



An evaluation of self-perceived knowledge, attitudes and behaviours of UK oncologists about LGBTQ+ patients with cancer



Alison May Berner ^{1,2}, Daniel Johnathan Hughes ^{3,4}, Hannah Tharmalingam,^{5,6} Tom Baker,⁴ Benjamin Heyworth,⁷ Susana Banerjee,⁸ Daniel Saunders⁷

To cite: Berner AM, Hughes DJ, Tharmalingam H, *et al.* An evaluation of self-perceived knowledge, attitudes and behaviours of UK oncologists about LGBTQ+ patients with cancer. *ESMO Open* 2020;5:e000906. doi:10.1136/esmoopen-2020-000906

Received 12 July 2020
Revised 28 September 2020
Accepted 7 October 2020



Watch Video

esmoopen.bmj.com

ABSTRACT

Introduction Over one million people in the UK identify as LGBTQ+ (lesbian, gay, bisexual, transgender, queer or questioning). Research has shown that this population experience differing cancer risk factors compared with non-LGBTQ+ patients and persistent inequalities in cancer care. Literature concerning the knowledge of oncologists of this group's healthcare needs is limited; our study aimed to evaluate knowledge, attitudes and behaviours of UK oncologists about LGBTQ+ patients.

Methods A 53-question survey was delivered via a secure online platform. Questions covered respondent demographics, knowledge, attitudes and behaviours with the majority of responses on a Likert scale. Oncologists were recruited via email from professional bodies and social media promotion. Informed consent was sought and responses fully anonymised. Multifactorial ordinal logistic regression and Fisher's exact test were used to assess for interactions between demographics and responses with Holm-Bonferroni multiple testing correction.

Results 258 fully completed responses were received. Respondents had a median age of 43 years (range 28–69); 65% consultants and 35% registrars; 42% medical, and 54% clinical, oncologists. 84% felt comfortable treating LGBTQ+ patients but only 8% agreed that they were confident in their knowledge of specific LGBTQ+ patient healthcare needs. There were low rates of routine enquiry about sexual orientation (5%), gender identity (3%) and preferred pronouns (2%). 68% of oncologists felt LGBTQ+ healthcare needs should be a mandatory component of postgraduate training.

Conclusions This survey showed that UK oncologists feel comfortable treating LGBTQ+ patients but may fail to identify these patients in their clinic, making it more difficult to meet LGBTQ+ healthcare needs. There is self-awareness of deficits in knowledge of LGBTQ+ healthcare and a willingness to address this through postgraduate training. Educational resources collated and developed in accordance with this study would potentially improve the confidence of oncologists in treating LGBTQ+ patients and the cancer care these patients receive.

INTRODUCTION

LGBTQ+ stands for lesbian, gay, bisexual, transgender, queer or questioning but the acronym is used to encompass the broader

Key questions

What is already known about this subject?

- ▶ LGBTQ+ (lesbian, gay, bisexual, transgender, queer or questioning) patients are known to experience inequalities in cancer care.
- ▶ Studies from the USA have suggested that this may in part be attributable to a lack of knowledge among healthcare providers about the specific healthcare needs of this population.

What does this study add?

- ▶ We surveyed UK oncology specialists' knowledge, attitudes and behaviours when treating LGBTQ+ patients, the first study of this kind in Europe.
- ▶ UK oncologists feel comfortable treating LGBTQ+ patients but lacked population-specific cancer knowledge.
- ▶ UK oncologists may fail to encourage disclosure of gender or sexual minority status in their clinic.
- ▶ UK oncologists feel ill-prepared for the cancer care needs of the LGBTQ+ population after completing current UK medical training curricula and would welcome further educational resources.

How might this impact on clinical practice?

- ▶ Greater awareness of the need for training around the specific needs of LGBTQ+ patients with cancer, and subsequent development of educational resources for healthcare providers, has the potential to improve treatment outcomes and quality of care for this patient group.

population of sexual and gender minority individuals. The term transgender or trans is used to describe someone whose gender identity does not align with the sex they were assigned at birth. Those whose gender identity and sex assigned at birth do align are described as being cisgender, and a number of other diverse identities exist. It is estimated that 5%–7% of the UK are LGB (lesbian, gay or bisexual)¹ and approximately 0.5%–4.5% of adults identify as gender diverse.²

© Author (s) (or their employer(s)) 2020. Re-use permitted under CC BY-NC. No commercial re-use. Published by BMJ on behalf of the European Society for Medical Oncology.

For numbered affiliations see end of article.

Correspondence to

Dr Alison May Berner;
alisonmayberner@gmail.com

Despite progressive equality and diversity legislation, LGBTQ+ individuals worldwide continue to face discrimination when accessing healthcare.^{3,4} They experience higher incidence of a number of diseases as well as risk factors for ill health,⁵ a lack of visibility in healthcare research and provision,^{5,6} and frequent cis-heteronormative assumptions by healthcare providers may create a barrier to the patient/provider relationship, holistic care planning and support.^{7,8}

Cancer care is an area of particular importance, with a number of cancer types having differing risk factors, incidence, screening and treatment considerations in the LGBTQ+ population. Although it is wrong to consider LGBTQ+ people as a homogeneous group, certain sexual and gender minority subpopulations have higher rates of obesity, smoking, alcohol consumption and blood-borne virus infection compared with the general population,^{4,9–11} putting them at higher risk of various cancer types.¹² Meanwhile, sexual orientation and trans status recording in cancer incidence data continues to be poor.

There are inequalities in cancer screening, where lesbian and bisexual women, and trans people assigned female at birth, have lower rates of cervical cancer screening uptake.^{13,14} Gender-diverse patients in particular may require thoughtful planning of their oncology treatment, including possible changes to any gender affirming medications such as hormones, procedures and surgeries. For example, work by one Dutch group demonstrated that rates of breast cancer in both trans men and trans women were higher than those for cis men and lower than those for cis women, and this is modulated by factors including duration on cross-sex hormones and chest surgery.¹⁵ For these patients, it is important to discuss the risks and benefits of pausing or stopping hormones during investigation and treatment, weighing up the physiological and psychological effects. In addition, trans patients may experience degrees of dysphoria following the diagnosis of a cancer in an organ associated with their sex assigned at birth.¹⁶ Sexual function may also be poorer for LGBTQ+ patients following treatment, as for gay men with prostate cancer, which will be important treatment planning and consent.^{17,18}

Of note, there is also increasing evidence of the importance of sex assigned at birth as a marker of prognosis, adverse events and response to treatment in non-sex-related cancers.^{19–22} A recent European Society for Medical Oncology (ESMO) report²³ recommended that ‘men and women with non-sex-related cancers should no longer be considered as subgroups, but as biologically distinct groups of patients’. This raises clinical questions for the treatment of trans patients, which need to be answered in order to provide optimal care. These include to what extent karyotype, hormones and behaviours govern the sex-related differences observed in such studies, how these studies should be interpreted for trans patients now, and how we involve these patients in research and study design now to improve their treatment in the future.

