Gender-related self-reported mental health inequalities in primary care in England: a cross-sectional analysis using the GP Patient Survey

Ruth Elizabeth Watkinson, Aimee Linfield, Jack Tielemans, Igor Francetic, Luke Munford

Summary

Background Transgender, non-binary, and gender diverse people face discrimination and barriers to accessing health care. Existing evidence suggests higher rates of mental health conditions among these groups compared with binary and cisgender groups. However, information is limited by poor gender recording in health records and surveys. We aimed to provide the first national estimates of gender-related inequalities in self-reported mental health conditions and mental health support across 15 gender groups in England.

Methods We used changes to the 2021 and 2022 nationally representative cross-sectional English General Pracitioner (GP) Patient Surveys and used age-adjusted logistic regression to predict probabilities of two outcomes: first, self-reporting a mental health condition and second, self-reporting unmet mental health needs. We report results for 15 exposure groups: five gender groups (female, male, non-binary, prefer to self-describe, and prefer not to say), within three cisgender or transgender identity groups (cisgender, transgender, or prefer not to say). We explored potential mediation by adding covariates.

Findings Of the 1 520 457 respondents in the estimation sample, 861 017 (51·4%) were female, 645 300 (47·4%) were male, 2600 (0·3%) were non-binary, 2277 (0·2%) self-described their gender, and 9263 (0·7%) preferred not to state their gender. 1 499 852 (98·3%) respondents were cisgender, 7994 (0·7%) were transgender, and 12 611 (1·0%) preferred not to say their cisgender or transgender identity. We found wide gender-related inequalities in the probability of self-reporting a mental health condition, with the highest probabilities among non-binary patients who were transgender (47·21% [95% CI 42·86–51·60]) or preferred not to say their cisgender or transgender identity (32·90% [26·50–40·00]), and among transgender patients who self-described their gender (35·03% [27·39–43·53]). With the exception of non-binary patients in each case, probabilities were lowest among cisgender patient groups (ranging from male at 8·80% [8·69–8·92] to female at 11·97% [11·86–12·07]) and patients who preferred not to say their cisgender or transgender identity (ranging from female 7·15% [6·06–8·42] to prefer to self-describe 10·37% [7·13–14·86]). Inequalities in other health conditions and socioeconomic factors might mediate some of these inequalities. Probabilities of self-reported unmet mental health needs were lowest among cisgender male (15·55% [15·33–15·76]) and female (15·93% [15·76–16·10]) patients with increased probabilities among all other groups, ranging from 19·95% (17·57–22·57) in transgender male patients to 28·64% (26·23–31·17) among patients who preferred not to say their gender or their cisgender or transgender identity. Inequalities in interactions with health-care professionals may mediate much of these inequalities.

Interpretation Together with existing evidence, our findings showed large gender-related inequalities in self-reported mental health outcomes in England. Given the existence of self-reported unmet mental health needs, we suggest that better health care system inclusivity and health-care professional training are needed, alongside broader improvements in the social and legal environment for transgender, non-binary, and gender diverse people.

Funding National Institute for Health and Care Research.

Copyright © 2024 The Author(s). Published by Elsevier Ltd. This is an Open Access article under the CC BY 4.0 license.

Lancet Public Health 2024; 9: e100–08

NIHR Applied Research Collaboration Greater Manchester, Manchester, UK (R E Watkinson PhD, L Munford PhD); **Health Organisation, Policy, and Economics (HOPE) Group, Centre for Primary Care and Health Services Research, University of Manchester, Manchester, UK** (R E Watkinson, I Francetic PhD, L Munford); **LGBT Foundation, Fairbairn House, Manchester, UK** (A Linfield MA); **The Proud Trust, The Proud Place LGBT+ Community Centre, Manchester, UK** (J Tielemans)

Correspondence to: Dr R E Watkinson, Health Organisation, Policy, and Economics (HOPE) Group, Centre for Primary Care and Health Services Research, University of Manchester, Manchester M13 9PL, UK **ruth.watkinson@manchester.ac.uk**

Introduction

Existing evidence suggests a higher prevalence of mental health conditions, including depression, anxiety, and suicidality, among transgender, non-binary, and gender diverse populations compared with populations with binary cisgender identities (cisgender men and cisgender women).[1,2] The leading explanation for worse mental health outcomes is minority stress. This theory posits that structural invalidation of identity, prejudice, and discrimination against transgender, non-binary, and gender diverse people creates a stressful social environment, fear, and internalised negative feelings, all of which increase the risk of poor mental health.[3–5] There is no legal recognition of gender diversity beyond binary identities in England,[6] and the process through which transgender people can legally change their (binary)

Research in context

Evidence before this study

We searched PubMed from database inception to Jan 31, 2023, in any language using the following search terms: ("gender identity"[All Fields] OR "trans"[All Fields] OR "transgender"[All Fields] OR "non-binary"[All Fields] OR "non binary"[All Fields] OR "gender nonconforming"[All Fields] OR "gender diverse"[All Fields] OR "genderqueer"[All Fields]) AND ("inequalities"[All Fields] OR "inequality"[All Fields] OR "inequity"[All Fields] OR "disparities"[All Fields] OR "disparity"[All Fields]) AND ("mental" OR "wellbeing" [All Fields]). This returned 742 results. Titles were screened, and 144 were found to be relevant (papers were excluded if about lesbian, gay, and bisexual health exclusively, if they were not relevant to mental health, or if they did not use inclusive definitions of gender). The 144 papers included 13 systematic reviews. For completeness, we also looked at forward and backward citations, and used similar search terms in Google Scholar to identify relevant grey literature. Results from several recent systematic reviews reported important themes from qualitative research identifying barriers to appropriate mental health care for transgender, non-binary, and gender diverse patients. There was also substantial evidence of inequalities in the prevalence of some mental health conditions among transgender, non-binary, and gender diverse patients compared to patients with binary cisgender identities. However, existing evidence comes from small studies and often focused on specific sub-populations (eg, college or university students or patients seeking gender affirming health care), so there is scant information that is generalisable to the total population. This is probably due, at least in part, to the lack of inclusive recording of gender in national health and care surveys or electronic healthcare records in England. From 2021 onwards, the English General Practice Patient Survey (GPPS) introduced inclusive recording of gender with the options female, male, non-binary, prefer to self-describe, and prefer not to say, and a second question about cisgender or transgender identity. To our knowledge this is the first major health and care survey in England to do so. There is one existing study that has used the updated recording of gender in the GPPS, but analysis was limited to a comparison of all transgender and non-binary respondents relative to all other survey respondents.

