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Health and Health Care Among Transgender Adults in the United States

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Keywords

transgender persons, sexual and gender minorities, health services for transgender persons, health disparities, social determinants of health

Abstract

Transgender (trans) communities in the USA and globally have long organized for health and social equity but have only recently gained increased visibility within public health. In this review, we synthesize evidence demonstrating that trans adults in the USA are affected by disparities in physical and mental health and in access to health care, relative to cisgender (nontrans) persons. We draw on theory and data to situate these disparities in their social contexts, explicating the roles of gender affirmation, multilevel and intersectional stigmas, and public policies in reproducing or ameliorating trans health disparities. Until recently, trans health disparities were largely made invisible by exclusionary data collection practices. We highlight the importance of, and methodological considerations for, collecting inclusive sex and gender data. Moving forward,

we recommend routine collection of gender identity data, an emphasis on intervention research to achieve trans health equity, public policy advocacy, and investment in supporting gender-diverse public health leadership.

Transgender (trans):

umbrella term for people whose gender identity differs from the sex they were assigned at birth

Transfeminine:

refers to women and/or feminine-identified people who were assigned male at birth

Transmasculine:

refers to men and/or masculine-identified people who were assigned female at birth

Nonbinary:

refers to people with a gender identity beyond “woman” or “man”

Gender diverse:

refers to people whose gender identity or expression differs from cultural expectations but who may or may not self-identify as trans or nonbinary

Intersex:

umbrella term for differences in sex characteristics or reproductive anatomy (also called differences of sex development)

Transsexual:

older term (still preferred by some) for trans people who pursue medical gender affirmation

1. INTRODUCTION

The arrival of the “transgender tipping point” (134) was heralded in 2014, as transgender (trans) people, including transfeminine, transmasculine, nonbinary, and other gender-diverse people, became increasingly visible in American society. An estimated 0.6% of adults in the USA—1.4 million people—identified as transgender in 2016 (47, 87), with population growth driven by younger age cohorts. In 2017, 1.8% of high school students identified as transgender and another 1.6% were questioning their gender (68). Intersex people are also increasingly visible but distinct; most do not identify as trans (120).

As implied by the tipping point metaphor, trans identities and movements have an extensive history. Terms such as transsexual and transgender were popularized in the USA beginning in the 1960s, but concepts of gender diversity have long existed in many societies, including Two Spirit identities in Native American communities. There was an initial surge of medical interest in trans identities in the USA in the 1960s and 1970s, but public health research with trans populations did not begin to coalesce until the early 1990s, partly in response to the disproportionate impact of HIV on transfeminine people who have sex with men (24, 61). In the early 2000s, the scope of US public health research on lesbian, gay, bisexual, transgender, and queer (LGBTQ) communities, also known as sexual and gender minority populations, began to widen to address the holistic health needs of trans people (89). In 2010, Healthy People became the first US national public health strategy to address trans health disparities and call for expanded federal data collection on gender identity (see <https://www.healthypeople.gov/2020>). The Behavioral Risk Factor Surveillance System (BRFSS) became the first US federal survey to collect gender identity data in 2014, albeit in an optional module. In 2016, sexual and gender minorities were officially recognized as a health disparity population by the National Institutes of Health (NIH).

Underlying these milestones is a shift from a trans patient perspective, defined by psychiatric diagnosis, to a trans population perspective. This transformation can be traced through nosology: “gender identity disorder” was removed from the *Diagnostic and Statistical Manual of Mental Disorders*, Fifth Edition (DSM-5), in 2013 and replaced with “gender dysphoria” (4), and the *International Classification of Diseases*, Eleventh Edition (ICD-11), moved its reconceptualized “gender incongruence” diagnosis out of the chapter on mental disorders (110). These changes sought to clarify that the focus of medical interventions for trans people is not gender identity itself but rather the clinically significant distress that can accompany a misalignment between gender identity and sex assigned at birth (110).