Further, the practice of oncology necessitates a particularly well-developed therapeutic relationship. Respect for a patient’s gender identity and sexual orientation, with correct use of pronouns, preferred terminology for body parts and understanding of their relationships are key to building rapport.^{7,8} A lack of recognition of same-sex relationships and carers is one of the most significant inequalities linked to the experiences of LGBTQ+ people affected by cancer.²⁴

The charity Cancer Research UK (CRUK) first published a policy statement recognising the need to better address cancer care for LGBTQ+ patients in 2008.²⁵ In 2017, workforce development was one of the five areas of recommendations in a position statement from the American Society of Clinical Oncology (ASCO) on reducing cancer health disparities among sexual and gender minority populations.²⁶ Similar directives have not yet been made by bodies responsible for oncology specialist training in the UK and Europe, and LGBTQ+ cancer care does not feature in the ESMO/ASCO Recommendations for Medical Oncology Training.²⁷

While there is growing UK-based literature exploring treatment of LGBTQ+ patients in cancer services from the patient perspective,^{7,8,28} there is a paucity of literature exploring how provider factors may be contributing to this. This study therefore was designed to assess knowledge, attitudes and behaviours of oncologists in the UK when treating LGBTQ+ patients with cancer, with a view to understanding the educational needs in this area, and how they might be addressed through policy and training.

METHODS

A 53-question survey was designed to assess self-perceived knowledge (n=23), attitudes (n=10) and behaviours (n=12) of oncologists when treating LGBTQ+ patients with cancer, and factors which may affect these, including demographics. Aside from questions on participant demographics, majority Likert scale responses were used.

Existing literature was used to shape the design of the study, as well as feedback received from a number of UK bodies responsible for the training of oncologists including Association of Cancer Physicians (ACP), Royal College of Radiologists (RCR) and Royal College of Physicians. In order to ensure questions pertinent to the LGBTQ+ patient with cancer experience were asked, patient feedback on our survey was sought via the CRUK Patient and Public Involvement Team.

The project was approved by UCL Research Ethics Committee (project ID: 15771/001) with formal endorsement from the RCR and ACP.

The survey was delivered via a secure online platform (Opinio V.7.12, ObjectPlanet), informed consent was sought, and responses were fully anonymised.

The study aimed to recruit consultant and trainee (higher specialty), medical and clinical oncologists throughout the UK. Participants were invited by email invitation to all members of the ACP, via newsletter and

follow-up email to clinical oncology members of the RCR and via advertising on Twitter.

The survey remained open for 6 weeks from 9 October 2019 until 20 November 2019, during which time 263 responses were received. Results were analysed for the 258 participants who completed the survey. Over 10% of UK oncology specialty doctors participated.²⁹

Results were presented as descriptive statistics. To assess interactions between key demographic and response subgroups, multifactorial ordinal logistic regression was utilised for Likert scale responses and Fisher's exact test for categorical responses. Holm-Bonferroni multiple testing correction was applied, and all p values shown are adjusted. Statistical analysis was carried out using R V.3.6.3.

RESULTS

Demographics

Participants had a median age of 43 years (n=237; range 28–69) and the median number of years since medical school graduation was 19 (n=234; range 4–46). A higher proportion of respondents identified as female (58%) versus male (41%), with 1% preferring not to answer. About 98% stated their sex assigned at birth was the same as their gender identity. About 81% of participants identified as heterosexual with 14% identifying as LGBTQ and 4% preferring not to say. With a similar ethnic breakdown to the current NHS workforce,³⁰ 75% identified as white versus 25% as black, Asian or minority ethnicity. Further demographics are shown in [table 1](#).

Two thirds of respondents were consultants with the remainder higher specialist trainees. There was a fairly equal representation of both clinical and medical oncologists. A breakdown of respondents by specialty and grade is shown in [table 1](#).

Knowledge

Overall, only 8% of participants felt confident ('agree' or 'strongly agree') in their knowledge of the unique healthcare needs of LGBTQ+ patients with cancer, while 75% felt they would benefit from further education on this ([figure 1A](#)). This is despite moderate levels of equality and diversity training and policy awareness ([figure 1B, C](#)).

Results showed that 3% and 5% of participants felt prepared for the needs of LGBTQ+ patients by their undergraduate and postgraduate training, respectively, with the majority agreeing that this should have been a mandatory curricula component ([figure 1A](#)). Oncologists who agreed that their undergraduate and/or postgraduate training provided them with an understanding of the healthcare needs of LGBTQ+ patients were more likely to say that they were confident in their knowledge of healthcare needs of LGBTQ+ patients (OR=9.5; 95% CI=3.4 to 26.2; p=0.0082).

Despite low levels of confidence and preparedness, 67% of all respondents felt confident in their ability to

Table 1 Demographics of respondents

	N (%)
<i>Gender identity</i>	
Female (including trans female)	149 (58)
Male (including trans male)	106 (41)
Non-binary	0 (0)
Prefer not to say	3 (1)
<i>Gender identity same as sex assigned at birth</i>	
Yes	253 (98)
No	1 (1)
Prefer not to say	4 (1)
<i>Sexual orientation</i>	
Heterosexual	212 (81)
Gay	18 (7)
Lesbian	5 (2)
Bisexual	9 (3)
Pansexual	2 (1)
Asexual	1 (1)
Queer	0 (0)
Questioning	0 (0)
Other	0 (0)
Prefer not to say	11 (4)
<i>Ethnicity</i>	
White	193 (75)
Mixed	9 (4)
Asian/Asian British—Indian	42 (16)
Black/African/Caribbean/Black British	4 (2)
Other ethnic group—Arab	3 (1)
Prefer not to say	7 (3)
<i>Grade</i>	
Consultant	171 (66)
Higher specialty trainee (non-consultant specialist)	86 (33)
Prefer not to say	1 (1)
<i>Specialty</i>	
Clinical oncologist	142 (55)
Medical oncologist	111 (43)
Paediatric oncologist	3 (1)
Endocrine oncologist	1 (1)
Specialist nurse	1 (1)

Percentages are rounded to the nearest whole number and so may not sum to 100%.