Added value of this study

We made use of the inclusive recording of gender in the GPPS results from 2021 and 2022 to provide the first nationally representative estimates of inequalities in mental health conditions and unmet mental health needs across 15 gender groups (five gender responses interacted with three cisgender and transgender identity responses). We also tested potential mediation of gender-related mental health inequalities, considering other health inequalities, socioeconomic inequalities, inequalities in factors related to general practice appointments and continuity of care, and inequalities in communication and relationships between healthcare professionals and patients. We found wide inequalities in the probability of reporting a mental health condition, with the highest probabilities among transgender patients who were non-binary or self-described their gender, and non-binary patients who preferred not to say their cisgender or transgender identity. Analyses adjusting for potential mediators suggested a moderate component of these inequalities may be mediated by inequalities in other aspects of health and socioeconomic factors. We also found inequalities in unmet mental health needs within primary care, with all gender diverse groups having a higher probability of unmet mental health needs compared with cisgender male and cisgender female patients. Our results suggest that much of this inequality could be explained by poorer communication and trust between health-care professionals and transgender, non-binary, and gender diverse patients.

Implications of all the available evidence

Alongside existing evidence, our results demonstrate that there are wide gender-related mental health differences in England, so improved recording of gender across health-care records systems and major surveys is needed to monitor and help address these inequalities. Changes are also needed to improve the gender-inclusivity of the English National Health Service, including better training of health-care professionals to improve their ability to meet the mental health needs of transgender, non-binary, and gender diverse patients. The evidence also suggests the need for broader social and legal reform to reduce minority stress for transgender, non-binary, and gender diverse groups, including reduced discrimination and marginalisation.

gender is extremely lengthy and medicalised.[7] Widespread discrimination faced by transgender, non-binary, and gender diverse people has been documented in England.[7,8]

In addition to minority stress, gender dysphoria—feelings of distress or discomfort due to discordance between one's gender and sex assigned at birth—might increase the risk of poor mental health among some transgender, non-binary, and gender diverse people. Several studies have reported a high prevalence of mental health conditions among people seeking gender-affirming health care, but access to timely and appropriate treatment can greatly improve mental health, with prevalence estimates post-treatment similar to levels in the general population.[1,9] There are very long waiting times for the UK National Health Service (NHS) gender identity clinics in England, with patients routinely waiting 5 years from referral to first appointment,[10] potentially exacerbating mental health risks for some patients.[11]

Transgender, non-binary, and gender diverse individuals often face difficulties in accessing appropriate general

and mental health-care services, leading to unmet mental health needs and therefore further mental health inequalities. Recent systematic reviews and co-produced community research identified multiple overlapping themes in barriers to care, including personal concerns and anxiety about seeking health care, ill-equipped health-care professionals, and inadequate health-care record systems, with each of these themes underpinned by systemic cisnormativity and discrimination.[11–13] Personal concerns included fears about being stereotyped, pathologised, or discriminated against, often based on past negative experiences of health care. Ill-equipped health-care professionals were unknowledgeable about transgender health issues, and patients frequently reported having their identity invalidated or feeling misunderstood.

There is also existing evidence of mental health inequalities and unmet mental health needs for transgender, non-binary, and gender diverse people. However, these data are mostly derived from small non-representative surveys, studies in specific subgroups, and qualitative evidence, particularly in the English context, and broader population-level quantitative estimates of mental health inequalities for transgender, non-binary, and gender diverse groups are scarce. This is in part due to few data sources, because the major English health and care surveys and English NHS record systems generally do not adequately record gender.[11,14] For example, there is no routine way to record non-binary or diverse gender identities, or to change binary gender markers in NHS electronic health records.[11]

In 2021, one major health care survey, the English General Practice (GP) Patient Survey (GPPS), made changes to the questionnaire, allowing five gender responses and separately asking about cisgender and transgender identity for the first time.[15,16] To the best of our knowledge, only one study used this data, and found evidence of health and health care inequalities comparing a pooled population of all transgender and non-binary patients to all other survey respondents.[17]

This study aimed to estimate inequalities in self-reported mental health and self-reported unmet mental health needs, providing the first estimates across 15 specific groups: five gender groups within three cisgender and transgender identity groups. Furthermore, we explored potential mediators of identified inequalities, considering socioeconomic factors; other long-term health conditions; variation in GP appointment histories; and interactions and relationships with health-care professionals.

Methods

Study design and participants

We used cross-sectional individual-level data from the 2021 and 2022 responses to the GPPS, obtained via a data-sharing agreement with NHS England and provided by Ipsos MORI. We pooled data across the 2 years to increase the sample size. These years were used as they are the only two available since the questionnaire was updated to record gender diversity and cisgender and transgender identity.[15,16] GPPS participants are selected using repeated stratified random sampling of patients aged 16 years or older, who are registered at GPs in England. Participants are permitted to complete the survey more than once, but this is not tracked. Surveys are posted to patients for self-completion, with the survey available in 17 languages including British Sign Language, and there are options for completion on paper, by phone, or online. Only paper and online responses were received in the years considered here. We used the provided weights, which adjust for the sampling strategy and determinants of non-response.[15,16]

Full information on consent and data ethics and confidentiality relating to the GPPS can be found online.

For **GPPS** see https://www.gp-patient.co.uk/confidentiality

No ethical approval was needed for this study as it involved the analysis of existing secondary data. No primary data collection was undertaken. Data from the GPPS was analysed as per the data-sharing agreement with NHS England. This study is reported according to STROBE guidelines.