These transformations in public and scientific consciousness are remarkable. Yet with progress came backlash: Since 2016, a wave of legislation and executive actions at multiple levels of government has sought to undo nondiscrimination protections, rescind health insurance coverage, and halt data collection for trans populations (149). While the administration of US President Joe Biden has promised to champion trans rights and taken steps such as establishing a White House–led Interagency Working Group on Safety, Inclusion, and Opportunity for Transgender Americans, in 2021 lawmakers in at least 33 states proposed legislation targeting health care access and social inclusion, primarily for trans children and adolescents (1). And while visibility has propelled trans civil rights, visibility can endanger trans people, particularly those who live at the intersection of multiple systems of oppression. Black transgender women face a crisis of violent

victimization and murder (43), and profiling and violence in policing and criminal justice specifically target Black, Latinx, and Indigenous trans people (67). Finally, the coronavirus disease 2019 (COVID-19) pandemic uniquely threatens trans populations because of preexisting inequalities in income, health insurance coverage, and mental health (13). It is therefore a critical time to assess the state of public health science and practice around trans health in the USA.

We begin this review by summarizing evidence on health disparities among trans adults in the USA and situating these disparities in their social context. We then describe health care access issues and solutions for trans populations. Finally, we chart directions for public health policies, measurement, and future research to achieve health equity for trans populations.

2. HEALTH DISPARITIES

2.1. Self-Rated Health and Disability

Few studies provided data on general trans physical health prior to 2014 (115), when the BRFSS began to make possible population-based analyses of disparities between trans and cisgender people. In describing these results, we use the BRFSS categories of trans men, trans women, and gender nonconforming (GNC) people. Overall, BRFSS studies have revealed fewer health disparities than suggested by convenience samples (59, 91), but they consistently show poorer self-rated health and more disability among trans people (13, 35, 44, 76), particularly GNC people. Compared with cisgender people, trans people had higher adjusted odds of fair or poor self-rated health and more mentally and physically unhealthy or activity-limited days (13). GNC adults and trans men reported poorer self-rated health relative to both trans and cisgender comparators (35, 76). Similarly, all trans groups had higher adjusted odds of various measures of disability when compared with cisgender men, and disparities were largest for GNC people (44, 137). The present inability to disaggregate BRFSS data by sex assigned at birth makes comparisons difficult to interpret, which is an area for improvement; a few states have begun to query sex assigned at birth in their BRFSS survey (see Section 6).

2.2. Mortality

Gender identity is not recorded on US death certificates (43). The National Violent Death Reporting System added a transgender indicator in 2013, but ascertainment is neither routine nor systematic (37, 53). A few older studies (mostly pre-2000) from Europe used population registries to estimate mortality among gender clinic patients, with findings of elevated mortality, particularly among transfeminine people, attributable to causes including suicide and HIV/AIDS (8, 42). Among US veterans, trans people had more than twice the adjusted hazard of suicide death, and a higher crude homicide rate, than cisgender people; however, trans people had lower all-cause mortality from ages 40 to 64 (26). Community-based organizations that track violent deaths in the absence of official statistics reported at least 44 murders of trans people in the USA in 2020, most of whom were Black trans women (65, 135).

2.3. Cardiovascular and Cerebrovascular Disease

Some studies have found higher adjusted odds of myocardial infarction and other cardiovascular and cerebrovascular events among trans women and trans men in comparison to cisgender women (2, 31, 44, 97). Comparisons between trans women and cisgender men have yielded mixed results but indicate that trans women may have a higher risk of stroke or myocardial infarction (2, 31). These differences have often been attributed to hormone therapy, but the absence of data on hormone use in most population studies makes causality unclear. In a cohort of insured patients

Two Spirit:

contemporary umbrella term for a range of roles and identities for gender diverse people in Native American communities

LGBTQ: umbrella term for communities or populations comprised of lesbian, gay, bisexual, transgender, and queer people

Sexual and gender minority: lesbian, gay, bisexual, transgender, intersex, and other populations defined by minoritized sexual orientation, gender identity, or sex characteristics

Gender incongruence:

difference between sex assigned at birth and gender identity; new diagnosis in the ICD-11 chapter titled “Conditions Related to Sexual Health”

Gender dysphoria: distress resulting from gender incongruence; also a psychiatric diagnosis commonly used in the USA to describe a need for gender-affirming care

Cisgender: refers to people whose gender identity aligns with the sex they were assigned at birth; not transgender

Gender nonconforming (GNC): refers to people whose gender identity and/or expression differs from cultural expectations based on sex assigned at birth

assessed using electronic health record (EHR) data, however, transfeminine people on hormone therapy had a higher incidence of venous thromboembolism and ischemic stroke than did cisgender women and men (48), consistent with evidence that estrogen therapy can increase thromboembolic risk in cisgender women (136). Trans people not on hormone therapy would be a more suitable comparison group to isolate the effects of hormones (136); in the 2015 US Trans Survey (USTS), the largest-ever nonprobability sample of trans people ($n > 27,000$), 45% were not on hormone therapy (139).