NHS, National Health Service .

communicate effectively with LGBTQ+ patients with cancer ([figure 1A](#)).

Regarding knowledge of risk factors for cancer, only 24% of participants were in agreement ('agree' or 'strongly agree') that cancer risk differs in patients whose gender differs to the sex they were assigned at birth and

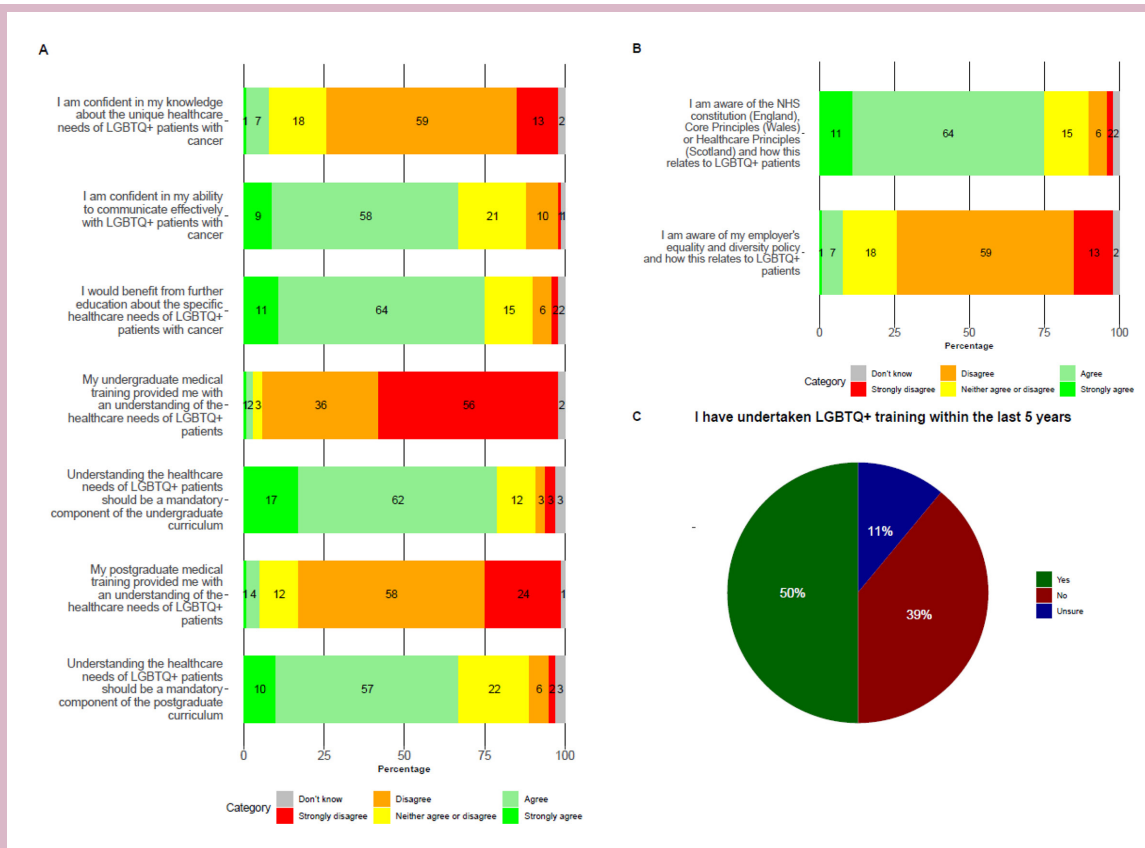


Figure 1 (A) Self-rated confidence in knowledge and preparedness for treating LGBTQ+ patients. (B) Awareness of LGBTQ+ healthcare policy. (C) Engagement in LGBTQ+ training. LGBTQ+, lesbian, gay, bisexual, transgender, queer or questioning.

26% agreed that it differs according to sexual orientation. However, 78% agreed that cancer risk differed depending on sexual practice.

Despite established evidence that cancer risk factors of obesity, tobacco smoking, excess alcohol intake and social drug use are higher in the LGBTQ+ populations, over a quarter of respondents responded 'Don't Know', to each of these knowledge statements (figure 2B), with low numbers in agreement, particularly for obesity (6%). By contrast 59% agreed that bloodborne virus infection (including HIV, hepatitis B and C) were higher in LGBTQ+ populations, with only 15% responding 'Don't Know'. Interestingly, on multifactorial ordinal logistic regression, participants responding agree or strongly agree to this statement were also more likely to agree that 'cancer risk differs with sexual practice' (OR=4.2; 95% CI=2.3 to 7.6; $p=1.4 \times 10^3$), and that there are higher smoking (OR=4.2; 95% CI=2.5 to 7.3; $p=9.5 \times 10^5$), alcohol use (OR=4.2; 95% CI=2.5 to 7.3; $p=1.3 \times 10^4$) and illicit drug use (OR=5.2; 95% CI=3.1 to 9.1; $p=1.2 \times 10^6$) in the LGBTQ+ population.

Regarding access to healthcare, 48% and 57% of all respondents agreed it was impacted by sexual orientation and trans status, respectively. However, 41% were aware that cervical cancer screening uptake specifically was lower in LGBTQ+ patients, and 38% were unsure.

Finally, with regard to fertility, only 14% of respondents felt confident in counselling trans patients with cancer about fertility options and 51% of participants in knowing where to refer such a patient for fertility treatment. Knowledge of where to refer trans patients for fertility treatment was the only item which showed significant differences in responses for consultants versus trainees, with 53% of consultants knowing where to refer the patient versus only 30% of trainees ($p=0.000157$, figure 2C).

Attitudes

A majority of respondents (79%) felt that sensitive communication around gender identity had implications for the doctor-patient relationship, and over half (57%) felt that it was important to know a patient's gender identity to better determine their healthcare needs. However, there was equipoise with regard to the referrer's responsibility to provide both the sex assigned at birth and gender identity of a patient in their referral (figure 3A).

By contrast, only 29% of participants felt it was important to know a person's sexual orientation to better determine their healthcare needs, with 75% feeling it was not the responsibility of a referring clinician to supply this information.

