

## Research paper

# Lesbian, gay and bisexual people's health in the UK: a theoretical critique and systematic review

Catherine Meads MBChB MSc PhD MPH FHEA

Senior Lecturer in Health Technology Assessment, Centre for Primary Care and Public Health, Barts and the London School of Medicine and Dentistry, Queen Mary University of London, London, UK

Chris Carmona BSc(Hons) MSc

Public Health Analyst

Michael P Kelly BA(Hons) MPhil PhD

Director, Centre for Public Health Excellence

National Institute for Health and Clinical Excellence and School of Community-Based Medicine, Faculty of Medical and Human Sciences, University of Manchester, Manchester, UK

### What is known on this subject

- Around 6% of the population are lesbian, gay, bisexual or transgender (LGBT).
- Organisations such as the NHS have a politico-legal duty to address health inequities, including those that affect LGBT people.
- Very little research has been conducted into LGBT health.

### What this paper adds

- The mental health of lesbian, gay and bisexual people is worse than that of the general population (but no information was available for transgender people).
- There is very little good-quality evidence on the physical health of LGBT people.
- Marginalisation and invisibility have led to a lack of investigation into sexual orientation as a social determinant of health.

## ABSTRACT

Much has been written about the general relationship between social position and health. Far less is available on this relationship as it applies to the health of lesbian, gay, bisexual and transgender (LGB&T) people. Whether the health of LGBT people is similar, better or worse in general than that of other members of the population, and the degree to which being LGBT contributes to health inequalities and inequities or intersects with other dimensions of social stratification and difference, is not well understood. As possibly as many as 6% of the UK population identify as LGBT, there could be important health consequences. This paper considers the theoretical aspects of social stratification, sexual orientation and health. It also reports the findings of a systematic review of physical and mental health research about LGBT people in the

UK. This was analysed in the context of the relationship between health and social position. For the systematic review, MEDLINE, MEDLINE In-process, EMBASE, PsycINFO, Web of Science and Cochrane Library databases were searched between January 2000 and May 2008. References were searched and experts were contacted. Included were UK studies enrolling LGBT participants with any physical or mental health measures, but not HIV/AIDS, sexually transmitted diseases, sexual behaviour or health related to transitioning. Unpublished surveys involving more than 1000 participants were included. Inclusion decisions, data extraction and quality assessment were undertaken in duplicate. Quality assessment used established checklists appropriate to each study design. The results were tabulated and assessed narratively. From a total of

2603 citations, five unpublished surveys and nine published papers were included. Studies were mostly small and of poor quality. No information on transgender people's health was available. The general trend of results for LGB people suggested worse health, particularly mental health and health behaviours. The lack of good-quality empirical information means that the interaction between the social position of LGBT people, other dimensions of social difference and the intersections between these dimensions and health outcomes is

very difficult to describe. LGBT health needs are rarely highlighted beyond sexual health and HIV prevention, and adequate equity audit is not possible. This systematic review initiates improved consideration of the specific health needs of LGBT people and the theoretical and empirical research that is needed to understand the health of LGBT people in the context of health inequalities.

**Keywords:** gay, lesbian, mental health, physical health, sexual orientation, systematic review

## Introduction

The relationship between poor health and relative social disadvantage is well established (Marmot and Wilkinson, 1999; Solar and Irwin, 2007; Graham, 2000; Braveman, 2003, 2006; Starfield, 2007) both within and between different countries (Commission on Social Determinants of Health, 2008). Globally, patterns of life expectancy vary widely in association with different levels of economic development and diverse forms of social and political organisation (Beaglehole and Bonita, 2008). There is a very extensive literature exploring the social determinants of health and the corresponding health inequalities or health inequities (Commission on Social Determinants of Health, 2008; Townsend and Davidson, 1982; Acheson, 1998; Department of Health, Health Inequalities Unit, 2007; Marmot, 2010; Kelly and Doohan, 2012).

The conventional way in which this relationship is studied involves taking some measure of socio-economic position, such as social class, occupation or income, and demonstrating a gradient showing the associations. Although there is extensive national and international evidence demonstrating these associations (Mackenbach, 2005; Siegrist and Marmot, 2006; Commission on Social Determinants of Health, 2008; Wilkinson and Pickett, 2009), there is significantly less showing what might be done to improve the relative health position of those in the poorer or poorest circumstances (Millward *et al*, 2003; Blas *et al*, 2008).

Competing models attempt to explain how these social determinants might operate (Goldberg *et al*, 2003; Frohlich *et al*, 2001). Psychosocial approaches argue that discrimination based on one's place in the social hierarchy causes stress, which in turn generates a neuroendocrine response that produces disease (Karasek, 1996; Siegrist and Marmot, 2004; Evans and Stoddart, 2003; Goldberg *et al*, 2003). Others consider the interaction between biology, social and physical environments and the contexts in which people live and work (Goldberg *et al*, 2003; Krieger, 2001; Frohlich

*et al*, 2001; Cockerham, 2007). Glass and McAtee (2006) developed an explanation in which the complex relationship between social structure and human behaviour is articulated, with reference to the life course, risk and human behaviour. For a review of approaches, see Starfield (2007), Evans and Stoddart (2003), Krieger (2008a,b), Solar and Irwin (2007), Levine *et al* (2004), Cockerham (2007), Starfield (2006, 2007), Taylor *et al* (1997), Berkman *et al* (2000), World Cancer Research Fund/American Institute for Cancer Research (2009) and Warnecke *et al* (2008).

The literature on social determinants generally acknowledges that there are multiple dimensions of social difference, as well as socio-economic ones, such as gender, ethnicity and disability, and that these are also linked to poor health in various ways (Bonnefooy *et al*, 2007). It has also been suggested that there are synergies between these different dimensions or axes of social differentiation in the population, although the epidemiological literature has tended to be much clearer about how to measure these dimensions than about how they interact with each other (Kelly, 2010). The feminist and ethnically informed sociological literature has been much more sophisticated in its treatment of the synergy between different dimensions of social difference (Anthias, 1990, 1992, 2005; Anthias and Lazarides, 1999; Anthias and Yuval-Davis, 1983, 1992; Yuval-Davis, 1994, 1997, 2006a,b, 2007, 2010), but has paid little attention to the links to health. The sociological literature grew out of a rejection of a simple class-based model of social stratification in favour of one that acknowledged the *intersections* between dimensions of class and ethnicity or gender and class and that attempted to formulate important theoretical accounts of the nature of the relationships.

The dimension of stratification or social differentiation which has received the least attention is sexual orientation and health and the corresponding intersections with other axes of social difference. This is surprising, given that other dimensions of social difference and health have been very extensively studied. The purpose of this paper is to review systematically

the somewhat scant literature on the issue in the UK. This is a first step in building more theoretically sophisticated models of the interaction and synergy between the intersections of class, ethnicity, gender, disability and sexuality in ways that the extant literature fails to do. The starting point is a systematic review of the linkages, such as can be observed empirically in the extant literature.