2.4. Cancer

Trans people may be at elevated risk of some cancers due to higher rates of smoking (44) and sexually transmitted infections (15, 57, 77). However, trans people may be at lower risk of other cancers relative to their sex assigned at birth (e.g., prostate cancer among trans women), likely due to hormone therapy (132). Although concerns have been raised about carcinogenicity of long-term hormone therapy, there is limited evidence to support such risk (27). Cancer progression and outcomes in trans populations may also be influenced by suboptimal screening due to health care barriers and discomfort with screening procedures (73).

2.5. Mental Health and Substance Use

Systematic reviews of nonprobability studies reveal a varying but consistently high prevalence of depression and anxiety (92, 115), nonsuicidal self-injury (85), and suicidal ideation and behavior (86) among trans people globally. These studies have tended to find a greater burden among transmasculine relative to transfeminine people (85, 86, 92). In the USA, probability samples show higher adjusted odds of severe mental distress among trans people compared with cisgender people (13), and trans men and GNC people were more likely than cisgender men and women to report frequent mental distress or diagnosed depression (41, 44). Trans women had elevated odds of depression in comparison to cisgender men (41, 44). The greater burden of mental distress among GNC people is likely due to a combination of assigned-sex differences [up to 80% of people who identify as GNC or nonbinary were assigned female at birth (67)] and unique stressors faced by this population.

The largest nonprobability studies have found that approximately half of trans people have seriously considered suicide and that close to one in ten attempted suicide in the previous year (22, 126); these estimates are an order of magnitude higher than in the general US population (140). Suicide risk disparities emerge in adolescence: In Youth Risk Behavior Surveillance System data, trans youth were four times as likely to consider suicide and six times as likely to attempt suicide compared with cisgender boys (68).

Findings on substance use are discrepant. Community surveys have found high rates of smoking, hazardous alcohol use, and drug use (49, 62) among trans populations. However, BRFSS studies report few differences between trans and cisgender populations (9, 31, 44), which may reflect countervailing selection biases (over- versus underrepresentation of those at highest risk). Community surveys may overrepresent, and telephone probability surveys underrepresent, trans people at higher risk of substance use (59). In a recent study of insured adults, trans persons were more likely than matched cisgender persons to have diagnosed nicotine use (17% versus 5%), alcohol use (3% versus 1%), or drug use (4% versus 1%) disorders (64).

2.6. HIV/AIDS

Transfeminine people who have sex with men, particularly those who are Black and/or Latina, shoulder a disproportionate burden of HIV in the USA (16, 24, 61, 107, 108). In a meta-analysis

of studies from 2006 to 2017, pooled HIV prevalence among transfeminine people was estimated at 19% (range, 1–73%) with very high between-study heterogeneity (24). HIV prevalence was higher among Black (44%) and Latina (26%) versus white transfeminine people (7%). Data were drawn largely from community surveys subject to sampling biases that may overestimate HIV burden (21). Among transmasculine people, pooled HIV prevalence was 2% (range, 0.3–10%). Transfeminine people living with HIV are less likely than cisgender women and men to be retained in care and achieve viral suppression (74, 106).

Transition: older term for process of gender affirmation; has fallen out of favor due to the implication of a linear, binary process

3. SOCIAL CONTEXT OF TRANSGENDER HEALTH

Addressing health disparities among trans populations requires understanding the multiple factors that influence health outcomes and behaviors across individual, interpersonal, community, and institutional/structural levels (**Figure 1**).

3.1. Gender Affirmation

Gender affirmation refers to internal and external recognition of one's gender (50, 72, 113, 129). Historically referred to as transition, it is an ongoing developmental process with no specific timeline or prescribed path (117, 125). Trans people may affirm their gender psychologically (by self-identifying and/or rejecting stigma), socially (by changing their name, pronouns, and/or gender expression), medically (with hormones, surgery, and/or hair removal), or administratively or legally

