fora will be excluded from *in situ* interventions, and thus deprived of effective health promotion, intervention and treatment. Identity-driven HIV prevention, particularly where grab bag terms such as MSM are utilised, contribute to the creation and maintenance of blind spots and health inequalities, leaving some of the most excluded at highest risk, particularly in social media contexts where identities are emphasised and constructed in different ways. Berg, et al (2013) have also noted that MSM with higher internalised homo-negativity are less likely to participate in HIV testing; while the current research did not investigate self-stigmatisation among the MSM sample, further research may be useful in identifying if such internalising plays a role both in sexual identity and risky behaviours among NGI MSM.

Limitations

A number of limitations of the current research must be noted. While the SMMASH survey included 2666 men, given the nature of online surveys and men's multiple profiles/use of multiple sites it is not possible to calculate a response rate; nor to appropriately gauge the representativeness of the current sample with the larger MSM population. However given that historically research with MSM has been subject to sampling bias (Harry, 1986) in part due to recruitment primarily from those MSM engaged with the gay scene, it is suggested that the use of online/social media recruitment presents an opportunity to recruit and engage a more representative sample of MSM. Furthermore a sizeable proportion of participants were excluded from the current analysis due to incomplete and missing data, however there were no notable significant differences between the men included in the analysis and those excluded. The current research asked men to self-report their sexual orientation, but did not provide a mechanism to record multiple or fluid sexual identities, which may have restricted the responses made by participants, and may be subject to bias in responses. Both straight identifying and bisexual identifying MSM were included in this analysis in a single category of NGI MSM, while it would have been preferable to examine these two groups separately the number of MSM reporting these identities was relatively low, and therefore to retain them within the sample, a strategic analytic decision was made to combine in a single category. Further research which seeks to explore this heterogeneity within the NGI MSM category itself is warranted. Additionally participants were not asked about the sex of their recent or historical sexual partners, therefore the current study is unable to investigate how actual sexual partnering reflects self-reported sexual orientation. Further research which explores how both these components relate to sexual risk behaviours and sexual health is warranted. Finally, although the survey was targeted at men from four countries – Scotland, Wales, Northern Ireland and the Republic of Ireland, participants were not asked to indicate their normal/permanent country of residence, which may result in men from other countries having been included in the sample.

Conclusions

A sizeable proportion of homosexually active men in Celtic nations do not see themselves as gay and have weak or non-existent attachments to gay community networks and interventions which facilitate health promotion and the prevention of

HIV and STIs. While their risk for HIV/STIs appears to be lower than GI men, they report lower levels of testing than GI men, and still share a burden of preventable disease. The present study highlights considerable heterogeneity in the identities of MSM, and in the health behaviours and health risks faced by GI and NGI men. Current research, and interventions, which conform to narrow definitions and conceptualisations of MSM as 'gay' may therefore restrict our understanding of the health risks and needs of the MSM population, and result in interventions excluding men who do not identify within this narrow definition. Furthermore evidence presented herein suggests a potential need for country specific health promotion for homosexually active men who are not gay identifying. This suggests a need to orient health promotion and clinical services in Celtic nations and outside of large metropolitan areas to the needs of homosexually active, heterosexual and bisexual men. Our research shows that hook-up apps, sites and social media such as Facebook are effective means for accessing populations who do not engage with gay scene based social networks within community settings, thus allowing access to a more representative sample of MSM to reflect the heterogeneity in identity within this population. Further research which investigates how these men use social media, as well as the interaction of age/generation and sexual identity would benefit our understanding of the online and offline lives and behaviours of this group, and assist in the development of interventions which meet the needs of those who currently are neglected.

References

- BSA-30 (2013) Personal relationships: Changing attitudes towards sex, marriage and parenthood. British Social Attitudes 30 Report, available from <http://www.bsa-30.natcen.ac.uk/read-the-report/personal-relationships/homosexuality.aspx> ; date accessed, 12/2/15
- Berg, R.C., Ross, M.W., Weatherburn, P. & Schmidt, A.J. (2013). Structural and environmental factors are associate with internalised homonegativity in men who have sex with men: Findings from the European MSM Internet Survey (EMIS) in 38 countries. *Social Science and Medicine*, 7, 61 – 69. DOI: 10.1016/j.socscimed.2012.11.033
- Blas, M.M., Alva, I.E., Cabello, R., Carcamo, C. & Kurth, A.E. (2011). Risk behaviors and reasons for not getting tested for HIV among men who have sex with men: An online survey in Peru. *PLoS ONE*, 6(11), e27334. DOI: 10.1371/journal.pone.0027334
- Centers for Disease Control and Prevention. (2001). *HIV/AIDS Surveillance Report, 2001*. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention.
- Clutterbuck, D.J., Flowers, P, Barber, T, Wilson, H., Nelson, M., Hedge, B., Kapp, S. Fakoya, A. & Sullivan, A.K. (2011) *United Kingdom National Guideline on Safer Sex Advice in the GUM Consultation*. 2011, Clinical Effectiveness Group, British Association of Sexual Health and HIV: London.
- D'Augelli AR. 1994. Identity development and sexual orientation: toward a model of lesbian, gay, and bisexual development. In E. Trickett, R. Watts & D. Birman (Eds). *Human Diversity: Perspectives on People in Context*. San Francisco: Jossey-Bass. Pp. 312–33.