Initial scoping searches sought to determine the current state of knowledge about the general physical and mental health of LGBT people (Meads *et al*, 2009). Would there be any evidence to suggest similarities or differences between LGB people and heterosexuals, and between transgender and cisgender people (i.e. people who have changed versus those who remained the gender assigned at birth)? Would evidence from one country be generalisable to another? There may be a presumption that the general health of LGBT people would be much the same as that of the majority population, but this has never been tested. Equally, it may be assumed that sexuality and gender identity, as dimensions of social difference, may interact with other dimensions of social variation and may be determinants of health in their own right. This also has not been tested. Social difference varies between countries, and is influenced in part by legislation that may encourage or discourage participation by LGBT people within mainstream cultural life. For example, it might be predicted that the general physical and mental health of LGB people would be worse in countries where homosexual behaviour is punishable by death or long terms of imprisonment compared with that in countries where same-sex marriage is encouraged, and there is protection from discrimination and equality of access to goods and services. A similar effect might be seen in countries where gender variation is subject to considerable social sanction compared with those that have a more accepting approach.

Preliminary searches of MEDLINE and EMBASE databases and the Internet, up to 2008, identified considerable amounts of research about acquired immune deficiency syndrome and sexually transmitted diseases, particularly in gay and bisexual men, and the transitioning process in transgender people. In addition, the search yielded a systematic review on mental health, suicide and alcohol abuse in LGB people compared with heterosexuals (King *et al*, 2008). This included 25 comparative studies and showed an approximate doubling of the risks, in LGB people, of depression, anxiety, suicide ideation and attempts, deliberate self-harm and alcohol dependence. Large surveys of LGB people were available on the Internet, but these were not published in the medical literature. They tended to show increased rates of harmful health behaviours, such as high rates of smoking and drug abuse, but did not record details of physical health.

It was curious that little or nothing was published on physical health in LGBT people. For example, if there were considerably higher rates of smoking, one might have expected higher rates of cardiovascular disease, but without the evidence to prove this, no action would be thought to be required. One of the issues that affect many minority groups is invisibility (Oliver and Barnes, 1998). Inherent in this invisibility is the assumption that there is no difference between the minority and the majority so that, even where there is evidence to the contrary, research is not deemed worthwhile. Consequently, minority group concerns tend to be unreported and/or under-investigated, which leads to claims of marginalisation and social isolation.

Coupled with these assumptions is the notion that invisible minorities must be small in number. However, around 6% of the UK population identifies as LGB (Department of Trade and Industry, 2004). Accurate estimates of the proportion of transgender people in the UK are not available, but may range from 0.02% to 1% (Parliamentary Forum on Gender Identity, 2009). Given the size of the population, the health of LGBT people deserves more attention than it has hitherto received. Consequently, we conducted a systematic review of UK research into LGB people's physical and mental health in order to determine whether their health was similar or different to that of the heterosexual majority. We also included the transgender (trans) community, as a high proportion of the LGB and trans communities have a number of general health concerns in common.

## Methods

A protocol was developed and circulated for comment. MEDLINE, MEDLINE In-process, EMBASE, PsycINFO, Web of Science (SCI and SSCI) and Cochrane Library databases, including CENTRAL, were searched for reviews and primary studies of the general health of LGB&T people published between January 2000 and May 2008. A broad search strategy was used that included terms related to *homosexual*, *lesbian*, *gay*, *bisexual* and *trans* people, restricted only by publication date and English language. An Internet search was conducted using Google, together with additional targeted searches of selected relevant websites. Citations from systematic and narrative reviews were checked for relevant studies.

## Study selection

Inclusion criteria for study selection were research conducted in the UK that included one or more

measures of physical or mental health in people who identified themselves as LGB or transgender, and in which at least some participants were enrolled after the beginning of January 2000. All aspects of health were included, with or without any comparator group, except those related to HIV/AIDS, sexually transmitted diseases, safe sex, sexual behaviour and transitioning. Studies did not have to be peer reviewed, but an additional inclusion criterion for non-peer-reviewed surveys was that they included more than 1000 participants.

The title and abstract (if available) for each study were screened by two reviewers to ensure that they met the inclusion criteria, and any disagreements were resolved through discussion. Full texts were retrieved for potentially relevant articles and were processed by one reviewer. These were checked by a second reviewer and any disagreements were resolved through discussion.

### Quality assessment and data extraction

Quality assessment of cross-sectional surveys was based on a generic quality assessment checklist developed by the National Institute for Health and Clinical Excellence (2009). Quality assessment of all other study designs used CASP critical appraisal checklists (Public Health Resource Unit, 2009). Quality assessment and data extraction were performed by one reviewer and checked by a second reviewer. Any discrepancies were resolved by discussion.

### Data analysis

The study characteristics and results were tabulated and discussed narratively. The results were interpreted in the light of the methodological strengths and weaknesses identified in quality assessment.

## Results

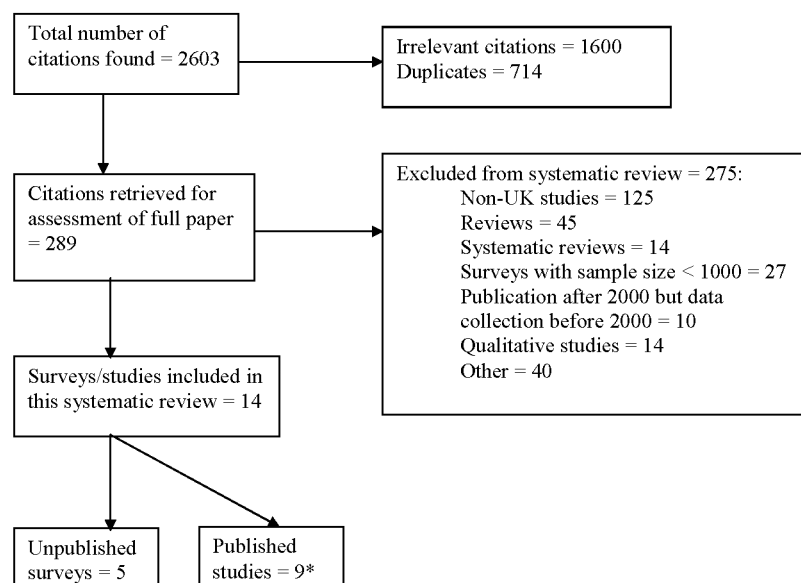
### Identified studies

From the searches, a total of 2603 citations were identified, of which 714 were duplicates. Of the 1889 remaining citations, 289 published papers and reports were retrieved for assessment and 14 studies (15 papers and reports) were included in the systematic review (see Figure 1). The final selection contained five unpublished surveys and nine published primary studies (see Tables 1 and 2 for numbers and background characteristics of participants).