Procedures

To generate public and community involvement and engagement with the study, we discussed initial plans with public contributors via online discussion groups with the Applied Research Collaboration-Greater Manchester (ARC-GM) Panel[18] and the ARC-GM/Health Innovation Manchester Forum.[19] We extended invitations through these groups and other connections for in-depth individual and small-group discussions, including people with lived and professional experience, and representatives from relevant charity organisations. Discussions continued throughout the project, and several public contributors joined the study team as coauthors. Changes resulting from these discussions included focusing on gender interacted with cisgender or transgender identity, exploration of age differences, and refinements to the framing, language, and discussion.

The two exposure variables were gender (derived from the question "Which of the following best describes you?" with the answer options "female", "male", "non-binary", "prefer to self-describe", and "I would prefer not to say") and cisgender and transgender identity (derived from the question "Is your gender identity the same as the sex you were registered at birth?" with the answer options "yes" coded as cisgender, "no" coded as transgender, and "I would prefer not to say" coded as prefer not to say). Both questions were visible at the same time for those filling in the questionnaire. Information on the underlying questions and responses is provided in the appendix (pp 5–6). We included as covariates the survey year (2021 and 2022), survey mode (online or scanned), and age group (in bands; appendix pp 5–6). Data were highly complete (96·9%) for all exposures and covariates (appendix p 2).

For the **questionnaire** see https://www.gp-patient.co.uk/downloads/2021/qandletter/GPPS_2021_Questionnaire_PUBLIC.pdf

See **Online** for appendix

	Sample with complete data for exposures N (weighted %)	Sample for Outcome 1 models* N (weighted %)	Sample for Outcome 2 models† N (weighted %)
N	1 520 457 (100%)	1 365 598 (100%)	624 388 (100%)
Gender			
Female	861 017 (51·4%)	768 895 (51·4%)	356 026 (52·1%)
Male	645 300 (47·4%)	585 010 (47·4%)	260 881 (46·4%)
Non-binary	2600 (0·3%)	2280 (0·3%)	1547 (0·4%)
Prefer to self-describe	2277 (0·2%)	1896 (0·2%)	1243 (0·2%)
Prefer not to say	9263 (0·7%)	7517 (0·7%)	4691 (0·9%)
Cisgender or transgender identity			
Cisgender	1 499 852 (98·3%)	1 348 713 (98·5%)	613 045 (97·8%)
Transgender	7994 (0·7%)	6961 (0·7%)	4833 (1·0%)
Prefer not to say	12 611 (1·0%)	9924 (0·9%)	6510 (1·2%)
Age group, years			
16–24	66 925 (9·9%)	59 842 (9·8%)	31 835 (10·8%)
25–34	124 649 (16·7%)	113 756 (16·9%)	61 114 (18·5%)
35–44	181 697 (17·3%)	165 497 (17·5%)	89 819 (19·5%)
45–54	247 412 (17·4%)	224 473 (17·5%)	118 621 (19·1%)
55–64	324 571 (16·2%)	293 348 (16·3%)	137 538 (15·8%)
65–74	321 615 (12·2%)	289 140 (12·2%)	107 460 (9·2%)
≥75	253 588 (10·3%)	219 542 (9·9%)	78 001 (7·1%)
Survey year			
2021	825 063 (54·3%)	733 958 (53·7%)	335 734 (53·5%)
2022	695 394 (45·7%)	631 640 (46·3%)	288 654 (46·2%)
Survey mode			
Scanned	914 431 (53·8%)	781 281 (50·9%)	341 824 (49·1%)
Online	606 026 (46·2%)	584 317 (49·1%)	282 564 (50·1%)
Long-term mental health condition			
No	1 236 652 (81·3%)	1 236 652 (88·4%)	464 492 (71·7%)
Yes	128 946 (8·5%)	128 946 (11·6%)	100 715 (19·1%)
Missing data	154 859 (10·2%)	NA	59 181 (9·1%)
Unmet mental health needs (at last appointment)			
No	531 619 (35·0%)	481 416 (36·5%)	531619 (83·6%)
Yes	92 769 (6·1%)	83 791 (7·1%)	92769 (16·4%)
Missing data	896 069 (58·9%)	800 391 (56·3%)	NA

Data are n (weighted percentage). NA=not applicable. *Outcome 1 is the presence of a self-reported long-term mental health condition (yes, no), derived from the question "Which, if any, of the following long-term conditions do you have?", with respondents who selected "A mental health condition" coded as "yes". †Outcome 2 is self-reported unmet mental health needs (yes, no), derived from the question "During your last general practice appointment, did you feel that the healthcare professional recognised and/or understood any mental health needs that you might have had?" Respondents who selected "I did not have any mental health needs" or "Did not apply to my last appointment" were excluded. We then coded "No, not at all" as unmet mental health needs and "Yes, definitely" or "Yes, to some extent" as no unmet mental health needs.

Table: **Survey respondent demographics**

The first outcome was a self-reported long-term mental health condition (yes, no), derived from the question "Which, if any, of the following long-term conditions do you have?", with respondents who selected "A mental health condition" coded as "yes". The second outcome was reported unmet mental health needs (yes, no), derived from the question "During your last general practice appointment, did you feel that the health-care professional recognised and/or understood any mental health needs that you might have had?" Respondents who selected "I did not have any mental health needs" or "Did not apply to my last appointment" were excluded. We then coded "No, not at all" as unmet mental health needs and "Yes, definitely" or "Yes, to some extent" as no unmet mental health needs. We allowed inclusion and missing data to vary between the two outcomes (appendix p 2). We included groups of potential mediators as covariates to identify inequalities that may be on the causal pathway between gender and mental health and care outcomes (appendix pp 3–4) for associated directed acyclic graphs showing assumptions underlying empirical models. Details about potential mediators are listed in the appendix (pp 7–10).

Statistical analysis

We reported baseline characteristics of the sample with complete data for gender, cisgender or transgender identity, age group, survey year, and survey mode with weighted percentages. We also presented statistics showing weighted population percentages for each gender group interacted with each cisgender or transgender identity group, stratified by broad age categories (under 35 years, 35–64 years, older than 65 years). Descriptive statistics (weighted counts and percentages) stratified by gender, gender identity, and each outcome are shown in the appendix (pp 11–34). For all models and descriptive statistics probability weights were applied using *pweights* options in Stata.

