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Richardson, D., Nambiar, K. and Nadarzynski, T.

This is an author's accepted manuscript of an article published in BMJ Sexual & Reproductive Health, DOI: 10.1136/bmjshr-2020-200804, 2020.

The final definitive version is available online at:

<https://doi.org/10.1136/bmjshr-2020-200804>

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Title Page

TITLE: Understanding the diverse sexual repertoires of MSM, Trans and gender diverse groups is important for sexually transmitted infection prevention.

CORRESPONDING AUTHOR: DR Daniel Richardson

Daniel.richardson7@nhs.net

Sexual Health & HIV medicine, Brighton & Sussex Medical School, Brighton

Brighton & Sussex University Hospitals NHS trust, Eastern Road, Brighton BN2 5BE

Tel 07801062600

Fax 01273 664718

Dr Kate Nambiar

Brighton & Sussex University Hospitals NHS trust, Eastern Road, Brighton, UK

Sexual Identity Clinic, Tavistock & Portman NHS trust, London, UK

Dr Tomaz Nadarzynski

Social Sciences, University of Westminster, London UK

Keywords: epidemiology, HIV, sexual behaviour, Sexual Health, sexually transmitted diseases

Word count:1037

2. Statements

contributorship: DR drafted the manuscript and KN and TN revised the manuscript and all authors contributed to the final manuscript

Funding: There is no funding associated with this editorial

competing interests: There are no conflicts of interests declared by any author

Data Sharing/Data availability: This is an editorial and there are no data

Understanding the diverse sexual repertoires of MSM, Trans and gender diverse groups is important for sexually transmitted infection prevention.

Daniel Richardson FRCP FChSHM, *Clinical Reader in Sexual Health & HIV medicine, Brighton & Sussex Medical School*

Kate Nambiar MB BS PhD, *Speciality doctor Brighton & Sussex University NHS trust, Tavistock & Portman NHS trust*

Tom Nadarzynski MSc PhD *Senior Lecturer, University of Westminster*

The sexual repertoires of men who have sex with men (MSM), transgender (trans) and gender diverse groups are poorly understood despite their disproportionate rates of sexually transmitted infections (STIs). The inter-related landscapes and syndemics of the social and sexual behaviour of MSM and trans and gender diverse groups, and transmission of sexually transmitted infections (STI) have changed beyond recognition over the past 20 years.¹⁻³ We are only beginning to understand the complex and evolving sexual behaviours of MSM in mainly urbanised Western populations such as described in the paper by Kilner et al. in this edition of the journal.⁴ The majority of our understanding of sexual behaviour in the trans population comes from studies of trans women with much less being understood about trans men and almost nothing about non-binary or other gender diverse people.⁵ Little is also known about sexual behaviours of sexual orientations such as pansexual or individuals who mainly have sex with trans or non-binary people, for whom we still lack clear terminology. It is time we included all sexual and gender minorities in behavioural and epidemiological research of such kind.

The changes in the complex sexual and social lives of MSM has been driven partly by social networking, information technology and increasing social acceptability of MSM in some societies. The internet, and in particular geo-social mobile phone apps have transformed the

way and frequency individuals and groups meet socially and for sex.^{6,7} We are now seeing sexual risk behaviour, particularly with the use of PrEP, in MSM associated with sexual freedom and empowerment.⁸ However for trans women and gender diverse groups there continues to be disempowerment, with syndemics of drug use, intimate partner violence, mental ill-health and transactional sex driving HIV and other STI acquisition: considerable stigma, discrimination, marginalisation and persecution remain.⁹