### Health outcomes

#### Physical health

Seven studies reported physical health, namely two surveys of gay and bisexual men (Reid *et al*, 2002; Weatherburn *et al*, 2005, 2008), one survey of lesbian and bisexual women (Hunt and Fish, 2008), and four published studies, one in lesbians and bisexual women (Agrawal *et al*, 2004), one in bisexual men and women (Barker *et al*, 2008), and two in LGB people compared



\* In 10 published papers

**Figure 1** Study flow diagram.

**Table 1** Characteristics of included surveys

Author, date, and name of survey	Sample recruitment	Internal control	Sample size	Ethnicity	Age (years)
Reid <i>et al</i> (2002) (Know the Score)	Gay and HIV health promotion agencies and online questionnaire (UK)	No	14 616 gay/bisexual men	92.8% white, 1.5% black, 2.8% Asian, 2.7% mixed/other	Mean 32.8 (SD 10.5), range 12–82
Sanderson (2002) (Measure for Measure)	Not given (West Midlands)	No	1532 (1083 gay/bisexual men and 449 lesbian/bisexual women)	90% white, 2% black, 3.1% Asian, 4.8% mixed/other	Mean: men, 32.9; women, 29.3; range, 15–73
Weatherburn <i>et al</i> (2005) (Risk and Reflection)	Gay and HIV health promotion agencies and online questionnaire (UK)	No	16 002 gay/bisexual men	93.9% white, 1.2% black, 2.8% Asian, 2.3% mixed/other	Mean 33.9 (SD 11.9), range 14–85
Limbrick (2007) (Revealing LGBT Islington)	Paper and online questionnaire (London)	No	1198 (872 gay/bisexual men, 320 lesbians and 45 trans)	85% white, 3% black, 4% Asian, 6% mixed/other	Weighted mean 36.8
Hunt and Fish (2008) (Prescription for Change)	Online and paper questionnaire (UK)	No	6178 lesbian and bisexual women	82% white British	Range 14–84

with heterosexuals (King and Nazareth, 2006; Warner *et al*, 2004; King *et al*, 2003).

With regard to gay and bisexual men, Reid *et al* (2002) found that 12% of respondents had a long-term illness, health problem or disability that limited their daily activities or the work that they could do ( $n = 1754/14\ 616$ ). Of the total sample, 2.4% had skeletal, muscular, nerve or mobility problems (including back and spinal problems, arthritis, physical injuries, paralysis or nerve damage, or chronic fatigue syndrome), 1.7% had blood or heart problems (including diabetes, angina or hypertension), and 1.1% had respiratory problems (most commonly asthma, but including lung disease, bronchitis, hay fever and sinusitis). Less than 5% of 1754 respondents had limiting gastrointestinal problems, cancers, kidney and liver problems, drug and alcohol misuse, or skin problems.

Weatherburn *et al* (2005) found that 10.2% of their study subjects had a long-term illness, health problem or disability that limited their daily activities or the work they could do ( $n = 1632/16\ 002$ ). Of the total sample, 3.4% had skeletal, muscular, nerve or mobility problems (including back and spinal problems, arthritis, physical injuries, paralysis or nerve damage, or chronic fatigue syndrome), 0.9% had diabetes, 0.9%

had heart problems, angina or hypertension, 0.8% had respiratory problems (most commonly asthma, but including other lung disease), 0.5% had sight or hearing problems and 0.4% had gastrointestinal problems. Less than 2% of 1632 respondents had limiting cancers, kidney and liver problems, or glandular or hormonal problems.

Hunt and Fish (2008) found that 8% of lesbian and bisexual women respondents aged between 50 and 79 years had been diagnosed with breast cancer. The numbers in this survey aged between 50 and 79 years are unclear, but if a normal distribution is assumed and the age range for the total survey was 14–84 years, then approximately 50% of the total of 6000 respondents will have been aged 50 years or over. However, this is likely to be an overestimate, as it is probable that there would have been more younger than older respondents. Agrawal *et al* (2004) investigated causes of infertility in 254 lesbians, compared with 364 heterosexual women, attending a London fertility clinic between 2001 and 2003. They found a significantly higher proportion of lesbians compared with heterosexual women with polycystic ovaries (80% vs. 32%) and polycystic ovary syndrome (38% vs. 14%), but no

**Table 2** Characteristics of included published studies

	Sample recruitment	Study date	Internal control	Sample size	Ethnicity	Age (SD) (range)
Agrawal <i>et al</i> (2004)	Women undergoing fertility treatment (London)	2001–2003	Yes	Women: 254 lesbian, 364 heterosexual	White = 93% Black = 2% Asian = 0.5% Mixed/other = 4.5%	Mean: lesbian, 35.1 (4.2); heterosexual, 35.6 (4.7); range 20–45
Barker <i>et al</i> (2008)	BiCon bisexuality conference attendees	2004	No	<i>n</i> = 92: 43 women, 33 men, 17 trans or genderqueer 20 lesbian/gay 78 bisexual 9 heterosexual 47 queer*	White = 99%	Weighted mean = 33.3 (18 to > 50)
Bolding <i>et al</i> (2002)	Men attending gyms (London)	2000	No	Men: 772 gay or bisexual	White = 90.6%	Median 35 years
King and Nazareth (2006)	General practices (North London)	?	Yes	Men: 38 gay, 23 bisexual, 373 heterosexual Women: 26 lesbian, 85 bisexual, 934 heterosexual	White = 74.7% Black = 12.9% Asian = 3.0% Mixed/other = 4.0%	Men: gay, 35.9 (12.3); bisexual, 37.1 (12.0); heterosexual, 35.9 (12.3) Women: lesbian, 32.7 (11.7); bisexual, 31.4 (11.7); heterosexual, 33.1 (12.1)
Meyer <i>et al</i> (2001)	Warwick University LGB Society (Coventry)	?	Yes	Men: 20 gay, 30 heterosexual Women: 20 lesbian, 30 heterosexual		Men: gay, 20.1 (1.2); heterosexual, 20.0 (1.1) Women: lesbian, 19.8 (0.9); heterosexual, 19.9 (0.8)
McNamee <i>et al</i> (2008)	Random sample (Northern Ireland)	2005	Yes	Men: 21 gay, 331 heterosexual Women: 49 lesbian, 467 heterosexual		16-year-olds
Rivers and Noret (2008)	School children (North of England)	2003	Yes	72 male, 34 female 50% homosexual (same sex attracted), 50% heterosexual (opposite sex attracted)	White = 92% Black = 2% Asian = 4% Mixed/other = 1%	Same sex attracted, 13.8 (1.4); opposite sex attracted, 13.8 (1.2)

Table 2 Continued

Warner <i>et al</i> (2003)	Older lesbians and gay men	–	Yes (not reported)	Men: 85 gay Women: 26 lesbians 14 heterosexuals		65 (6.4) (56–81)
Warner <i>et al</i> (2004) and King <i>et al</i> (2003)	Mainstream press, health clubs, libraries, LGBT networks, snowball sample (England and Wales)	2000–2002	Yes	Men: 656 gay, 85 bisexual, 505 heterosexual Women: 430 lesbian, 113 bisexual, 588 heterosexual	White = 90.3% Black = 3.8% Asian = 2.0% Mixed/other = 4.0%	Men: gay, 36.5 (13.5); bisexual, 35.4 (15.0); heterosexual, 37.5 (14.1) Women: lesbian, 34.2 (10.2); bisexual, 29.9 (10.2); heterosexual, 38.0 (14.4)

\* Percentages given indicate that participants selected more than one identity.

difference in other causes of infertility or subsequent pregnancy rates.