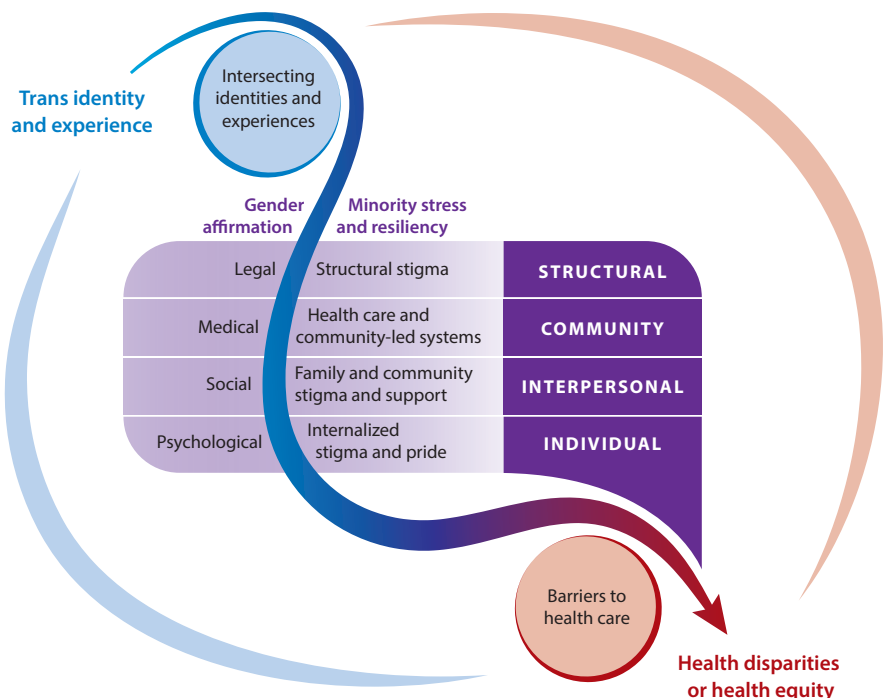


Figure 1

Social context of transgender health, depicting how gender affirmation, minority stressors, and resiliency at multiple social-ecological levels influence health disparities or equity for trans populations.

(by correcting their gender marker and name on documents and records). Gender affirmation encompasses both steps taken by a trans person to express their identity and the extent to which other individuals and institutions acknowledge and respect that identity (72). Gender nonaffirmation is a key stressor for trans populations, while gender affirmation can reduce or eliminate gender dysphoria and mitigate health consequences of stigma (60, 143).

Medical gender affirmation is associated with improvements in mental health and quality of life (see Section 4.1) (15, 94, 101, 150). Future research in this area requires more systematic studies of prospective trans patient cohorts (114). A nascent body of research examines the health impact of social and legal gender affirmation. In a recent scoping review of 25 cross-sectional studies (72), most found that social gender affirmation was associated with improved health. For example, use of affirmed names for trans youth was associated with reduced depression and suicidality (122). Among trans women of color living with HIV, social affirmation was associated with viral suppression (130). Two recent studies found reduced psychological distress (116, 126), as well as less suicidal ideation (126), among trans adults with the correct name and/or gender marker on their identity documents.

3.2. Minority Stress and Resiliency

Stigma, discrimination, and violence are ubiquitous in the lives of trans people (153). In a population-based study from Canada, 98% of participants reported at least one experience of antitrans stigma (84). Half (48%) of respondents to the 2015 USTS reported being denied equal treatment, harassed, or attacked in the previous year; 9% had been physically assaulted for being transgender (67). A 2020 meta-analysis indicated that trans people are more than twice as likely as cisgender comparators to experience physical and/or sexual intimate partner violence (102).

Originally elucidated as a framework to understand health disparities among sexual minorities (30, 88, 90, 119), minority stress theory has been extended to trans populations. Briefly, the gender minority stress model posits that external stressors such as discrimination, rejection, victimization, and gender nonaffirmation lead to poorer health outcomes, partially mediated by internal stressors such as self-stigma, anticipated stigma, and concealment (60, 143). Minority stressors are associated with poorer mental and behavioral health in trans populations, particularly psychological distress, depression, and suicidality (148, 156). Gender identity conversion efforts, an extreme manifestation of gender nonaffirmation, were reported by 14% of 2015 USTS respondents and were associated with increased lifetime suicide attempts (145, 146).

The model also highlights the buffering role of minority-specific resilience resources such as community connectedness and pride (29, 60), although limited research has examined these factors (29, 98, 104). Several studies have found social support to be protective against suicide risk in trans populations, but more research is needed on informal and formal support from trans peers specifically (71). Family support, particularly from parents, has been identified as a critical factor associated with lower levels of psychological distress and suicidal ideation among both trans youth and adults (22, 72, 155).