Eighty-four per cent of participants stated they felt comfortable treating LGBTQ+ patients, but concerning, 3% stated that they were not comfortable; it is



Figure 2 (A) Knowledge of LGBTQ+ cancer risk. (B) Knowledge of cancer risk factors in the LGBTQ+ population. (C) Knowledge of healthcare access by LGBTQ+ people. (D) Confidence in fertility counselling for trans patients with cancer. (E) Knowledge of fertility services for trans patients with cancer. LGBTQ+, lesbian, gay, bisexual, transgender, queer or questioning.

unclear if this relates to their concerns over their lack of knowledge or training, or any level of prejudice. Five per cent of respondents did feel that LGBTQ+ patients were more difficult to treat, though reasons for this were not explored as part of this study.

Oncologists who agreed that they were comfortable in treating LGBTQ+ patients were significantly more likely to feel confident in their ability to communicate with them (OR=4.3; 95% CI=2.2 to 8.5; p=0.018).

Thirty-seven per cent of respondents felt confident to be listed as LGBTQ+ healthcare providers ('agree' or 'strongly agree'), 16% did not feel confident ('disagree' or 'strongly disagree') and 37% gave neutral responses ('neither agree or disagree' or 'don't know'). No definition of 'LGBTQ+ healthcare provider' role was given. The free-text responses to this question were categorised into four main themes: (1) a lack of training to stay up-to-date with healthcare needs of this group; (2) a lack of clarity about what being a LGBTQ+ healthcare provider entailed; (3) a perception that LGBTQ+ patients did not present specific care issues compared with the general population; and (4) that these patients may be disadvantaged by putting their care solely into the hands of clinicians badged as LGBTQ+ specialists. Themes (1) and (3)

were found throughout responses whereas theme (2) was expressed predominantly by those providing neutral or negative responses (disagree/strongly disagree). Theme (4) was expressed solely by those providing positive responses (agree/strongly agree).

Those who agreed that they were willing to be listed as an LGBTQ+ friendly provider were significantly more likely to agree that they were comfortable in treating LGBTQ+ patients (OR=6.8; 95% CI=3.7 to 12.7; p=6.9 × 10⁻⁷). A greater knowledge of where to refer trans patients for fertility services was also noted in those willing to be listed as a LGBTQ+ friendly provider compared with those who were not (p=0.039).

Behaviours

There were stark differences in perceived clinician behaviours around gender identity versus sexual orientation. Fifty-nine per cent stated they never asked a patient's gender identity and 64% never asked a patient's preferred pronouns. Forty-three per cent acknowledged that they have 'always' or 'often' made assumptions about a patient's gender identity, but 87% went on to state that they always or often assumed a patient was cisgender.

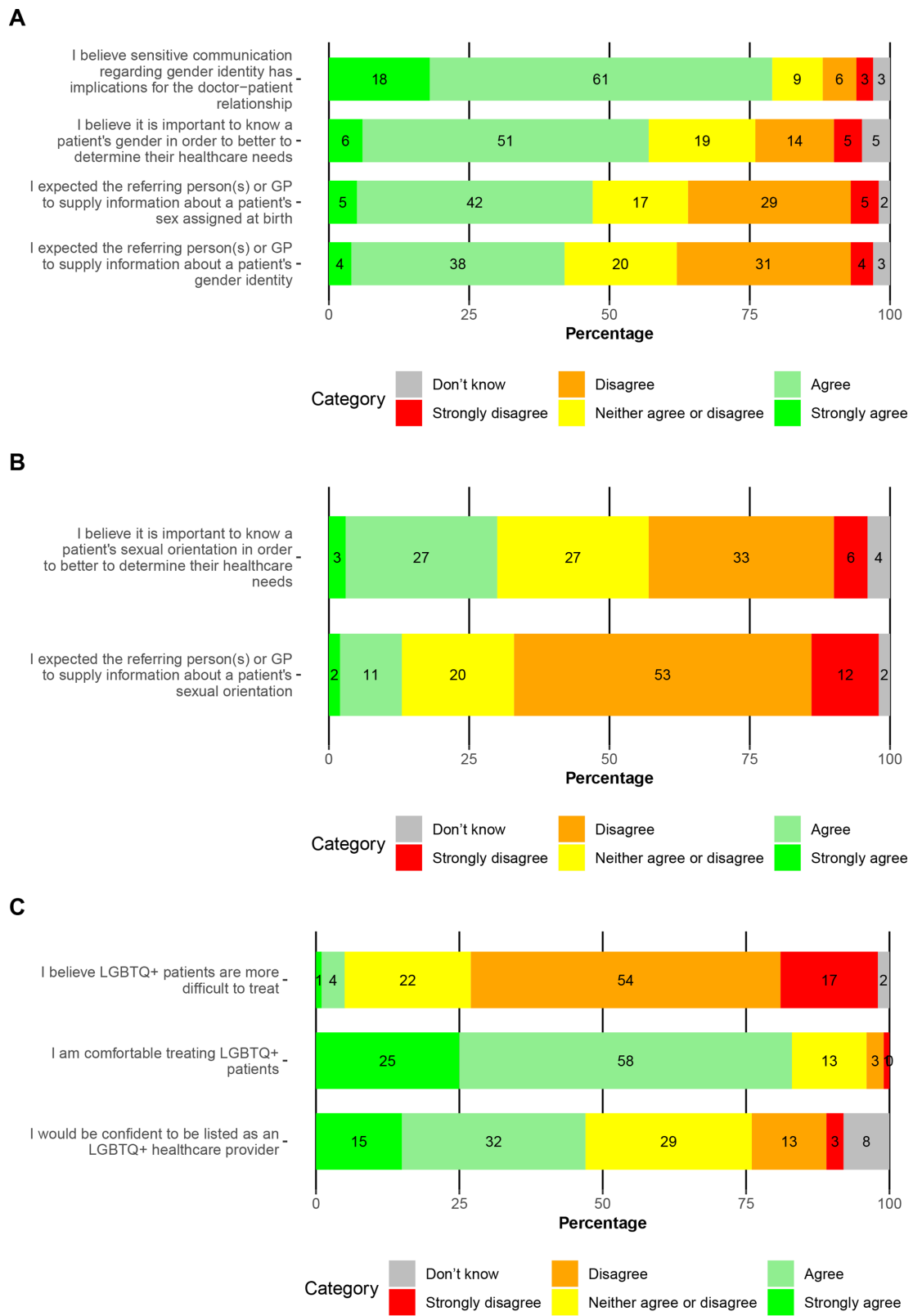


Figure 3 (A) Attitudes to communication and disclosure for gender-diverse patients. (B) Attitudes to communication and disclosure for LGB patients. (C) Comfort with treating LGBTQ+ patients. GP, general practitioner; LGBTQ+, lesbian, gay, bisexual, transgender, queer or questioning.