Barker *et al* (2008) recruited 92 participants from an annual bisexuality conference (BiCon) and found that 36% of them had single (24%) or multiple (12%) physical or mental health impairments that interfered with everyday life. Physical impairments included unseen impairment (e.g. diabetes, epilepsy) in 12%, learning difficulty (e.g. dyslexia) in 5%, hearing impairment in 3%, mobility impairment in 3% and visual impairment in 2%.

King and Nazareth (2006) reported the percentages of people scoring less than the 25th centile on the Short-Form 12 Physical Scale of 27% (97/373) for heterosexual men, 16% (3/23) for bisexual men, 35% (13/38) for gay men, 25% (233/934) for heterosexual women, 28% (23/85) for bisexual women and 25% (6/26) for lesbians. Warner *et al* (2004) and King *et al* (2003) reported median (range) Short-Form 12 Physical Scale median results of 53.2 (range 31.4–58.8) for heterosexual men ( $n = 505$ ), 53.1 (36.8–58.9) for gay men ( $n = 656$ ), 52.3 (34.3–58.7) for heterosexual women ( $n = 588$ ) and 52.4 (33.2–59.1) for lesbians ( $n = 430$ ).

### Mental health

A total of 13 studies reported on mental health, namely five unpublished surveys (Reid *et al*, 2002; Weatherburn *et al*, 2005; Sanderson, 2002; Limbrick, 2007; Hunt and Fish, 2008) and eight published studies (Barker *et al*, 2008; Bolding *et al*, 2002; King and Nazareth, 2006; McNamee *et al*, 2008; Meyer *et al*, 2001; Rivers and Noret, 2008; Warner *et al*, 2003, 2004; King *et al*, 2003). The participants in these studies are

listed in Table 2. Incidence results and more general results are reported below, including those for young people aged 16 years or under. Prevalence results for specific diagnoses and validated measures specific to gender and sexual orientation are shown in Table 3.

The incidence of mental health problems was reported in two surveys and one published study. Limbrick (2007) ( $n = 1198$ ) found that mental health problems related to their sexuality were ongoing in 7% of women and 8% of men with depression, 2% of women and 1% of men with eating disorder, 2% of women and 1% of men with a history of self-harm, and 2% of women and 2% of men had attempted suicide. Hunt and Fish (2008) ( $n = 6178$ ) found that 20% of lesbians and bisexual women had deliberately harmed themselves in the last year, and that 5% had attempted suicide in the last year. Bolding *et al* (2002) ( $n = 772$ ) found that 13% of gay and bisexual men attending gyms had had suicidal thoughts in the previous 6 months, 40.1% were depressed, 56.4% were anxious, 82.3% were confident, 85.5% were cheerful and 48.2% had felt unhappy about their body shape or size.

Reid *et al* (2002) ( $n = 14\,616$ ) and Weatherburn *et al* (2005) ( $n = 16\,002$ ) reported long-term illness, health problems or disability that limited respondents' daily activities or the work that they could do, and both studies found that 2.5% ( $n = 358/14\,616$  and  $n = 408/16\,002$ , respectively) had mental health/emotional or neurological problems, most commonly depression or anxiety, but also epilepsy, motivational or developmental problems, eating disorders, sleeping disorder, brain injury, phobias, neurological problems, headache or migraine.

**Table 3** Mental health prevalence results by group for specific diagnoses and validated measures

	Study	Gay men	Bisexual men	Heterosexual men	Lesbian women	Bisexual women	Heterosexual women
GHQ-12 > 4	King and Nazareth (2006)	58%	26%	35%	42%	47%	40%
	Warner <i>et al</i> (2004)/ King <i>et al</i> (2003)	35%	45%		36%	45%	
GHQ-12 mean score	Warner <i>et al</i> (2004)/ King <i>et al</i> (2003)	3.2	4.0		3.5	3.6	
GHQ median score (range)	Warner <i>et al</i> (2004)/ King <i>et al</i> (2003)	2.0 (0–9)		1.0 (0–8)	2.0 (0–10)		2.0 (0–9)
SF-12 mental score median (range)	Warner <i>et al</i> (2004)/ King <i>et al</i> (2003)	47.8 (25.5–57.1)		50.1 (28.3–57.9)	45.3 (25.2–56.6)		49.1 (27.5–57.6)
CIS-R case greater than threshold	Warner <i>et al</i> (2004)/ King <i>et al</i> (2003)	42%	52%	35%	43%	46%	34%
CIS-R mean score	Warner <i>et al</i> (2004)/ King <i>et al</i> (2003)	12.2	14.9		12.7	12.6	
CIS-R median score (range)	Warner <i>et al</i> (2004)/ King <i>et al</i> (2003)	9.0 (0–29)		7.0 (0–25)	9.0 (0–29)		7.0 (0–24)
Depression	Sanderson (2002)	29%		31%			
	Limbrick (2007)	30%		29%			
Eating disorder	Limbrick (2007)	7%		8%			
	Hunt and Fish (2008)				20% (10% bulimia, 7% anorexia)		
	Meyer <i>et al</i> (2001)*	0.85 (2.30)		0.17 (0.06)	0.25 (0.55)		1.27 (1.93)
Considered suicide	Sanderson (2002)	47%		48%			
	Warner <i>et al</i> (2004)/ King <i>et al</i> (2003)	47%	55%		56%	57%	
Attempted suicide	Sanderson (2002)	29%		31%			
	Limbrick (2007)	8%		6%			



Table 3 Continued

	Warner <i>et al</i> (2004)/ King <i>et al</i> (2003)	25%	27%		31%	33%	
Considered self-harm	Warner <i>et al</i> (2004)/ King <i>et al</i> (2003)	50%		33%	57%		33%
Self-harm carried out	Sanderson (2002)	21%		31%			
	Limbrick (2007)	3%		6%			
	Warner <i>et al</i> (2004)/ King <i>et al</i> (2003)	26.5%		13.2%	31.8%		15.2%
CAGE high score	King and Nazareth (2006)	34%	39%	32%	31%	41%	18%
AUDIT case	Warner <i>et al</i> (2004)/ King <i>et al</i> (2003)	46%	44%		43%	43%	
AUDIT median score (range)	Warner <i>et al</i> (2004)/ King <i>et al</i> (2003)	7.0 (2–19)		8.0 (2–19)	7.0 (1–17)		5.0 (1–14)

\* Eating Attitudes Test bulimia mean (SD) scores.