Beyond resiliency at the individual level, trans communities have taken collective action to develop community-led services, starting with organizations such as Conversion Our Goal, founded in San Francisco in 1967 to help trans people navigate the health care system, and the Street Transvestite Action Revolutionaries, founded in New York City in 1970 to provide housing and support for trans youth. LGBTQ community centers began to spring up across the USA in the 1970s and spawned a network of service providers that played critical roles in addressing the HIV epidemic. Rooted in this legacy are hundreds of trans- and LGBTQ-led organizations across the country that continue to provide a comprehensive array of health and social services to trans

people and their families, including federally qualified community health centers in many cities that provide gender-affirming care within an informed consent framework (see Section 4.1) (113).

Community-led supports continue to thrive outside of formal organizations. One example is Ballroom (ball) culture, which has its roots in Black, Latinx, and Asian trans communities. In ball culture, people from various racial, gender, and sexual orientation groups are celebrated and engage in competitive performance art. Ball cultures are often organized by Houses, which provide chosen-family structures, particularly for trans people experiencing homelessness due to family rejection, that help promote mental and sexual health (105).

3.3. Structural Stigma and Structural Determinants of Health

Trans people in the USA continue to face officially sanctioned transphobia and discrimination, as exemplified by the growing volume of state legislation proposing to prohibit trans-inclusive antidiscrimination protections and restrict access to health care, sex-segregated facilities, and athletics, particularly for trans youth (1). Furthermore, although the US Supreme Court ruled in 2020 that antitrans discrimination constitutes sex discrimination, a lack of explicit protections based on gender identity at both the state and federal levels makes it difficult for trans people to rely on these protections. As of mid-2021, 14 states and 4 territories have no legal protections for trans people, and protections that exist in other states are often incomplete or inadequately enforced (93). As described by the minority stress model (56), forms of structural stigma such as laws depriving trans people of legal protections or targeting them for discrimination are associated with increased suicidality and avoidance of health care among trans adults in the USA (51, 103) and lower life satisfaction among trans adults in Europe (28).

3.4. Intersectionality

In addition to transphobia, structural systems of power and oppression that include racism, sexism, and classism shape trans people's well-being and access to resources. Intersectionality is an analytical framework grounded in Black feminist scholarship that illuminates the interacting and interdependent effects of systems of oppression (25, 39, 40). While there has been a recent proliferation of intersectionality-informed population health research (20, 55), the explicit application of intersectionality to trans health studies is nascent (151). Nevertheless, intersectional health disparities in trans populations have long been recognized, particularly in relation to HIV (24) and violent victimization (43). Intersectionality, however, does not imply that multiply marginalized individuals necessarily fare more poorly. In BRFSS studies, for instance, Black trans people were more likely, but Hispanic trans people less likely, to report fair or poor health in comparison to white trans people (79, 80). An intersectional framework requires consideration not only of differences in disease burden but also of different gender-related experiences over the life course, such as racial/ethnic and cohort differences in gender minority stress processes (141) and gender affirmation developmental milestones (117). An intersectional lens can shed light on the impact of racism and other structural inequalities on trans population health and health care access.

4. HEALTH CARE

4.1. Gender-Affirming Care

Many trans people need medical services to express and affirm their gender, which may include psychological support, hormone therapy, and reconstructive surgeries (38). For children, social affirmation and support are primary interventions (46); once puberty arrives, puberty-delay medications are a fully reversible intervention that allows adolescents to explore their gender identity

before deciding on more permanent steps (57). Surgeries that may be part of gender affirmation include gonadectomy; genital (bottom) surgeries, such as phalloplasty or vaginoplasty; chest (top) surgeries, including mastectomy or mammoplasty; and facial and vocal surgeries. Electrolysis to remove face and body hair can also be an important component of gender affirmation for trans-feminine people, as can gamete storage and fertility services for trans people who may wish to become parents.

Gender-affirming care, particularly hormone therapy, can be provided or overseen by clinicians from a variety of specialties, including general practitioners. A lack of access to affordable, competent, and affirming care can lead to self-treatment with hormones or illicit soft tissue fillers (121, 154). To expand access to gender-affirming care, some US medical professionals are shifting away from requirements that trans people follow a rigid course of standardized assessment and toward an informed-consent and shared decision-making model, especially for adults (113, 127). Several countries have sought to further expand the availability of care by recognizing gender affirmation as fundamental for the human right to self-definition and removing requirements that trans people seeking care present with a psychiatric diagnosis such as gender dysphoria (6, 128).