By contrast, only 16% ‘always’ or ‘often’ made assumptions about sexual orientation, though 33% then stated they ‘always’ or ‘often’ assumed a patient was heterosexual.

While rates of asking partner status and name of partner ‘always’ or ‘often’ were relatively high (72% and 53%, respectively), rates of asking about sexual orientation and partner gender were low (figure 4B, C). Rates of taking a sexual history were also low with 65% taking one ‘rarely’ or ‘never’. Though this may reflect its perceived relevance to the tumour type being treated, sexual problems are one of the most commonly reported negative consequences of treatment for a range of different tumour types.³¹

Further subgroup analyses

No significant differences were found when responses were grouped by: gender identity; experience; specialty (medical vs clinical oncology); time since medical school graduation (less than vs more than 10 years); and identifying as LGBTQ+ (yes or no). Significant differences were found for consultant versus higher specialist trainees, only when assessing knowledge of fertility referrals pathways as discussed.

DISCUSSION

To our knowledge, this study represents the first assessment of oncologist’s self-perceived knowledge, attitudes and behaviours regarding LGBTQ+ patients with cancer in a European country. With over 250 respondents, it assesses these domains for over 10% of the medical and clinical oncology specialist workforce in the UK and is the largest worldwide study of oncologist doctors in this area.

Three similar studies have been conducted in the USA investigating knowledge, attitudes and behaviours of oncologists when treating LGBTQ+ patients. Shetty and colleagues³² surveyed 108 oncology professionals including medical doctors and specialist nurses at a single institution. Banerjee *et al* collected responses from 1253 healthcare professionals at a comprehensive cancer centre, including 187 of which were physicians (including non-oncologists) and 828 nurses. Finally, Schabath *et al* administered a similar study to 149 oncologists in 45 cancer centres across the USA.

Despite the heterogeneous nature of these studies, and the differences in culture and training between the USA and the UK, there are many commonalities in the findings. Our study found a high level of comfort in treating LGBTQ+ patients at 84%, compared with 94% in Shetty *et al*.³² Schabath and colleagues³³ separated comfort measurements for treating LGB and trans patients, which were 95.3% and 82.5%, respectively. These measurements likely vary due to previous experience of treating patients in these groups as well as prior education. High levels of comfort are reassuring, although discrimination or unconscious bias may persist. The NHS Rainbow Badge initiative³⁴ has done much to highlight healthcare inequalities for LGBTQ+ patients by providing this

information to staff of NHS Trusts that sign up to the scheme and this may improve the insight of some healthcare professionals. Still, only 5% of respondents in our study felt that LGBTQ+ patients were more difficult to treat compared with 17% in the study by Shetty and colleagues.³²

Similarly, 75% of UK oncologist’s surveyed felt they would benefit from further education on LGBTQ+ patient needs regarding their cancer care, compared with 78% and 70.4% in the two USA studies mentioned.^{32 33} Our study went further, to determine where this education might be offered, and found that low levels were being offered in both the undergraduate and postgraduate curricula, respectively, with most UK oncologists reporting that it should be a mandatory component of both. Of note, a staggering 56% of respondents in our study strongly disagreed that their undergraduate training provided them with an understanding of the healthcare needs of LGBTQ+ patients.

Similar to work by Banerjee and colleagues,³⁵ our specific knowledge questions on cancer risk factors received around 25% ‘don’t know’ or neutral responses, a figure that was even higher for some of the differing knowledge questions posed by Schabath *et al*.³³ such as the fact that LGBTQ+ have increased healthcare avoidance. In our study, the majority of respondents did know that there was an increased rate of bloodborne virus infection in the LGBTQ+ community, which fits with research that the undergraduate curriculum on LGBTQ+ healthcare mostly concerns sexual health and HIV, as does the amount of research funding this area receives.^{12 36 37} The fact that oncologists who were aware of this had greater knowledge of other factors affecting cancer risk, also suggests this is a basic piece of field knowledge which physicians may or may not build on during their training.

Work by Banerjee *et al*.³⁵ also found that specific knowledge of LGBTQ+ healthcare predicted open communication behaviours by oncologists. Indeed, improved knowledge of reasons why it is important to know a patient’s gender identity and sexual orientation may result in a change in related attitudes and behaviours. Much of the failure to enquire about gender and sexual orientation in ours and other studies^{32 33} likely results from the mistaken belief that equality means treating all patients in the same way, something that is borne out in our own free-text question, as well as those in the Shetty study,³² or from a lack of knowledge on the differing risk factors or medical considerations. However, in addition, failure to identify LGBTQ+ patients in the clinic may impair the therapeutic relationship. In a study by Fish and colleagues,³⁸ disclosure of sexual orientation by LGB patients with cancer allowed a level of authenticity for many patients and enabled the provision of more holistic care. Partners were an important salutogenic resource enabling disclosure and their involvement in subsequent decision-making improved patient satisfaction with treatment.