GHQ, General Health Questionnaire; SF, Short Form; CIS-R, Clinical Interview Schedule – Revised; CAGE, alcoholism questionnaire (Cut down, Annoyed, Guilty, Eye-opener); AUDIT, Alcohol Use Disorders Identification Test.

Barker *et al* (2008) ( $n = 92$ ) found that 25% of their respondents had had a diagnosis of a mental health problem from a professional (depression, 16%; anxiety, 8%; self-harm, 8%; seasonal adjustment disorder, 7%; panic disorder, 3%; post-traumatic stress disorder, 3%; bipolar disorder, 2%; obsessive-compulsive disorder, 2%; eating disorder, 1%; schizoaffective disorder, 1%. There was also one case of adult attention deficit disorder and of Asperger's syndrome. Warner *et al* (2003) ( $n = 125$ ) found that 16% of the sample of older lesbians and gay men scored above the threshold on the GHQ-28.

McNamee *et al* (2008) ( $n = 868$ ) found that the percentage GHQ-12 cases (score of 4 or more items) was 19.2% for opposite-sex-attracted and 40.9% for same-/both-sex-attracted young people.

Rivers and Noret (2008) ( $n = 106$ ) administered the Brief Symptom Inventory (53-item version), and reported mean depression scores of 0.60 (SD, 0.81) for opposite-sex-attracted and 1.29 (1.25) for same-sex-attracted children, and anxiety scores of 0.50 (0.70) for opposite-sex-attracted and 1.13 (1.18) for same-sex-attracted children. The scores for thoughts about ending life were 0.65 (1.08) for opposite-sex-

attracted and 1.02 (1.52) for same-sex-attracted children.

The prevalence results shown in Table 3 suggest either the same or worse levels of mental health in LGB people compared with heterosexuals (where comparisons are available). They also indicate how little research has been conducted. For example, only two unpublished reports (Sanderson; 2002; Limbrick, 2007) measured depression, and neither of them had a heterosexual control group. There were no results for anxiety or dementia.

## Discussion

These results demonstrate how little research is available on the physical and mental health of LGBT people in the UK. If the results of the systematic review are taken at face value, they suggest a range of point estimates for physical and mental health outcomes. The general trend of results suggests worse health, particularly some aspects of mental health, in LGB people compared with heterosexual comparators or

routinely collected information on the general population. There were no results from large cohort studies, so the incidence of any specific condition was not available. There were no routinely collected data from disease registries, and little or no information on common diseases such as cardiovascular diseases, despite the increased rates of smoking and other risky health behaviours in some of the groups studied (Meads *et al*, 2009). Where particular conditions were identified, such as higher rates of polycystic ovaries in lesbians seeking fertility treatment, there was no follow-up research to suggest or explain why the underlying higher levels of androgens could be present and what could be done to alleviate the problems that they might be causing. It is not known whether higher androgen levels occur generally in lesbians and bisexual women compared with heterosexual women.

No studies on transgender people's health that matched the inclusion criteria for this systematic review could be located. This was particularly disappointing in view of the fact that it is known that some trans people have considerable mental health difficulties, and there is a high rate of suicide attempts in this population (Whittle *et al*, 2007). There is some information about their quality of life (World Professional Association for Transgender Health, 2011), but very little is published internationally about their general physical health. It is important to highlight this gap so that it can be addressed in the future.

Given that an estimated 6–7% of the UK population are LGBT, this dearth of information is surprising and very worrying. It has been assumed that lesbians and bisexual women are at lower risk of cervical cancer than the general population. Cervical screening rates are only around 50% (Meads *et al*, 2009), and some lesbians are turned away from screening and/or told that they do not need to attend (Hunt and Fish, 2008). However, there is no information on cervical cancer rates in the UK, and the fact that a higher proportion of lesbians and bisexual women report having heterosexual sex before the age of 16 years (43% vs. 21%) (Mercer *et al*, 2007) suggests that some lesbians and bisexual women might be at higher rather than lower risk.

The rate of eating disorders in gay and bisexual men was approximately 7%. If 0.2% of the population of men in England (around 25 million) have an eating disorder (National Collaborating Centre for Mental Health, 2004), this would be equivalent to around 50 000 men. If 5% of the population of men in England are gay or bisexual, this would be equivalent to around 1 250 000 men, and if 7% of these have an eating disorder, this would suggest that there are 875 000 gay and bisexual men with an eating disorder (i.e. many more than 50 000 men). Either the rates found in the LGB samples are too high, or else many gay and bisexual men are not coming forward for treatment

and so have not been included in eating disorder prevalence statistics for the general population. It is unclear whether any eating disorder treatment clinics in the UK have ever systematically asked their clients, particularly the men, whether they were LGB and/or whether they had experienced any difficulties with regard to their sexual identity.

Similarly, if 2.4% of the general population of England (around 50 million) self-harm, this would be equivalent to around 1 200 000 people, and if around 25% of LGB people actually self-harm (i.e. 50% of those who considered self-harm), that would be equivalent to 750 000 LGB people self-harming. This suggests that more than 50% of all people who are self-harming are LGB. It is unclear whether any self-harm treatment clinics in the UK have ever systematically asked their clients whether they were LGB and/or whether they had experienced any difficulties with regard to their sexual identity. However, in one self-harm support group approximately 50% of the participants are LGBT (Karen Thorne, Wolverhampton Primary Care Trust Self-harm Network, December 2008, personal communication). The results suggest that action directed at reducing self-harm specifically in the LGB population would have a disproportionate effect on reducing the overall statistic.

These findings raise politico-legal issues with regard to the ability of the NHS to fulfil equalities duties effectively in the absence of good data. The public sector in the UK is subject to a growing body of policy and legislation relating to equalities, culminating in the Equalities Act (2006) and the founding of the Commission for Equality and Human Rights (CEHR) in 2007. This legislation requires public bodies, including the NHS, to look at the evidence, examine their processes, and find ways of delivering services for everyone, regardless of race, gender, disability, age, religion or belief, sexual orientation or gender identity. As this review shows, the parlous state of the current evidence makes this extremely difficult.

A second issue concerns organisations such as the National Institute for Health and Clinical Excellence (NICE), which have to develop guidance and recommendations for the NHS in which the question of health inequities, in all its forms, must figure. As far as the question of sexual orientation is concerned, as can be seen from this systematic review, the task is rendered much more difficult by the absence of basic information.

This systematic review raises other social issues, not all of which can be addressed here (e.g. the invisibility of sexual minority patients within the UK health services and in health research). It is clear that very little has been done so far because of lack of, among other factors, interest, perceived need, funding, or staff, or combinations of these factors. If large cohort studies such as the Avon Longitudinal Study of Parents

and Children (ALSPAC) (Golding, 1990) or the Whitehall II study (Marmot *et al*, 1991) included questions on sexual orientation and gender identity, this lack of information could be addressed very quickly. These cohort studies receive government funding (e.g. from the Medical Research Council), so could be subject to the same kind of data collection requirements as other government-funded organisations.