As noted above, gender-affirming care can benefit the physical and mental health of trans people. Puberty-delay treatment can decrease depression and anxiety among trans adolescents (82), and hormone therapy is effective in reducing depression and anxiety and increasing quality of life among trans youth and adults (15, 82, 94, 150, 152). Gender-affirming surgeries are associated with numerous measures of improved health and well-being (94, 101, 150), and all major US medical associations recognize that surgeries and other types of gender-affirming care are medically necessary for trans people who need and want them (3, 5, 58, 109).

4.2. Barriers to Care

In addition to gender-affirming care, trans people need access to a full range of health services delivered in settings that are welcoming, affirming, and both clinically appropriate and culturally responsive. However, many barriers have historically stood between trans people and health services. These barriers include individual factors, such as a lack of health insurance coverage; interpersonal factors, such as encounters with discrimination from health care providers and insurers; and broader structural factors, such as a widespread lack of provider training in trans health and invisibility of trans people in organizational policies and programs (36, 70, 78, 123).

A major barrier to care has been the widespread prevalence of exclusions of public and private insurance coverage for gender-affirming care, which have been expanded in practice to deny coverage for any care at all (63). The 2010 Affordable Care Act (ACA) partially addressed this issue by introducing new guaranteed-issue protections in private insurance. Between 2010 and 2014, the US Department of Health and Human Services promulgated several other regulations that codified nondiscrimination protections on the basis of gender identity in insurance marketing, benefit design, and access to health programs (11). Around the same time, individual states began to adopt or strengthen similar protections by interpreting existing laws to prohibit discrimination against trans people in both state-regulated health insurance markets and state Medicaid programs (12). As of mid-2021, 24 states and territories prohibited blanket coverage exclusions for gender-affirming care in state-regulated private coverage (93). National reforms over the same period included the 2014 rescission of Medicare's ban on coverage for gender-affirming surgeries and federal regulatory actions prohibiting blanket exclusions of gender-affirming care in both public and private coverage under the ACA's statutory ban on sex discrimination.

Despite these reforms, challenges remain for trans people seeking insurance coverage and health services. Many state Medicaid programs continue to exclude coverage for gender-affirming

care (83), which is a particular concern given the high prevalence of poverty among trans people. In a study using BRFSS data, GNC people were almost twice as likely as cisgender women to report unmet care needs due to financial issues, and they had more than twice the odds of not having received a routine checkup in the previous year (52). According to the 2015 USTS, 25% of insured respondents reported encountering insurance discrimination (67). Their experiences included being denied coverage for what are often construed as gender-specific services, such as cancer screenings (13%); being denied coverage for care not related to gender affirmation (7%); and being denied coverage for gender-affirming surgery (55%) or hormone therapy (25%). Among respondents who had seen a health care provider in the previous year, 33% overall—and larger proportions among Black and other respondents of color—had at least one negative experience related to being trans, such as being verbally harassed, physically assaulted, or refused treatment, and 23% reported not seeking care when they needed it in the previous year for fear of mistreatment. A 2019 systematic review found that 27% (range, 19–40%) of trans people reported having been denied health care outright (70), and assessments of provider readiness indicate that many clinicians do not receive training on trans clinical and cultural competency, which can contribute to interpersonal discrimination in health care settings (45).

4.3. Strategies to Improve Care

Important aspects of providing culturally responsive and clinically appropriate services for trans people include but are not limited to creating affirming environments with robust nondiscrimination protections, requiring ongoing workforce training; addressing social determinants of health as part of health care provision; recognizing the central role that gender affirmation and personal empowerment can play in improving health outcomes for trans people; using enrollment and other forms that are inclusive of diverse identities and family structures; adapting quality assessment tools and other metrics to incorporate the needs and experiences of trans people; and encouraging the career development of trans-identified health professionals (95). Collecting gender identity data in health care settings is also critical for understanding and effectively addressing health disparities, as described in Section 6 (14).