- Dowds, L., Robinson, G., Gray, A.M., & Heenan, D. (1999). Men and Women in Northern Ireland: Challenging the Stereotypes. Northern Ireland Life and Times Survey Research Update No. 1. Belfast: ARK.
- Friedman, M.R., Wei, C., Klem, M.L., Silvestre, A.J., Markovic, N. & Stall, R. (2014). HIV infection and sexual risk among men who have sex with men and women (MSMW): A systematic review and meta-analysis. *PLoS One*, 9(1), e87139. DOI: 10.1371/journal.pone.0087139
- Goldbaum, G., Perdue, T. & Higgins, .D. (1996). Non-gay identifying men who have sex with men: formative research results from Seattle, Washington. *Public Health Reports*, 111(51), 36 – 40.
- Jarman, N. & Tennant, A. (2003) *An Acceptable Prejudice? Homophobic Violence and Harassment in Northern Ireland*. Belfast: Institute for Conflict Research.
- Kilmarx, P.H. (2009). Global epidemiology of HIV. *Current Opinion in HIV & AIDS*, 4(4), 240 – 246. DOI: 10.1097/COH.0b013e32832c06db
- Lelutiu-Weinberger, C., Pachankis, J.E., Golub, S.A, Walker, J.J., Bamonte, A.J. & Parsons, J.T. (2013). Age cohort differences in the effects of gay-related stigma, anxiety and identification with the gay community on sexual risk and substance use. *AIDS Behavior*, 1, 340 – 349. DOI: 10.1007/s10461-011-0070-4
- Lorenc, T., Marrero-Guillamón, I., Llewellyn, A., Aggleton, P., Cooper, C., Lehmann, A. & Lyndsay, C. (2011). HIV testing among men who have sex with men (MSM): systematic review of qualitative evidence. *Health Education Research*, 26(5), 834 – 846. DOI: 10.1093/her/cyr064
- Lyons, A. Pitts, M., Grierson, J., Smith, A., McNally, S & Crouch, M. (2012). Sexual behaviour and HIV testing among bisexual men: A nationwide comparison of Australian bisexual-identifying and gay-identifying men. *AIDS Behavior*, 16, 1934- 1943. DOI: 10.1007/s10461-012-0148-7
- Margolis, A.D., Joseph, H., Belcher, L., Hirschfield, S. & Chiasson, M.A. (2012). ‘Never testing for HIV’ among men who have sex with men recruited from a sexual networking website, United States. *AIDS Behavior*, 16, 23 – 29. DOI: 10.1007/s10461-011-9883-4
- McDaid, L., Li, J., Knussen, C. and Flowers, P. (2012) Sexually transmitted infection testing and self-reported diagnoses among a community sample of men who have sex with men in Scotland. *Sexually Transmitted Infections*, 89(3), 223-230. DOI: 10.1136/sextrans-2012-050605

- McLean K. (2008). Inside, outside, nowhere: bisexual men and women in the gay and lesbian community. *Journal of Bisexuality*, 8(1–2), 63–80. DOI: 10.1080/15299710802143174
- Mitchell, C. (2006). *Religion, Identity and Politics in Northern Ireland. Boundaries of Belonging and Belief*. Ashgate: Ashgate Publishing Ltd.
- Myers, T., Allman, D., Jackson, E. A., & Orr, K. (1995). Variation in sexual orientations among men who have sex with men, and their current sexual practices. *Canadian Journal of Public Health*, 86, 384–388.
- National Institute for Health and Clinical Excellence (2011). *Increasing the uptake of HIV testing among men who have sex with men*. London: NICE.
- Pathela, P., Hajat, A., Schillinger, J., Blank, S., Sell, R., & Mostashari, F. (2006). Discordance between sexual behavior and self-reported sexual identity: A population-based survey of New York City men. *Annals of Internal Medicine*, 145, 416–425. DOI: 10.7326/0003-4819-145-6-200609190-00005
- Postmes, T., Spears, R. & Lea, M. (2002). Intergroup Differentiation in Computer-Mediated Communication: Effects of Depersonalization. *Group Dynamics: Theory, Research, and Practice*, 6(1):3-16. DOI: 10.1037/1089-2699.6.1.3
- Public Health England (2013). *Health Protection Report: Sexually transmitted infections and chlamydia screening in England, 2012*. (Rep. No. 7 (23)). Public Health England.
- Reback, C.J. & Larkins, S. (2013). HIV risk behaviors among a sample of heterosexually identified men who occasionally have sex with another male and/or a transwoman. *Journal of Sex Research*, 50(2), 151 – 163. DOI: 10.1080/00224499.2011.632101
- Schindhelm, R. K., & Hospers, H. J. (2004). Sex with men before coming out: Relation to sexual activity and sexual risk-taking behavior. *Archives of Sexual Behavior*, 33(6), 585–591. DOI: 10.1023/B:ASEB.0000044742.83096.b9
- Sneddon, I., & Kremer, J. (1992). Sex Behavior and Attitudes of University Students in Northern Ireland. *Archives of Sexual Behavior*, 21(3), 295 – 312. DOI: 10.1007/BF01542998
- World Health Organization. (2011). *Guidelines: prevention and treatment of HIV and other sexually transmitted infections among men who have sex with men and transgender people: recommendations for a public health approach*. Geneva, Switzerland: World Health Organization, Department of HIV/AIDS.