It is clearly evident from the small amount of research that has been conducted that there is a need to explain the poorer health that is found in LGB people. There is an obvious need to establish the general health profile of trans men and women. The fact that there are unpublished surveys suggests that some funding is available, but this may not be from mainstream health research funders such as the National Institute for Health Research. Indeed, the survey by Hunt and Fish (2008) was conducted by a charity (Stonewall) and funded by Lloyd's Bank. There is considerable interest in health within the LGBT community, but this has evidently not yet carried over to the mainstream.

## Limitations

The main strength of this systematic review is that it was conducted to the highest standards by experts in systematic reviewing and in LGBT health, so is likely to have included all of the relevant studies. The major weakness of the results lies in the poor quality of most of the included studies. Most of the cross-sectional surveys had small sample sizes, particularly the published studies; in many instances the study design and/or methodology was poor, so the results may not be very accurate. We focused on studies in which people had to identify as being LGBT. This is problematic because, for the purposes of sexual health research, people are often classified by their behaviour, such as women who have sex with women (WSW) within a certain period of time (Weatherburn *et al*, 2005; Mercer *et al*, 2007). However, behaviour and identity are by no means so clear-cut:

Of the ten men who regarded themselves as heterosexual, two had experienced a sexual relationship with a man in the past year. Of those women who identified as heterosexual, 67% had engaged in a sexual relationship with a woman in the last 12 months. Additionally, a third of women who identified as lesbian had experienced a sexual relationship with a man in the past twelve months.

(Buckley and Sanderson, 2005)

Such statements are often found in LGB surveys.

The use of the terms MSM and WSW is an incomplete way of describing people in that these terms only describe recent sexual behaviour, and say little about

individual social behaviour. They obscure the social dimensions of sexual orientation, and undermine the self-labelling of people (Young and Meyer, 2005). People may or may not express their sexual orientation in their behaviour. Sexual behaviour classification was not included in this systematic review, so studies oriented towards sexual behaviour research were excluded, even if they measured general physical and mental health as well as sexual health (e.g. Mercer *et al*, 2007). However, in this study the general health results showed that 31% of WSW had had an illness lasting for more than 3 months in the previous 5 years, compared with 24.2% of WSMW and 14.9% of WSM (Mercer *et al*, 2007). No other behaviour classification studies with general health results were found. All of this highlights the difficulties involved in using categorical constructs to capture the complexities of relationships in diverse, dynamic and overlapping life worlds (Kelly, 2006).

The searches were originally conducted in 2008, but continual surveillance of the medical media and LGBT researchers online since this time has not yielded any more unpublished surveys eligible for inclusion. One published study has become available which is an analysis of the Adult Psychiatric Morbidity Survey 2007, comparing the prevalence of mental health conditions by sexual orientation (Chakraborty *et al*, 2011). It found that non-heterosexual people had elevated levels of mental health problems (including depression, anxiety, obsessive-compulsive disorder, phobic disorder, probable psychosis, drug dependence, alcohol dependence, suicidal thoughts, suicide attempts and self-harm) and of service use (GP contacts and community care services). These findings are consistent with previous research reported in this systematic review.

## Conclusion

A number of deeper empirical and theoretical problems remain. These relate to the question of sexual orientation as a social determinant of health in its own right and the relationship or intersection between sexual orientation and socio-economic position, ethnicity and other social differences. The nature of these relationships cannot be determined on the basis of the systematic review reported here. However, several lines of empirical and theoretical research could be built on the platform provided by this review.

The review shows that the general health of the LGB population is worse than that of the population as a whole. This requires explanation at two levels. First, what are the causal mechanisms operating at the individual level which produce particular disease outcomes in individuals linked to their social position?

What are the specific features of sexual orientation that produce particular individual health outcomes (Kelly, 2009)? Secondly, what are the causes of the population pattern of LGB health? Socio-economic position, ethnicity, gender and sexual orientation can be treated as characteristics of individuals, where the characteristic is something that the person has or possesses in some way. In sociological terms these categories are much more than individual characteristics; they represent and describe *relationships* between groups, including social classes, different ethnic groups, men and women, able-bodied and disabled people, and heterosexual and LGBT people. The clue to understanding the pattern at population level is in understanding and describing how these relationships between groups, which are about the struggle for power and scarce resources, produce particular patterns of health outcomes. Of course these groups do not exist in isolation. People occupy many social positions, and these positions intersect and interact in complex life worlds. The interaction produces multiple complex patterns and outcomes, one of which is health. It is not yet clear empirically whether the interaction in the intersections is additive, synergistic or of some other type. This is an important deficit in our knowledge.

The intersections of the dimensions of social difference are important sociologically, as they open up a set of questions about the nature of social stratification and the complexities of the power relationships between groups. The intersections are also important epidemiologically, posing questions about the causal links between distal social factors and health outcomes in a way that implies not a simple linear determinism but a set of complex interactions between a range of social and other health factors. These are questions which neither epidemiology nor sociology have been particularly good at answering. This review cannot answer these questions either. In fact it demonstrates that we are not yet even at first base. However, it represents an important initial step in describing a research agenda involving epidemiology, sociology and biomedicine in unravelling a highly important issue which goes well beyond LGBT people to the broader population where, among other things, the same intellectual problems have yet to be solved.

#### ACKNOWLEDGEMENT

Most of this research was funded through the West Midlands Regional Public Health Levy.