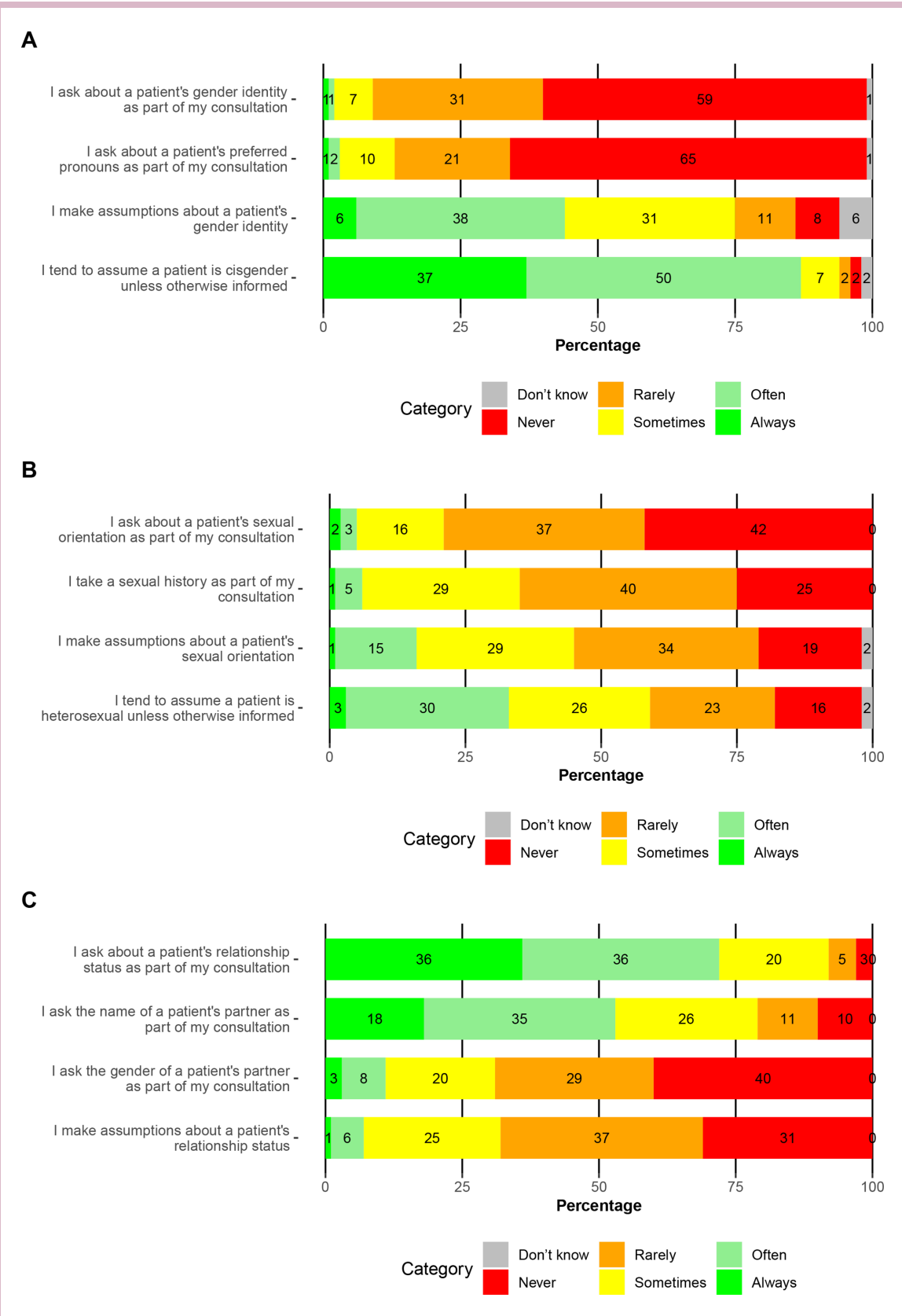


Figure 4 (A) Self-rated behaviours on gender identity and trans status monitoring. (B) Self-rated behaviours on sexual orientation monitoring. (C) Self-rated behaviours on patient partner status and support structure.

A willingness to provide appropriate healthcare for LGBTQ+ patients is seen in the fact that almost half of respondents would be confident to be listed as an LGBTQ+ healthcare provider. This statement was left intentionally broad, as in different settings it may be used to suggest everything from simply a guaranteed non-discriminatory approach to LGBTQ+ patients, to enhanced training on LGBTQ+ patient specialist services and/or greater experience with this population. The majority of respondents recognised that such a listing in the UK would require enhanced education which is important, given that in the USA there are many providers listed as 'LGBTQ+ friendly' lacking the necessary expertise.³⁹

Importantly, our study highlighted almost no effect of specialty, experience, length of practice, gender or LGBTQ+ identity on the knowledge, attitudes and behaviours assessed. This indicates that universal improvement to LGBTQ+ specific education and training for UK oncologists is required. The authors felt that increased knowledge of fertility referral pathways by consultants is likely due to them having worked in the same locality for a longer period of time.

Limitations

Given recruitment to this study was disseminated via national specialty organisations and social media, we believe that it includes physicians from across the UK. However, we acknowledge that regional-level data were not collected, in the interests of maintaining anonymity.

This study is the first of its kind in Europe, and, although limited to the UK, its results are consistent with some of those observed in studies of oncology professionals in the USA,^{32 33 35} while also containing unique findings. However, in countries across Europe, there will be important differences in sociocultural factors, equality and diversity legislation and LGBTQ+ healthcare provision. We would therefore recommend that studies of this kind be undertaken across Europe, and indeed, worldwide.

The survey was disseminated via Twitter to ensure non-members of professional bodies (ACP and RCR) were provided the opportunity to participate. All respondents were asked to confirm their specialty status during the informed consent process and responses that did not include specialty confirmation were not included in the analysis.

This study was limited to specialist doctors in oncology; however, we acknowledge that cancer care requires expert input from a multiprofessional team and subsequent studies should also include other specialties involved in the cancer pathway (eg, surgeons), allied healthcare professionals working in oncology (eg, cancer specialist nurses, pharmacists and radiographers) and non-clinical staff helping to coordinate care in inpatient, outpatient and community settings. The expected level of training of a multiprofessional audience will of course vary but it may be possible to develop common educational resources for these varied groups. Surveying specialist doctors and

introducing appropriate educational interventions will enable this group to lead by example.

Although some of the attitudes and behaviours surveyed could be representative of underlying discrimination, as identified in similar studies,^{35 36} we did not evaluate this as part of this study. We acknowledge that both direct and indirect discrimination continue to persist in the clinical environment.^{7 8 39} However, the purpose of this study was to determine where education could improve LGBTQ+ cancer care in particular, and it is hoped that better understanding of the inequalities faced by this population may reduce discrimination. This of course needs to be complimented with equality and diversity and unconscious bias training to tackle the underlying beliefs and assumptions linked to discrimination. There may also be sociocultural factors at play in this and our study lacked the geographic data to look at differences between oncologists treating patients in rural versus urban settings, or with populations of differing socioeconomic status. We also acknowledge the greater levels of healthcare inequality and discrimination that may be faced by a trans person of colour or who has a disability, and that we have not examined knowledge of the importance of intersectionality healthcare⁴⁰ in this study. Further studies on this topic are warranted, but are beyond the scope of this work.

Our study did not address particular issues in cancer care for patients with disorders of sexual differentiation and or identifying as intersex. We acknowledge that studies addressing healthcare inequalities for this population are also warranted.

Recommendations

Findings of this and other studies show that further education for oncologists on the cancer care needs of LGBTQ+ patients is both desired and necessary to end the health inequalities faced by this diverse group of patients. The authors therefore make several recommendations regarding the future direction of education in this area in the UK.