Table 1:
Characteristics of GI and NGI men who have sex with men.

	GI (%)	NGI (%)	χ^2
Country			
Scotland	50.7	42.9	8.075*
Wales	16.8	17.4	
NI	10.7	14.4	
RoI	21.8	25.2	
Age			
18 – 25	25.8	24.0	11.071**
26 – 35	25.9	20.4	
36 – 45	22.0	20.4	
46=<	26.2	35.1	
Relationship status			
Single	62.1	47.7	630.61***
Male Partner	36.9	9.3	
Female Partner	0.9	42.9	
Education			
Highers or less	34.2	39.0	2.814
Degree or more	65.8	61.0	
Employment			
Employed	70.5	71.5	2.222
Unemployed	7.3	8.1	
Inactive	6.3	4.	
Student	15.9	16.2	
No partners			
<10	60.0	70.0	11.398**
10+	40.0	30.0	
No anal partners			
<10	78.6	89.8	21.825***
10+	21.4	10.2	
High risk UAI			
No	61.1	70.0	9.147**
Yes	38.9	30.0	
STI Diagnosis			
No	87.2	94.3	13.410***
Yes	12.8	5.7	
Recency of last STI test			
Never	27.3	44.7	42.430***
Within last year	47.2	31.3	
More than a year ago	25.5	23.7	
Regularity of HIV Test			
Test at least yearly	34.4	22.8	69.175***
Never	25.6	46.5	
Test less often than yearly	33.4	29.7	
Don't require testing	6.7	0.9	
Gay Scene Use			
No, never	36.1	58.9	58.749***
Yes	63.9	41.1	
Nearness to scene			
Near	57.1	45.9	13.761***
Far	42.9	54.1	
	\bar{x} (s.d)	\bar{x} (s.d)	
How 'out'	4.01 (1.19)	2.04 (1.25)	27.00***

Notes: GI, Gay identified men; NGI, non-gay identified men; *, p<0.05; **, p<0.01, ***, p<0.001

Table 2: Logistic regression of NGI with demographics, community engagement, risk behaviours and testing behaviours, n=1816.

	Model 1	Model 2	Model 3	Model 4	Model 5
	Demographics	Sexual Behaviours	HIV/STI Testing	Community engagement	All variables
Country					
Scotland	-				-
Wales	1.158 (.825 – 1.027)				1.082 (.759 – 1.543)
NI	1.705 (1.174 – 2.478)				1.644 (1.112 – 2.431)
RoI	1.404 (1.039 – 1.898)				1.412 (1.033 – 1.930)
Age					
18 – 25	-				
26 – 35	.870 (.610 – 1.240)				1.087 (.749 – 1.579)
36 – 45	1.009 (.706 – 1.442)				1.277 (.873 – 1.867)
46=<	1.532 (1.109 – 2.116)				1.762 (1.234 – 2.515)
No partners					
<10	-	-	-		
10+		.936 (.689 – 1.271)			1.072 (.776 – 1.482)
No anal partners					
<10	-	-	-		
10+		.478(.304 - .757)			.584 (.365 - .934)
High risk UAI					
No	-	-	-		
Yes		.813 (.621 – 1.064)			.919 (.692 – 1.221)
STI Diagnosis					
Yes	-	-	-	-	
No			1.851 (1.109 -3.087)		1.564 (.918 – 2.663)
Recency of last STI test					
Never	-	-	-		
Within last year			.936 (.612 – 1.432)		1.064 (.692 – 1.635)
More than a year ago			.882 (.601 – 1.293)		.880 (.595 – 1.300)
Regularity of HIV Test					
Test at least yearly	-	-	-		
Never			2.444 (1.567 – 3.812)		2.222 (1.409 – 3.505)
Test less often than yearly			1.316 (.903 – 1.917)		1.168 (.793 – 1.721)
Don't require testing			.210 (.065 - .677)		.201 (.062 - .657)
Gay Scene Use					
No, never	-			-	

Yes		.732 (.546 - .962)	.495 (.383 - .640)
Nearness to scene			
Far	-	-	
Near		.979 (.733 – 1.308)	.827 (.641 – 1.068)

Note: Bold indicates significance; Sexual orientation and 'How out' participant feels excluded due to high collinearity with other variables in model.