#### REFERENCES

- Acheson D (1998) *Independent Inquiry into Inequalities in Health: Report*. London: The Stationery Office.
- Agrawal R, Sharma S, Bekir J *et al* (2004) Prevalence of polycystic ovaries and polycystic ovary syndrome in lesbian women compared with heterosexual women. *Fertility and Sterility* 82:1352–7.
- Anthias F (1990) Race and class revisited – conceptualising race and racisms. *Sociological Review* 38:19–42.
- Anthias F (1992) Connecting race and ethnic phenomena. *Sociology* 26:421–38.
- Anthias F (2005) Social stratification and social inequality: models of intersectionality and identity. In: Devine F, Savage M, Scott J and Crompton R (eds) *Rethinking Class: culture, identities and lifestyles*. London: Palgrave Macmillan, pp. 24–45.
- Anthias F and Yuval-Davis N (1983) Contextualizing feminism: gender, ethnic and class divisions. *Feminist Review* 15:62–75.
- Anthias F and Yuval-Davis N (1992) *Racialized Boundaries: race, nation, gender, colour and class and the anti-racist struggle*. London: Routledge.
- Anthias F and Lazarides G (1999) *Into the Margins: migration and exclusion in Southern Europe*. Aldershot: Ashgate.
- Barker M, Bowes-Catton H, Iantaffi A *et al* (2008) British bisexuality: a snapshot of bisexual representations and identities in the United Kingdom. *Journal of Bisexuality* 1–2:141–62.
- Beaglehole R and Bonita R (2008) Global public health: a scorecard. *Lancet* DOI:10.1016/S0140–6736(08)61558–5.
- Berkman LF, Glass T, Brissette I *et al* (2000) From social integration to health: Durkheim in the new millennium. *Social Science and Medicine* 51:843–57.
- Blas E, Gilson L, Kelly MP *et al* (2008) Addressing social determinants of health inequities: what can the state and civil society do? *Lancet* 372:1684–9.
- Bolding G, Sherr L and Elford J (2002) Use of anabolic steroids and associated health risks among gay men attending London gyms. *Addiction* 97:195–203.
- Bonnefoy J, Morgan A, Kelly MP *et al* (2007) *Constructing the Evidence Base on the Social Determinants of Health: a guide*. [www.who.int/social\\_determinants/knowledge\\_networks/add\\_documents/mekn\\_final\\_guide\\_112007.pdf](http://www.who.int/social_determinants/knowledge_networks/add_documents/mekn_final_guide_112007.pdf)
- Braveman P (2003) Monitoring equity in health and health care: a conceptual framework. *Journal of Health, Population and Nutrition* 21:181–92.
- Braveman P (2006) Health disparities and health equity: concepts and measurement. *Annual Review of Public Health* 27:167–94.
- Buckley E and Sanderson P (2005) *Measure for Measure 2: needs assessment of services for lesbian, gay and bisexual individuals in the West Midlands*. Stoke on Trent: Staffordshire University.
- Chakraborty A, McManus S, Brugha TS *et al* (2011) Mental health of the non-heterosexual population of England. *British Journal of Psychiatry* 198:143–8.
- Cockerham WC (2007) *Social Causes of Health and Disease*. Cambridge: Polity.
- Commission on Social Determinants of Health (2008) *Closing the Gap in a Generation: health equity through action on the social determinants of health*. Geneva: World Health Organization.
- Department of Health, Health Inequalities Unit (2007) *Implementation Plan for Reducing Health Inequalities in*

- Infant Mortality: a good practice guide*. London: Department of Health.
- Department of Trade and Industry (2004) *Final Regulatory Impact Assessment: Civil Partnership Act 2004*. London: Department of Trade and Industry.
- Evans RG and Stoddart GL (2003) Consuming research, producing policy. *American Journal of Public Health* 93:371–9.
- Frohlich KL, Corin H and Potvin L (2001) A theoretical proposal for the relationship between context and disease. *Sociology of Health and Illness* 23(6):776–97.
- Glass TA and McAtee MJ (2006) Behavioral science at the crossroads in public health: extending horizons, envisioning the future. *Social Science and Medicine* 62:1650–71.
- Goldberg M, Melchior M, Leclerc A *et al* (2003) Épidémiologie et déterminants sociaux des inégalités de santé. *Revue d'Épidémiologie et de Santé Publique* 51:381–401.
- Golding J (1990) Children of the nineties. A longitudinal study of pregnancy and childhood based on the population of Avon (ALSPAC). *West of England Medical Journal* 105(3):80–82.
- Graham H (2000) (ed.) *Understanding Health Inequalities*. Buckingham: Open University Press.
- Hunt R and Fish J (2008) *Prescription for Change*. London: Stonewall.
- Karasek R (1996) Job strain and the prevalence and outcome of coronary artery disease. *Circulation* 94:1140–41.
- Kelly MP (2006) Mapping the life world: a future research priority for public health. In: Killoran A, Swann C and Kelly MP (eds) *Public Health Evidence: tackling health inequalities*. Oxford: Oxford University Press.
- Kelly MP (2009) The individual and the social level in public health. In: Killoran A and Kelly MP (eds) *Evidence-Based Public Health: effectiveness and efficiency*. Oxford: Oxford University Press.
- Kelly MP (2010) The axes of social differentiation and the evidence base on health equity. *Journal of the Royal Society of Medicine* 103:266–72.
- Kelly MP and Doohan E (2012) The social determinants of health. In: Merson MH, Black RE and Mills AJ (eds) *Global Health: diseases, programs, systems and policies*, 3rd edn. Burlington, MA: Jones and Bartlett. pp. 75–113.
- King M and Nazareth I (2006) The health of people classified as lesbian, gay and bisexual attending family practitioners in London: a controlled study. *BMC Public Health* 6:127.
- King M, McKeown E, Warner J *et al* (2003) Mental health and quality of life of gay men and lesbians in England and Wales – controlled, cross-sectional study. *British Journal of Psychiatry* 183:552–8.
- King M, Semlyen J, Tai SS *et al* (2008) A systematic review of mental disorder, suicide and deliberate self-harm in lesbian, gay and bisexual people. *BMC Psychiatry* 8:1–17.
- Krieger N (2001) Theories for social epidemiology in the 21st century: an ecosocial perspective. *International Journal of Epidemiology* 30:668–77.
- Krieger N (2008a) Proximal, distal, and the politics of causation: what's level got to do with it? *American Journal of Public Health* 98:221–30.
- Krieger N (2008b) Ladders, pyramids, and champagne: the iconography of health inequities. *Journal of Epidemiology and Community Health* 62:1098–104.
- Levine R and the What Works Working Group with Kinder M (2004) *Millions Saved: proven successes in global health*. Washington, DC: Center for Global Development.
- Limbrick G (2007) *Revealing Lesbian Gay Bisexual Trans Islington*. London: Word Works.
- McNamee H, Lloyd K, and Schubotz D (2008) Same sex attraction, homophobic bullying and mental health of young people in Northern Ireland. *Journal of Youth Studies* 11:33–46.
- Mackenbach J (2005) *Health Inequalities: Europe in profile*. London: COI for the UK Presidency of the EU.
- Marmot M (2010) *Fair Society, Healthy Lives: a strategic review of health inequalities in England post-2010*. [www.ucl.ac.uk/ghcg/marmotreview/Documents/finalreport](http://www.ucl.ac.uk/ghcg/marmotreview/Documents/finalreport)
- Marmot M and Wilkinson R (1999) (eds) *Social Determinants of Health*. Oxford: Oxford University Press.
- Marmot MG, Davey Smith G, Stansfeld SA *et al* (1991) Health inequalities among British civil servants: the Whitehall II study. *Lancet* 337:1387–93.
- Meads C, Pennant M, McManus J *et al* (2009) *A Systematic Review of Lesbian, Gay, Bisexual and Transgender Health in the West Midlands Region of the UK Compared to Published UK Research*. Birmingham: Unit of Public Health, Epidemiology and Biostatistics, West Midlands Health Technology Assessment Group, University of Birmingham.
- Mercer CH, Bailey JV, Johnson AM *et al* (2007) Women who report having sex with women: British national probability data on prevalence, sexual behaviors, and health outcomes. *American Journal of Public Health* 97:1126–33.
- Meyer C, Blissett J and Oldfield C (2001) Sexual orientation and eating psychopathology: the role of masculinity and femininity. *International Journal of Eating Disorders* 29: 314–18.
- Millward L, Kelly MP and Nutbeam D (2003) *Public Health Interventions Research: the evidence*. [www.nice.org.uk/aboutnice/whoweare/aboutthehda/hdapublications/hdapublications.jsp?o=497](http://www.nice.org.uk/aboutnice/whoweare/aboutthehda/hdapublications/hdapublications.jsp?o=497)
- National Collaborating Centre for Mental Health (2004) *Core Interventions in the Treatment and Management of Anorexia Nervosa, Bulimia Nervosa and Related Eating Disorders*. London: British Psychological Society and the Royal College of Psychiatrists.
- National Institute for Health and Clinical Excellence (2009) *Methods for the Development of NICE Public Health Guidance*, 2nd edn. [www.nice.org.uk/aboutnice/howwe work/developingnicepublichealthguidance/publichealthguidanceprocessandmethodguides/public\\_health\\_guidance\\_process\\_and\\_method\\_guides.jsp?domedia=1andmid=F6A97CF4-19B9-E0B5-D42B4018AE84DD51](http://www.nice.org.uk/aboutnice/howwe work/developingnicepublichealthguidance/publichealthguidanceprocessandmethodguides/public_health_guidance_process_and_method_guides.jsp?domedia=1andmid=F6A97CF4-19B9-E0B5-D42B4018AE84DD51)
- Oliver M and Barnes C (1998) *Disabled People and Social Policy: from exclusion to inclusion*. London: Longman.
- Parliamentary Forum on Gender Identity (2009) *Guidelines for Health Organisations Commissioning Treatment Services for Trans People*, 2nd edn. Ashted, Surrey: Gender Identity Research and Education Society.
- Public Health Resource Unit (2009) *CASP Appraisal Tools*. [www.sph.nhs.uk/sph-files/casp-appraisal-tools](http://www.sph.nhs.uk/sph-files/casp-appraisal-tools) (accessed 22 February 2012).
- Reid D, Weatherburn P, Hickson F *et al* (2002) *Know the Score. Findings from the National Gay Men's Sex Survey*