We used logistic regression models for each outcome: first, a self-reported mental health condition, and second, self-reported unmet mental health needs. We estimated all models fully interacting gender (reference group "male") with cisgender or transgender identity (reference group "cisgender")–ie, including gender, cisgender or transgender identity, and their interaction as explanatory variables. We adjusted for age group, survey year, and survey mode, and applied probability weights. Joint significance of the interactions was tested for all models. The empirical model and inference approach are detailed in supplementary material (appendix pp 5–6).

We report full results from these models as odds ratios with 95% CIs in supplementary tables. We then computed adjusted average predicted probabilities of the outcomes for each exposure level (ie, gender and cisgender or transgender identity combination) at the observed values of the covariates in the model. Point estimates and confidence intervals were obtained using endpoint transformation–ie, applying an inverse logit transformation to average log-odds for each exposure level and their corresponding Wald 95% CIs.[20–22] To help with readability, we rescaled all predicted probabilities from 0–1 to percentages (0–100). Pairwise χ^2 tests for differences between exposure groups are reported in the appendix (pp 40–43, 53–55).

Next, we repeated the analysis, adding groups of potential mediators stepwise in blocks as covariates. This analysis was aimed at gauging the stability of our main

results to the inclusion of potential mediators and not at formally testing statistical mediation. All potential mediators were statistically significantly associated (Pearson's χ^2 test) with both the exposures and outcomes, indicating validity as potential mediators (appendix pp 11–34).

We then repeated the main analysis for each outcome estimating separate stratified models by broad age groups (under 35 years, 35–64 years, or older than 65 years) to assess potential differences by age. All analysis was done using Stata version 17.

Role of the funding source

The funder had no role in study design, data collection, data analysis, data interpretation, or writing of the report.

Results

There were 1520457 GPPS respondents who had complete data for gender, cisgender or transgender identity, age group, survey year, and survey mode (table, appendix p 2). With weighted percentages, 861017 (51·4%) were female; 645300 (47·4%) were male; 2600 (0·3%) were non-binary; 2277 (0·2%) self-described their gender; and 9263 (0·7%) preferred not to state their gender. 1499852 (98·3%) respondents were cisgender, 7994 (0·7%) were transgender, and 12611 (1·0%) preferred not to say their cisgender or transgender identity. 128946 (11·6%) of 1365598 respondents who comprised the outcome 1 cohort reported a long-term mental health condition. 624388 (39·8%) reported that their mental health needs were relevant at their last appointment (appendix p 2), and of these, 92769 (16·4%) reported their mental health needs were unmet (table).

Figure 1 shows the distribution of gender and cisgender or transgender identity across three age groups (<35 years, 35–64 years, and ≥65 years). Gender diversity (ie, not cisgender male or female) was highest among younger age groups (<35 years [3·01%]) and lowest among older age groups (≥65 years [0·96%]). Among the gender diverse population, the largest population groups across all age groups were patients who preferred not to say both their gender and their cisgender or transgender identity (0·15–0·60%). The relative population sizes of gender diverse groups were similar across age groups, with some exceptions. For example, the percentage of non-binary patients among those younger than 35 years was substantially higher compared to the percentage of non-binary patients aged 35–64 years and those aged 65 or older.

The age-adjusted predicted probability of self-reporting a long-term mental health condition was highest among non-binary patients who were transgender (47·21% [95% CI 42·86–51·60]); or those non-binary patients who preferred not to say their cisgender or transgender identity (32·90% [26·50–40·00]); and transgender patients who self-described their gender (35·03% [27·39–43·53]). By contrast, except for non-binary patients, probabilities were relatively low among all other cisgender patient groups (ranging from male 8·80% [8·69–8·92] to female 11·97% [11·86–12·07]) and all other patients who preferred not to say their cisgender or transgender identity (ranging from female 7·15% [6·06–8·42] to prefer to self-describe 10·37% [7·13–14·86]; figure 2A; appendix p 39).

There was an increased probability of reporting a mental health condition among transgender patients

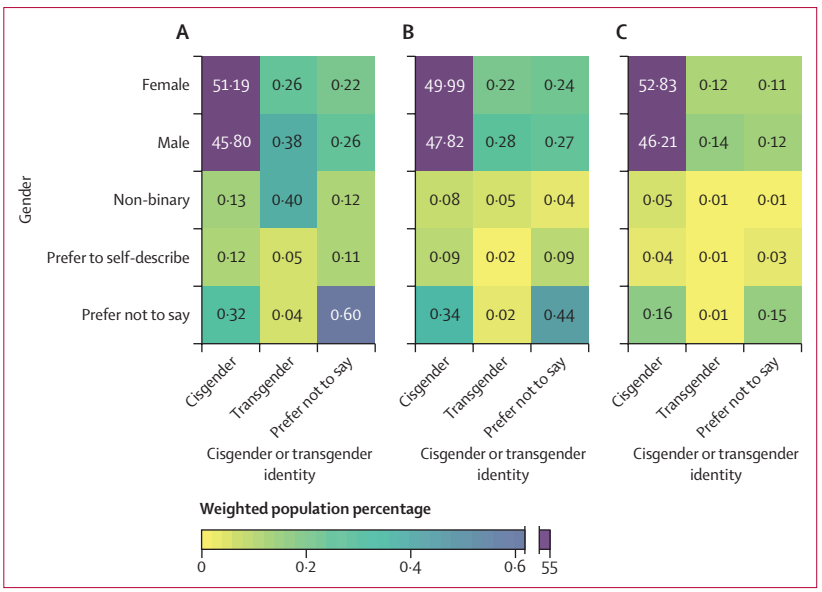

Figure 1: **Weighted population percentages by gender and cisgender or transgender identity stratified by age group**

(A) Population aged under 35 years (26·6% of total population). (B) Population aged between 35 years and 64 years (50·9% of total population). (C) Population older than 65 years (22·5% of total population).