First, any oncology-specific training should be set in the context of improved teaching on LGBTQ+ health in UK undergraduate medical curricula, similar to work that has already been piloted in the UK.^{41 42}

Second, awareness of LGBTQ+ care needs in oncology should be incorporated into the postgraduate curricula for medical and clinical oncology. This need not be a bespoke module, but may be done when considering important population-specific knowledge for these patients under the relevant curriculum areas, such as cancer screening and sex and relationships after cancer. An example of this in practice, is the inclusion of two LGBTQ+ oncology cases in the ACP's forthcoming publication on Cancer and Fertility.^{43 44}

While the Royal College of General Practitioners, UK, have developed bespoke modules on LGBTQ+ general practice topics in a similar format,⁴⁵ a differing approach in oncology might be to build an online repository of existing available educational material, supplemented by

some specially designed UK-specific content. This would also enable oncologists to be directed to a wealth of resources for LGBTQ+ patients that have been produced by charities.^{28 46 47} Many of these have been coproduced with LGBTQ+ patients, which would also allow lived experience to be heard. Such a repository should also be accessible to other healthcare professionals working in oncology, as well as to patients themselves.

Finally, the level of education and training in LGBTQ+ cancer care needs is only as good as the research from which it is derived. High-quality health research in this field requires healthcare organisations, registries and trials internationally to collect data on sexual orientation and gender identity status, in order to detect differing cancer risks and outcomes in these populations. It also requires support from cancer charities, funding bodies and the Royal colleges to research topics specific to LGBTQ+ cancer care needs, within which patients are involved from study conception. In particular, the evidence base for non-transition-related medical care for trans patients is lacking, and must be included and encouraged to participate in clinical trials.

Progress in clinician education and research has the potential to greatly reduce the healthcare inequalities experienced by the LGBTQ+ people accessing cancer care in the UK and beyond.

Author affiliations

¹Genomics and Computational Biology, Barts Cancer Institute, London, UK

²Gender Identity Clinic, Tavistock and Portman NHS Foundation Trust, London, UK

³UCL Cancer Institute, London, UK

⁴Royal College of Physicians, London, UK

⁵Royal College of Radiologists, London, UK

⁶Department of Oncology, Mount Vernon Cancer Centre, Northwood, UK

⁷Department of Oncology, The Christie NHS Foundation Trust, Manchester, UK

⁸Department of Oncology, Royal Marsden NHS Foundation Trust, London, UK

Twitter Alison May Berner @drallycat, Daniel Johnathan Hughes @DrDanielJHughes and Daniel Saunders @DanOfChorlton

Acknowledgements We would like to thank the CRUK Patient and Public Involvement team for their assistance with contacting patient representatives to review our survey, as well as the patients themselves for taking the time to provide such useful feedback. We would like to thank the Association of Cancer Physicians, UK and the Royal College of Radiologists, UK for their support, including endorsement and promotion of the survey. We also thank our colleagues at UCL Research Department of Medical Education and the Royal College of Physicians, London, UK for their support and intellectual input.

Contributors AMB and DJH developed the concept of the study. AMB, DJH, DS, BH and TB developed the questionnaire. AMB, DH and HT assisted in participant recruitment. AMB and DH analysed the data. AMB, DJH, DS, BH, HT and SB were involved in results interpretation. AMB and DJH wrote the original draft of the manuscript. All authors reviewed and edited the manuscript. The corresponding author attests that all listed authors meet authorship criteria and that no others meeting the criteria have been omitted. AMB is the guarantor.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests AMB reports personal fees from Pfizer Oncology, outside the submitted work. SB reports grants and personal fees from AstraZeneca/MSD, grants and personal fees from GSK/Tesaro, personal fees from Clovis, personal fees from Immunogen, personal fees from Mersana, personal fees from Roche, personal fees from Amgen, personal fees from Seattle Genetics, personal fees from Genmab and personal fees from Merck Sereno, outside the submitted work.

Patient consent for publication Not required.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement Data are available upon reasonable request. Deidentified participant data are available upon request from Dr Alison May Berner—ORCID ID 0000-0002-1132-0275. Reuse is permitted where aggregate data will advance research in this field, for example international or cross-specialty studies of this kind.

Open access This is an open access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited, any changes made are indicated, and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>.

ORCID iDs

Alison May Berner <http://orcid.org/0000-0002-1132-0275>

Daniel Johnathan Hughes <http://orcid.org/0000-0003-2641-7632>

REFERENCES

- Department of Trade and Industry. *Final regulatory impact assessment: civil partnership act 2004*, 2014.
- Zhang Q, Goodman M, Adams N, et al. Epidemiological considerations in transgender health: a systematic review with focus on higher quality data. *Int J Transgend Health* 2020;21:1–13.
- Government Equalities Office. *National LGBT survey: research report*. Government Equalities Office, 2018.
- Stonewall. *LGBT in Britain health report*, 2018.
- Institute of Medicine (US) Committee on Lesbian, Gay, and Bisexual and Transgender Issues. *The health of lesbian, gay, bisexual, and transgender people: building a foundation for better understanding*. National Academies Press, 2011.
- Bonvicini KA, Perlin MJ. The same but different: clinician-patient communication with gay and lesbian patients. *Patient Educ Couns* 2003;51:115–22.
- Fish J, Williamson I, lesbian E. Exploring lesbian, gay and bisexual patients' accounts of their experiences of cancer care in the UK. *Eur J Cancer Care* 2018;27. doi:10.1111/ecc.12501. [Epub ahead of print: 20 Apr 2016].
- Brighton and Hove LGBT Switchboard. *LGBTQ people affected by cancer report*, 2018.
- Hagger-Johnson G, Taibjee R, Semlyen J, et al. Sexual orientation identity in relation to smoking history and alcohol use at age 18/19: cross-sectional associations from the longitudinal study of young people in England (LSYPE). *BMJ Open* 2013;3:e002810.
- Fish J. Reducing health inequalities for LGBT people. In: *Briefing papers for health and social care staff*. London: Department of Health, 2007.
- All Party Parliamentary Group on Cancer. *Report of the all party parliamentary group on cancer's inquiry into inequalities in cancer*, 2009.
- Quinn GP, Sanchez JA, Sutton SK, et al. Cancer and lesbian, gay, bisexual, transgender/transsexual, and queer/questioning (LGBTQ) populations. *CA Cancer J Clin* 2015;65:384–400.
- Hunt R, Fish J. Prescription for Change: Lesbian and bisexual women's health check 2008. *The British Library* 2008.
- Peitzmeier SM, Khullar K, Reisner SL, et al. Pap test use is lower among female-to-male patients than non-transgender women. *Am J Prev Med* 2014;47:808–12.
- de Blok CJM, Wiepjes CM, Nota NM, et al. Breast cancer risk in transgender people receiving hormone treatment: nationwide cohort study in the Netherlands. *BMJ* 2019;365:l1652.
- Braun H, Nash R, Tangpricha V, et al. Cancer in transgender people: evidence and methodological considerations. *Epidemiol Rev* 2017;39:93–107.
- Susman E. Gay men face extra burden coping with prostatectomy. *Oncol Times* 2011;33:23.
- Motofei IG, Rowland DL, Popa F, et al. Preliminary study with Bicalutamide in heterosexual and homosexual patients with prostate cancer: a possible implication of androgens in male homosexual arousal. *BJU Int* 2011;108:110–5.
- Wang C, Qiao W, Jiang Y, et al. Effect of sex on the efficacy of patients receiving immune checkpoint inhibitors in advanced non-small cell lung cancer. *Cancer Med* 2019;8:4023–31.
- Conforti F, Pala L, Bagnardi V, et al. Cancer immunotherapy efficacy and patients' sex: a systematic review and meta-analysis. *Lancet Oncol* 2018;19:737–46.