2001. London: University of Portsmouth and Sigma Research.
- Rivers I and Noret N (2008) Well-being among same-sex and opposite-sex attracted youth at school. *School Psychology Review* 37:174–87.
- Sanderson P (2002) *Measure for Measure: assessing the needs of the LGBT community in the West Midlands 2002*. PowerPoint presentation. Birmingham: West Midlands Regional Health Authority.
- Siegrist J and Marmot M (2004) Health inequalities and the psychosocial environment: two scientific challenges. *Social Science and Medicine* 58:1463–73.
- Siegrist J and Marmot M (2006) *Social Inequalities in Health: new evidence and policy implications*. Oxford: Oxford University Press.
- Solar O and Irwin A (2007) *Towards a Conceptual Framework for Analysis and Action on the Social Determinants of Health*. Geneva: World Health Organization and the Commission on Social Determinants of Health.
- Starfield B (2006) State of the art in research on equity and health. *Journal of Health Politics, Policy and Law* 31:11–32.
- Starfield B (2007) Pathways of influence on equity in health. *Social Science and Medicine* 64:1355–62.
- Taylor SE, Repetti RL and Seeman T (1997) Health psychology: what is an unhealthy environment and how does it get under the skin? *Annual Review of Psychology* 48:411–47.
- Townsend P and Davidson N (eds) (1982) *Inequalities in Health: the Black Report*. London: Penguin.
- Warnecke RB, Oh A, Breen N *et al* (2008) Approaching health disparities from a population perspective: the National Institutes of Health Centers for Population Health and Health Disparities. *American Journal of Public Health* 98:1608–15.
- Warner JP, Wright L, Blanchard M *et al* (2003) The psychological health and quality of life of older lesbians and gay men: a snowball sampling pilot survey. *International Journal of Geriatric Psychiatry* 18:754–5.
- Warner J, McKeown E, Griffin M *et al* (2004) Rates and predictors of mental illness in gay men, lesbians and bisexual men and women. *British Journal of Psychiatry* 2004; 185:479–85.
- Weatherburn P, Reid D, Hickson F *et al* (2005) *Risk and Reflection. Findings from the UK Gay Men's Sex Survey 2004*. London: Sigma Research, University of Portsmouth.
- Weatherburn P, Hickson F, Reid D *et al* (2008) *Multiple Chances. Findings from the UK Gay Men's Sex Survey 2006*. London: Sigma Research, University of Portsmouth.
- Whittle S, Turner L and Al-Alami M (2007) *Engendered Penalties: transgender and transsexual people's experiences of inequality and discrimination*. London: Press for Change and Manchester Metropolitan University.
- Wilkinson R and Pickett K (2009) *The Spirit Level*. London: Allen Lane.
- World Cancer Research Fund/American Institute for Cancer Research (2009) *Policy and Action for Cancer Prevention. Food, nutrition, and physical activity: a global perspective*. Washington, DC: American Institute for Cancer Research.
- World Professional Association for Transgender Health (2011) *Standards of Care for the Health of Transsexual, Transgender, and Gender Nonconforming People*, 7th edn. Minneapolis, MN: World Professional Association for Transgender Health .
- Young RM and Meyer IH (2005) The trouble with “MSM” and “WSW”: erasure of the sexual-minority person in public health discourse. *American Journal of Public Health* 95:1144–9.
- Yuval-Davis N (1994) Women, ethnicity and empowerment. *Feminism and Psychology* 4:179–97.
- Yuval-Davis N (1997) *Gender and Nation*. London: Sage Publications.
- Yuval-Davis N (2006a) Intersectionality and feminist politics. *European Journal of Women's Studies* 13:193–209.
- Yuval-Davis N (2006b) Belonging and the politics of belonging. *Patterns of Prejudice* 40:196–213.
- Yuval-Davis N (2007) Human/women's rights and feminist transversal politics. In: Marx Ferree M and Tripp AM (eds) *Global Feminism: transnational women's activism, organizing and human rights*. New York: New York University Press.
- Yuval-Davis N (2010) Beyond the recognition and redistribution dichotomy: intersectionality and stratification. In: Lutz H, Herrera Vivar MT and Supik L (eds) *Framing Intersectionality: debates on a multi-faceted concept in gender studies*. Aldershot: Ashgate.

#### CONFLICTS OF INTEREST

None.

#### ADDRESS FOR CORRESPONDENCE

Dr Catherine Meads, Senior Lecturer in Health Technology Assessment, Centre for Primary Care and Public Health, Barts and the London School of Medicine and Dentistry, Queen Mary, University of London, Yvonne Carter Building, 58 Turner Street, Whitechapel, London E1 2AB, UK. Tel: 0207 882 7211; email: [C.meads@qmul.ac.uk](mailto:C.meads@qmul.ac.uk)

Received 7 September 2011

Accepted 4 January 2012