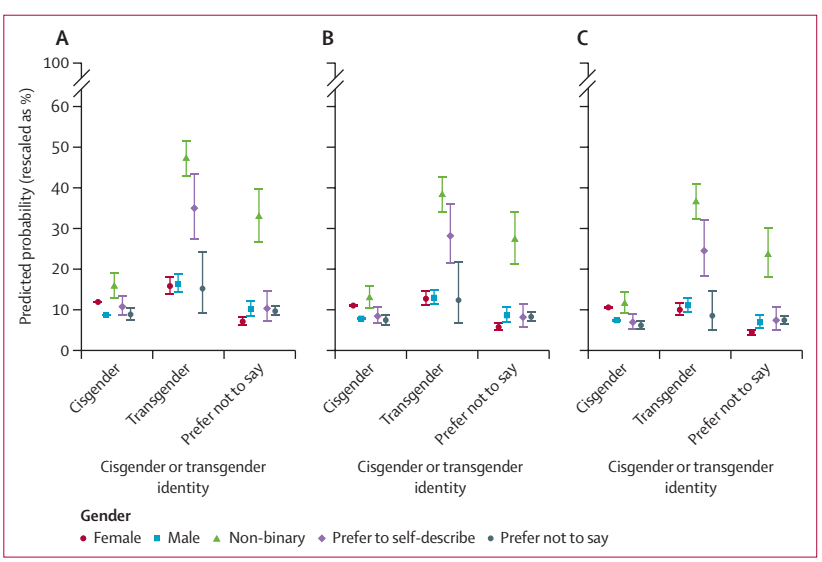

Figure 2: **Differences in the predicted probability of a self-reported mental health condition by gender identity**

Adjusted average predicted probabilities as percentages with 95% CIs. (A) Main analysis, adjusted for age group, survey year, and survey mode. Potential mediators added as covariates: model A + health variables (B) and model B + socioeconomic variables (C). Results also reported alongside tests for interaction between trans identity and gender (appendix pp 35–38) and pairwise tests for difference among gender-identity groups (appendix pp 40–43).

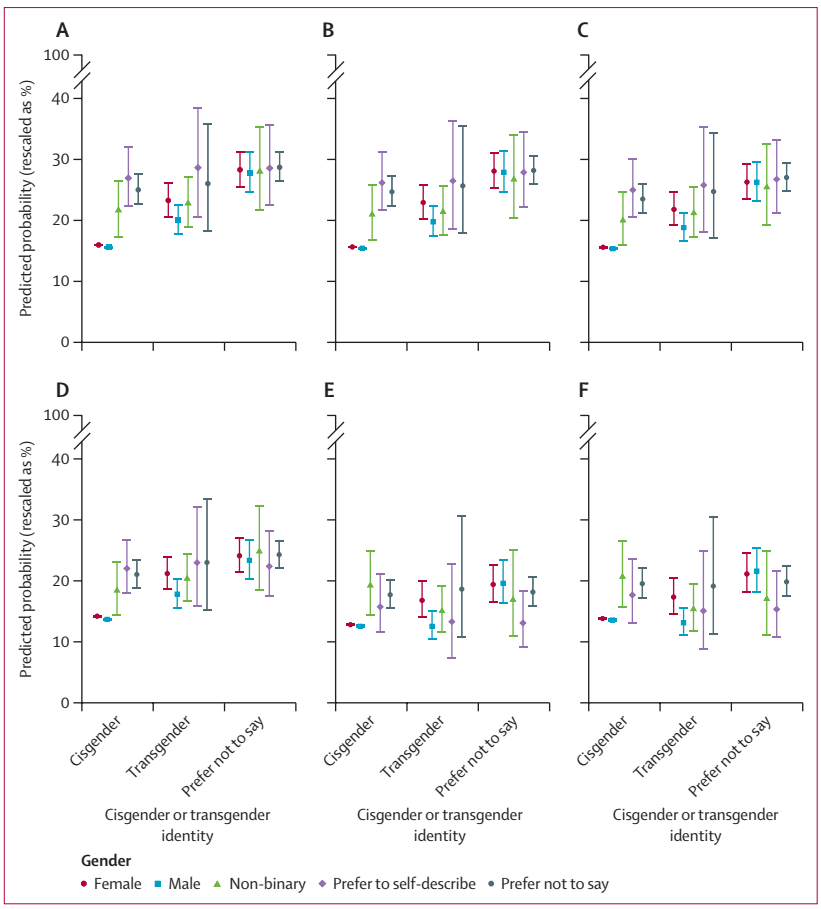

Figure 3: **Differences in the predicted probability of unmet mental health needs by gender identity**
Adjusted average predicted probabilities as percentages with 95% CIs. (A) Main analysis (adjusted for age group, survey year, and survey mode). Panels B to F show potential mediators added as covariates. (B) Model A + health variables. (C) Model B + socioeconomic variables. (D) Model C + general practice appointment variables. (E) Model D + healthcare professional–patient interaction and relationship variables. (F) Model A + healthcare professional–patient interaction and relationship variables. Results are also reported alongside tests for interaction between transgender identity and gender (appendix pp 46–51) and pairwise tests for difference among gender-identity groups (appendix pp 53–55).

who were female (15·87% [95% CI 13·76–18·24]), male (16·40% [14·14–18·94]), or preferred not to say their gender (15·24% [9·05–24·51]), and among cisgender non-binary patients (15·78% [12·82–19·27]).

Adding other long-term health conditions to the model as potential mediators moderately reduced estimated differences in most cases but did not change overall patterns (figure 2B, appendix p 39). For example, the inequality in the probability of reporting a mental health condition between female patients who preferred not to say their gender (lowest probability) and transgender non-binary patients (highest probability) reduced from 40 percentage points (47·21% [42·86–51·60] compared with 7·15% [6·06–8·42]) to 33 percentage points (38·29% [34·01–42·76] compared to 5·79% [4·85–6·90]). Adding a set of socioeconomic indicators had some limited further impact (for example, the above inequality reduced to 32 percentage points, 36·53% [32·21–41·08], compared to 4·48% [3·75–5·34]; figure 2C, appendix p 39).