In MSM and trans women who do not inject drugs, HIV transmission is predominantly transmitted via penetrative penile-anal sex^{10,11} Design and delivery of effective interventions for the prevention of HIV have focussed on penetrative penile-anal sexual behaviours. A combination of effective HIV treatment, HIV treatment as prevention, a significant increase in HIV testing, access to HIV pre-exposure prophylaxis and vaccines against STIs as well as interventions improving condom use have significantly reduced the incidence of HIV in some populations of MSM.¹² Many of these interventions rely on MSM and other at-risk groups accessing clinical or bespoke community services or exposure to interventions mostly in 'gay' venues either real or online which is why more work is needed among hidden or 'seldom heard' groups.¹³

Simultaneously, we have seen epidemics of infectious syphilis, antimicrobial-resistant gonorrhoea, lymphogranuloma venereum and significant sporadic outbreaks of other less recognised STIs such as *Shigellosis*, Hepatitis A and other enteric infections (eg *Campylobacter*, verotoxin producing *E-coli*) affecting MSM.¹⁴⁻¹⁶ STI prevalence (other than HIV) in trans people is highly variable but also confounded by many studies not sampling extragenital sites.¹⁷ Their transmission is associated with a broader repertoire of sexual activities such as oral-genital sexual contact, oro-anal sexual contact (rimming) and fisting which have not been widely described within sexual behaviour research.¹⁸ Intimate 'sexual' behaviours such as kissing are rarely considered by clinicians and clinical scientists as these are not considered a risk for STIs. Kissing may be important for the transmission of

gonorrhoea, however, the intimate act of kissing probably provides significant emotional and physical wellbeing for MSM and any interventions for STI prevention involving kissing needs to be carefully considered.¹⁸⁻²⁰

Currently, surveillance and surveys of sexual behaviour of MSM and other diverse groups is limited to addressing sexual activities such as anal, penile and oral sex through convenience samples of MSM where older individuals, gender diverse people and minority ethnic groups are often underrepresented. Epidemiological modelling as well as the development and delivery of prevention strategies against STIs require an in-depth understanding of the ranges and types of behavioural factors affecting susceptible communities and individuals. Thus, we need to understand the demographic, psycho-social and clinical characteristics of at-risk populations, infection transmission dynamics as well as the individual sexual behaviours and activities that contribute to the transmission of STIs in order to design the most effective preventative measures. It is crucial to recognise the complex layers of syndemics that interact between sexual, physical and mental health to look beyond sexual behaviours as the main determinant of STIs.

Kilner and colleagues report in this edition of the journal from a large programme of research at Melbourne Sexual Health Centre.⁴ This programme of research has already shown an association between the use of saliva as a lubricant and kissing with the transmission of gonorrhoea in MSM.^{19,20} Amongst 1596 MSM, asked about different sexual activities including 'kissing each other', 'touching penises', oral-anal sexual contact or 'rimming', kissing was the most common, Sexual activity with casual partners was strongly associated with age indicating that younger MSM were more likely to engage in kissing, receptive rimming and receptive anal sex. The sexual repertoire of MSM with regular partners is broader than those with casual partners, particularly among older men.

This work should be of interest to clinicians, clinical scientists and wider public health for designing and implementing clinical services and public health strategies, but should also act as a springboard for future behavioural research of such scope. The authors have described the sexual repertoire of MSM in an income rich urban setting but still little is known about MSM from lower socioeconomic settings as well as minority ethnic groups who experience difficulties to disclose their same/trans-sex practices to a healthcare professional. There is a need to establish a gradient of sexual behaviours in accordance to their risk of STIs from the epidemiological perspective so that the given advice is developed in a sensitive and non-judgemental manner.

Sexual behaviour is highly complex, dynamic and hugely more varied than the act of penile-anal penetration.^{4,18} We call for research on the sexual repertoire of trans and gender diverse groups. Understanding sexual behaviours is essential to improving the health of groups and individuals who are disproportionately affected by STIs and poor sexual health. Nevertheless, caution needs to be exercised so that some practices such as kissing, associated with the spread of STIs, are not stigmatised and condemned. Further health education is required to increase awareness of the complexity of sexual behaviours and their direct consequences.

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