- 21 Özdemir BC, Csajka C, Dotto G-P, *et al.* Sex differences in efficacy and toxicity of systemic treatments: an undervalued issue in the era of precision oncology. *J Clin Oncol* 2018;36:2680–3.
- 22 Wagner AD, Grothey A, Andre T, *et al.* Association of sex and adverse events (AES) of adjuvant chemotherapy (act) in early stage colon cancer (CC): a pooled analysis of 28,636 patients (PTS) in the accent database. *JCO* 2018;36:3603.
- 23 Wagner AD, Oertelt-Prigione S, Adjei A, *et al.* Gender medicine and oncology: report and consensus of an ESMO workshop. *Ann Oncol* 2019;30:1914–24.
- 24 Curie M. “Hiding who I am” *The reality of end of life care for LGBT people*, 2017.
- 25 Cancer Research UK. *Policy statement: health inequalities in cancer and Lesbian, gay, bisexual, transgender (LGBT) communities*, 2008.
- 26 Griggs J, Maingi S, Blinder V, *et al.* American Society of clinical oncology position statement: strategies for reducing cancer health disparities among sexual and gender minority populations. *J Clin Oncol* 2017;35:2203–8.
- 27 Dittrich C, Kosty M, Jezdic S, *et al.* ESMO / ASCO recommendations for a global curriculum in medical oncology edition 2016. *ESMO Open* 2016;1:e000097.
- 28 Macmillan. *Supporting Lesbian, gay, bisexual and trans people with cancer a practical guide for cancer and other health professionals*, 2019.
- 29 Roques T. *Clinical oncology UK workforce census report*, 2019.
- 30 NHS. NHS workforce statistics, 2019. Available: <https://digital.nhs.uk/data-and-information/publications/statistical/nhs-workforce-statistics/nhs-workforce-statistics-march-2019-provisional-statistics>
- 31 Bober SL, Varela VS. Sexuality in adult cancer survivors: challenges and intervention. *J Clin Oncol* 2012;30:3712–9.
- 32 Shetty G, Sanchez JA, Lancaster JM, *et al.* Oncology healthcare providers' knowledge, attitudes, and practice behaviors regarding LGBT health. *Patient Educ Couns* 2016;99:1676–84.
- 33 Schabath MB, Blackburn CA, Sutter ME, *et al.* National survey of oncologists at National Cancer Institute-Designated comprehensive cancer centers: attitudes, knowledge, and practice behaviors about LGBTQ patients with cancer. *J Clin Oncol* 2019;37:547–58.
- 34 NHS. NHS rainbow badges. Available: <https://www.evelinalondon.nhs.uk/about-us/who-we-are/NHS-Rainbow-Badges.aspx>
- 35 Banerjee SC, Walters CB, Staley JM, *et al.* Knowledge, beliefs, and communication behavior of oncology health-care providers (HCPs) regarding Lesbian, gay, bisexual, and transgender (LGBT) patient health care. *J Health Commun* 2018;23:329–39.
- 36 Obedin-Maliver J, Goldsmith ES, Stewart L, *et al.* Lesbian, gay, bisexual, and transgender-related content in undergraduate medical education. *JAMA* 2011;306:971–7.
- 37 Davy Z, Amsler S, Duncombe K, *et al.* Health and social care content in higher education teaching. *Qual Res Educ* 2015.
- 38 Fish J, Williamson I, Brown J. Disclosure in lesbian, gay and bisexual cancer care: towards a salutogenic healthcare environment. *BMC Cancer* 2019;19:678.
- 39 Rounds KE, McGrath BB, Walsh E. Perspectives on provider behaviors: a qualitative study of sexual and gender minorities regarding quality of care. *Contemp Nurse* 2013;44:99–110.
- 40 Ng HH. Intersectionality and shared decision making in LGBTQ health. *LGBT Health* 2016;3:325–6.
- 41 Salkind J, Gishen F, Drage G, *et al.* LGBT+ health teaching within the undergraduate medical curriculum. *Int J Environ Res Public Health* 2019;16:2305–9.
- 42 LGBT Foundation. For medical students - influencing the curriculum. Available: <https://lgbt.foundation/who-were-here-for/pride-in-practice/for-medical-students>
- 43 Berner A, Seal L, Snape K. A case of breast cancer in a transgender man with BRCA2 mutation. In: Karapanagiotou E, Kopeika J, Board RE, eds. *Probl solving cancer Fertil*. Oxford: EBN Health, 2021.
- 44 Berner A, Hughes D, Saunders D. A case of testicular cancer in a gay man. In: Karapanagiotou E, Kopeika J, Board RE, eds. *Probl solving cancer Fertil*. Oxford: EBN Health, 2021.
- 45 RCGP. Home: LGBT health hub. Available: <https://elearning.rcgp.org.uk/mod/page/view.php?id=9380>
- 46 Cancer Research UK. Trans and non-binary cancer screening. Available: <https://www.cancerresearchuk.org/about-cancer/screening/trans-and-non-binary-cancer-screening>
- 47 Marie Curie. Caring for LGBTQ+ people at the end of life. Available: <https://www.mariecurie.org.uk/professionals/palliative-care-knowledge-zone/equality-diversity/lgbt-end-life>