Splitting the population by broad age group indicated that differences in self-reported mental health conditions tend to be smaller among older age groups (appendix pp 44–45).

The two groups with the lowest age-adjusted predicted probability of self-reported unmet mental health needs at their last GP appointment were cisgender male (15·55% [95% CI 15·33–15·76]) and female (15·93% [15·76–16·10]) patients (figure 3A, appendix p 52). Probabilities were higher among all other groups, ranging from 19·95% [17·57–22·57] among transgender male patients to 28·64% [26·23–31·17] among patients who preferred not to say their gender or cisgender or transgender identity. There was a trend towards higher point estimates among patients who self-described their gender and those who preferred not to say their cisgender or transgender identity, but differences with other groups were not statistically significant.

Adding potential mediators including other long-term health conditions (figure 3B), socioeconomic indicators (figure 3C), and appointment and continuity of care related variables (figure 3D, appendix p 52) each had little effect on estimated gender inequalities. By contrast, adding potential mediators that reported on the quality of interactions and relationships between health-care professionals and patients markedly reduced estimated differences to an average of 4 percentage points (ranging from 19·61% [16·23–23·51] in male patients who preferred not to state their cisgender or transgender identity to 12·56% [12·32–12·79] in cisgender male patients; figure 3E, appendix p 52). Adding just health-care professional interaction and relationship variables without other potential mediators confirmed these variables accounted for almost all the change in estimated differences (figure 3F, appendix p 52).

Stratifying by age group showed that, in contrast to inequalities in reported mental health conditions, gender-related inequalities in unmet mental health needs tended to increase with age (appendix pp 56–57).

Discussion

We found evidence of wide gender-related inequalities in the prevalence of reported long-term mental health conditions, with inequalities concentrated in patients younger than 35 years. Prevalence of long-term mental health conditions tended to be higher among transgender patients compared to patients who were cisgender or who did not state their cisgender or transgender identity, and there were substantial additional health disadvantages among non-binary patients and those who self-described their gender relative to patients with binary gender identities. We found that gender-related differences in other long-term health conditions and socioeconomic factors may mediate a moderate component of these observed differences. We identified

further gender-related inequalities in terms of unmet mental health needs in primary care. Compared to cisgender male and cisgender female patients, all other groups had similarly increased probabilities of unmet mental health needs, with the magnitude of inequalities increasing among older age groups. Our results suggest that quality of communication and relationships between health-care professionals and patients might mediate a large component of these gender-related differences.

One strength of this study is the use of a large, nationally representative survey, with more inclusive gender questions and response options than most surveys. This allowed us to provide the first population-level estimates of gender inequalities interacting five gender groups with three cisgender and transgender identity groups. However, even with this large sample, small group sizes prevented investigation of intersecting factors such as ethnicity, socioeconomic status, or disability, which are likely to affect gender-related inequalities in mental health and mental health needs. Similarly, small group sizes prevented a more detailed analysis of differences by age group, with age splits chosen to allow sufficient sample sizes. To maximise sample size, we pooled data from two survey years, but this could have violated assumed independence of observations, since we do not know whether some of the same participants were resampled in consecutive years. While repeated responses are unlikely—approximately 1% of the population registered with a GP respond to the survey each year—we cannot rule out the possibility this could have biased our estimates.

In addition, there were substantial populations who responded with "prefer not to say" to gender-related questions. This is probably a highly heterogeneous group, with reasons for non-disclosure ranging from general privacy concerns, to patients feeling there was no response suitable for them, to patients specifically not wanting to disclose their gender identity in an NHS survey, perhaps due to previous negative experiences when seeking health care.[11–13] There was a high prevalence of unmet mental health need in this group, and the probable heterogeneity suggests it might underestimate inequalities for more vulnerable subgroups within this population. This highlights the importance of including this response option, and of further research to understand the demographics and specific needs of this patient group.

The nature of the multiple-choice survey meant there was limited context in answers. For example, there is no information beyond "a mental health condition", so we were unable to differentiate between types or severity of conditions, and this simple binary outcome cannot fully capture differences in mental health. However, previous research has indicated common mental health conditions such as anxiety and depression, as well as eating disorders, self-harm, and suicidality, are more common among transgender, non-binary, and gender diverse groups, whereas rarer severe mental illnesses such as schizophrenia or bipolar disorder are thought to occur at rates similar to those in the binary cisgender population.[1,2,9]

Our exploration of factors that could mediate differences was limited by the information captured in the survey. Although we included employment status and area-level deprivation as socioeconomic factors, we did not have information about individual-level income or education. Similarly, the GPPS does not capture aspects of exposure to minority stress, gender dysphoria, gender affirmation, or community networks, all of which are theorised to be important modulators of mental health for transgender, non-binary, and gender diverse populations.[3–5,23,24] Substantial components of the mental health inequalities we identified were not mediated by any of the factors we considered, and we hypothesise that a probable driver of much of this inequality is minority stress. In addition, all our analysis of potential mediation was exploratory, and formal statistical tests of mediation were not used.

Another consideration is reliance on self-reporting of mental health conditions, and the clinical language in the survey (long-term mental health condition), which could influence which patients report a mental health condition in this survey.

Our findings are consistent with previous reports of higher levels of mental health difficulties among transgender, non-binary, and gender diverse populations, including some previous evidence of the highest rates of mental health conditions among those with non-binary and diverse identities compared to binary transgender groups.[1,2,9,17] This is consistent with additional minority stress experienced by people with non-binary and diverse identities, resulting from poorer social and legal recognition of such identities compared to binary transgender identities.[6,7] We also found evidence of increased gender-related inequalities in self-reported mental health conditions among younger age groups. This could reflect underlying age-based differences, but might also be explained—at least in part—by age-based differences in openness in acknowledging and disclosing both diverse gender identities and mental health difficulties. It is difficult to directly compare our results to existing estimates, as previous studies have either relied on small samples, focused on specific subgroups (such as people seeking gender-affirming health care, or students), or used broad groupings which do not differentiate within transgender, non-binary, and gender diverse populations.

Our finding that socioeconomic disadvantage could contribute to increased mental health conditions among transgender, non-binary, and gender diverse patients is consistent with existing evidence of discrimination, which can limit socioeconomic opportunities,[7] leading to poverty, a major risk factor for poor mental health.[25] Our results also add to existing evidence of intersections

between gender diversity and neurodiversity, disability, and the prevalence of other long-term health conditions.[17,26] Our results suggest gender-related patterning of these factors could mediate a component of mental health differences, and warrants further research.

We also add to existing evidence of gender-related inequalities in unmet mental health needs, with some evidence of increased inequalities among older adults. Previous literature has suggested this may be due to life-course effects of the more hostile environment experienced by LGBTQ+ older adults when they were younger.[27] We also found evidence of inadequate communication and trust-building from health-care professionals when supporting trans, non-binary, and gender diverse patients.[11–13] Training health-care professionals can improve confidence and communication with LGBTQ+ patients,[26] and a New Zealand study found supportive primary care interactions were associated with better mental health among transgender people.[28] A USA-based study also found widespread gender-related medical misattribution and invasive questioning (often described as trans broken arm syndrome, where health concerns raised by a patient are incorrectly attributed to the patient's transgender status) from health-care professionals, which negatively influenced patient relationships with health-care providers, particularly in the context of mental health.[29] This suggests better training of medical staff could improve outcomes for transgender, non-binary, and gender diverse patients. Although we did not find differences in inequality across levels of continuity of care, a recent similar study identified that continuity may be more important to transgender, non-binary, and gender diverse patients.[17] This suggests building confidence and trust with a health-care professional could be particularly important to some populations, especially those who might have had previous negative health care experiences.

Adopting inclusive language and increasing visibility of positive attitudes within health care settings could help reduce minority stress, potentially improving mental health outcomes for transgender, non-binary, and gender diverse patients.[11,26] Similarly, electronic health care record systems need reforming to allow standardised recording of transgender, non-binary, and diverse identities that prioritises patient wellbeing and safety. For example, inclusive recording of gender (rather than biological sex) alongside anatomical inventories would ensure accurate biological records with all patients appropriately invited for preventative screening, and would also be inclusive of intersex patients' health needs.[30] Such mechanisms would also affirm and validate patients' gender identities, and reduce the psychological burden associated with repeated explaining or being misgendered, again reducing minority stress and potentially improving mental health.[11,31] More broadly, improving legal and social recognition of gender diversity in England could help reduce mental health inequalities, with a recent study from the USA finding that having gender-concordant identification documents was associated with reduced measures of psychological distress among transgender people.[32]

We report gender-related mental health inequalities for transgender, non-binary, and gender diverse people using a large, nationally representative health care survey. Our results suggest improved inclusivity in health-care systems and better communication from health-care professionals could reduce these inequalities. There is also an emerging literature exploring the power of gender euphoria, gender affirmation, resistance, and community-building as protective factors for mental health among transgender, non-binary, and gender diverse groups.[23,24] Further research could provide valuable insights into strategies to promote wellbeing.

Contributors

REW, AL, and JT developed the research questions and analysis plan, with input from all authors. REW obtained the data from Ipsos MORI and the English National Health Service (NHS England). REW and IF accessed and verified the underlying data. REW cleaned the data and conducted the statistical analysis with support from IF and LM. LM obtained the funding for the study. REW did the literature review and drafted the figures and manuscript text following discussion with all authors. All authors contributed to editing the final manuscript. REW was responsible for the decision to submit the manuscript, with agreement from all authors. All authors have seen and approved the final text.

Declaration of interests

We declare no competing interests.

Data sharing

Individual-level data from GPPS were obtained from Ipsos MORI via an NHS England sharing agreement with our team at the University of Manchester (Reference 199). Further information about the GPPS and dataset is available at https://gp-patient.co.uk or by contacting gppatientsurvey@ipsos.com. The authors of this study cannot share individual-level data as they are the property of NHS England, and managed by Ipsos MORI. Information relating to the questionnaires is available at https://gp-patient.co.uk/downloads/2023/qandletter/GPPS_2023_Questionnaire_PUBLIC.pdf. Researchers can obtain cross-sectional data from 2007 through to 2023 for all available patients by submitting a request to NHS England. Code replicating the results, tables, and figures in this Article can be found in Watkinson and colleagues in the Harvard Dataverse, https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/ENJPS2.

Acknowledgments

We are grateful to Aneela McAvoy, Joanna Ferguson, and Nicky Timmis for helping arrange and facilitate early Public and Community Involvement and Engagement discussion groups. We would also like to thank all members of the Applied Research Collaboration-Greater Manchester (ARC-GM) Young Person Advisory Group, the Health Innovation Manchester and ARC-GM Public Panel, and the Greater Manchester Public Involvement and Engagement Forum for their participation and input. We would also like to acknowledge the helpful advice and input from Stevie Watson (LGBT Foundation), Emily Wilkins (LGBT Foundation), and Paul Hine (Made by Mortals). We are also grateful for helpful discussions with Jack Elliott, Joe Dodd, and Sam Khavandi (University of Manchester). Finally, we would like to thank all respondents to the 2021 and 2022 English General Practice Patient Survey (GPPS) for their time and responses. This study was supported by National Institute for Health and Care Research (NIHR) and ARC-GM grant NIHR200174. The views expressed are those of the authors and not necessarily those of the NIHR or the Department of Health and Social Care.

References

1 Coleman E, Radix AE, Bouman WP, et al. Standards of care for the health of transgender and gender diverse people, version 8. *Int J Transgender Health* 2022; **23** (suppl 1)**:** S1–259.

2 Zeeman L, Sherriff N, Browne K, et al. A review of lesbian, gay, bisexual, trans and intersex (LGBTI) health and healthcare inequalities. *Eur J Public Health* 2019; **29:** 974–80.

3 Hendricks ML, Testa RJ. A conceptual framework for clinical work with transgender and gender nonconforming clients: an adaptation of the minority stress model. *Prof Psychol Res Pr* 2012; **43:** 460–67.

4 Meyer IH. Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: conceptual issues and research evidence. *Psychol Bull* 2003; **129:** 674–97.

5 Lefevor GT, Boyd-Rogers CC, Sprague BM, Janis RA. Health disparities between genderqueer, transgender, and cisgender individuals: an extension of minority stress theory. *J Couns Psychol* 2019; **66:** 385–95.

6 Hansard Online. Legal recognition of non-binary gender identities. May 23, 2022. https://hansard.parliament.uk/Commons/2022-05-23/debates/b389188e-8dd2-403c-b1ca-809d865c8b7d/WestminsterHall (accessed Jan 19, 2023).

7 Stonewall. LGBT in Britain: trans report. 2018. https://www.stonewall.org.uk/resources/lgbt-britain-trans-report-2018 (accessed April 20, 2023).

8 Morgan H, Lamprinakou C, Fuller E, Albakri M. Attitudes to transgender people: research report. Manchester: Equality and Human Rights Commission, 2020. https://www.equalityhumanrights.com/sites/default/files/attitudes_to_transgender_people.pdf (accessed Sept 6, 2023).

9 Dhejne C, Van Vlerken R, Heylens G, Arcelus J. Mental health and gender dysphoria: a review of the literature. *Int Rev Psychiatry* 2016; **28:** 44–57.

10 The Tavistock and Portman NHS Foundation Trust. NHS gender identity clinic waiting times information. 2023. https://gic.nhs.uk/appointments/waiting-times/ (accessed May 2, 2023).

11 TRANSforming Futures Partnership. Trans people's experience of healthcare in England. 2020. https://www.transformingfuturespartnership.co.uk/healthcare (accessed Jan 19, 2023).

12 Snow A, Cerel J, Loeffler DN, Flaherty C. Barriers to mental health care for transgender and gender-nonconforming adults: a systematic literature review. *Health Soc Work* 2019; **44:** 149–55.

13 Heng A, Heal C, Banks J, Preston R. Transgender peoples' experiences and perspectives about general healthcare: a systematic review. *Int J Transgenderism* 2018; **19:** 359–78.

14 UK Data Service. Variable and question bank. 2023. https://discover.ukdataservice.ac.uk/variables#7972_V349 (accessed Sept 7, 2023).

15 NHS and Ipsos MORI. GP patient survey 2021 technical annex. 2021. https://www.gp-patient.co.uk/Downloads/2021/GPPS_2021_Technical_Annex_PUBLIC.pdf (accessed Jan 19, 2023).

16 NHS and Ipsos MORI. GP patient survey 2022 technical annex. 2022. https://gp-patient.co.uk/Downloads/2022/GPPS_2022_Technical_Annex_PUBLIC.pdf (accessed Jan 19, 2023).

17 Saunders CL, Berner A, Lund J, et al. Demographic characteristics, long-term health conditions and healthcare experiences of 6333 trans and non-binary adults in England: nationally representative evidence from the 2021 GP Patient Survey. *BMJ Open* 2023; **13:** e068099.

18 NIHR Applied Research Collaboration Greater Manchester. Panel. https://arc-gm.nihr.ac.uk/panel (accessed July 7, 2022).

19 Health Innovation Manchester. Public community involvement and engagement (PICE) forum. https://healthinnovationmanchester.com/partnerships/public-and-community-involvement-and-engagement/one-manchester-public-and-community-forum/ (accessed July 7, 2022).

20 Muller CJ, MacLehose RF. Estimating predicted probabilities from logistic regression: different methods correspond to different target populations. *Int J Epidemiol* 2014; **43:** 962–70.

21 Hoechle D. Robust standard errors for panel regressions with cross-sectional dependence. *Stata J* 2007; **7:** 281–312.

22 Pitblado J. Apply a transformation to estimates and confidence limits from margins command. 2015. https://www.stata.com/users/jpitblado/transform_margins/transform_margins.hlp (accessed Sept 21, 2023).

23 Tebbe EA, Budge SL. Factors that drive mental health disparities and promote well-being in transgender and nonbinary people. *Nat Rev Psychol* 2022; **1:** 694–707.

24 Austin A, Papciak R, Lovins L. Gender euphoria: a grounded theory exploration of experiencing gender affirmation. *Psychol Sex* 2022; **13:** 1406–26.

25 Marmot M, Allen J, Boyce T, Goldblatt P, Morrison J. Health equity in England: the Marmot review 10 years on. London: Institute of Health Equity, 2020.

26 LGBT Foundation. Pride in practice LGBTQ patient experience survey. 2022. https://lgbt.foundation/news/pride-in-practice-lgbt-patient-experience-survey-2021/476 (accessed Oct 25, 2022).

27 Kneale D, Henley J, Thomas J, French R. Inequalities in older LGBT people's health and care needs in the United Kingdom: a systematic scoping review. *Ageing Soc* 2021; **41:** 493–515.

28 Treharne GJ, Carroll R, Tan KKH, Veale JF. Supportive interactions with primary care doctors are associated with better mental health among transgender people: results of a nationwide survey in Aotearoa/New Zealand. *Fam Pract* 2022; **39:** 834–42.

29 Wall CSJ, Patev AJ, Benotsch EG. Trans broken arm syndrome: a mixed-methods exploration of gender-related medical misattribution and invasive questioning. *Soc Sci Med* 2023; **320:** 115748.

30 Grasso C, Goldhammer H, Thompson J, Keuroghlian AS. Optimizing gender-affirming medical care through anatomical inventories, clinical decision support, and population health management in electronic health record systems. *J Am Med Inform Assoc* 2021; **28:** 2531–35.

31 Matsuno E, Bricker NL, Savarese E, Mohr R Jr, Balsam KF. The default is just going to be getting misgendered: minority stress experiences among nonbinary adults. *Psychol Sex Orientat Gend Divers* 2022; published online 2022. https://doi.org/10.1037/sgd0000607.

32 Scheim AI, Perez-Brumer AG, Bauer GR. Gender-concordant identity documents and mental health among transgender adults in the USA: a cross-sectional study. *Lancet Public Health* 2020; **5:** e196–203.