The Joint Commission, which accredits approximately 80% of US hospitals, began requiring accredited entities to establish nondiscrimination policies inclusive of gender identity in 2011 (69). The National Standards for Culturally and Linguistically Appropriate Services in Health and Health Care, which define cultural competency in health settings, also address gender identity. Training in providing culturally responsive and clinically appropriate care needs to begin early for clinicians and other health care and public health workers (see the Related Resources) (99, 138).

5. PUBLIC POLICIES

Public health research and practice point toward policies that can help protect and promote trans health. The Equality Act, which is legislation under consideration in Congress, would address the piecemeal nature of nondiscrimination laws across the country by amending the federal Civil Rights Act to enumerate and apply gender identity nondiscrimination protections nationwide in domains that include employment, housing, education, and public accommodations. The federal Prison Rape Elimination Act requires that housing decisions for trans people in criminal justice and immigration detention settings be made on a case-by-case basis with a focus on ensuring the person's health and safety, and some state and local jurisdictions have adopted policies that outline additional considerations for the safety of trans people in detention settings. Antibullying policies have likewise been adopted by a number of school districts and states, and some states require

that school sex education and other curricula include material relevant to the experiences of trans youth (17).

Policies that advance trans well-being by supporting gender affirmation include laws that ensure access to gender-affirming medical care for both adults and youth as well as protect the ability of trans people of all ages to use their correct names and gender pronouns and to access gender-appropriate hospital accommodations, restrooms, sports and recreation, and other gendered spaces. Trans people can change their name and/or gender marker on their driver's license in all states and on passports, and some states are making it possible for nonbinary people to receive identification documents with an "X" gender marker (93). Every state except Tennessee allows trans people to amend their birth certificates. However, changes to identification documents often require burdensome proof of surgical procedures that may not be appropriate or necessary in individual cases (96), and cost is a major barrier (67, 126). Another affirming intervention supporting trans health is the nationwide movement to ban gender identity conversion therapy, which is illegal for minors in 20 states as of mid-2021 (93).

At a broader level encompassing numerous determinants of health, trans people and issues related to gender identity must be included in national movements for health equity, civil rights, and health reform. The prevalence of poverty in trans communities makes large-scale initiatives such as universal health coverage critical to the health and well-being of trans people. Similarly, nationwide efforts to address systemic racism and police brutality must reflect the dangers facing trans people, particularly Black and other trans women of color (111). Trans people also need access to abortion and other reproductive health services to support their ability to make choices about parenting, and laws permitting health providers to claim religious objections to specific services pose a major threat to trans health. Finally, from a public health perspective, important harm reduction interventions that support trans health and safety include the decriminalization of sex work (147), expansion of syringe service programs, and elimination of police profiling for carrying condoms or "walking while trans," as New York State achieved in early 2021 (34).

6. MEASUREMENT AND IDENTIFICATION OF TRANSGENDER POPULATIONS

Measurement is fundamental to public health research, evaluation, surveillance, and policy. Research into valid and reliable measures of sex, gender, and transgender status has been undertaken in earnest only relatively recently, and data on trans populations are not routinely collected in public health surveillance outside of HIV/AIDS, meaning that the effects of public health crises such as the COVID-19 pandemic on trans people remain largely unknown (32). Fortunately, efforts to improve and harmonize measurement of these constructs are underway. At the national level, the PhenX data collection toolkit maintained by the NIH includes gender identity questions in its core demographics module (54), federal regulations governing EHR incentive programs require certified EHR systems to have the capacity to collect structured data on gender identity (33), and Healthy People 2030 calls for an increase in population surveys that include gender identity questions. The National Academies of Sciences, Engineering, and Medicine have similarly recommended the routine collection of data on gender identity and sexual orientation throughout the federal statistical system (95), and in mid-2021 the Academies undertook a consensus study project to inform the development of standards for these variables.

6.1. Key Constructs and Measurement Approaches

Measures historically used to capture sex and gender typically lack validity and reliability. Most instruments have a variable that is labeled "sex" but usually assesses some combination of sex and

gender. For example, it has been common practice in face-to-face or telephone surveys for the interviewer to record the sex of the individual based upon a guess. Even when “sex” is assessed by a spoken question or on a self-completed form, it is usually in a format such as: “Are you male or female?” When people respond to such questions, it is difficult to know whether they are reporting their assigned sex, their gender, or both.

By contrast, while further work needs to go into measure development and validation, methodologically sound questions to identify trans individuals already exist and are increasingly included in federal surveys (95). These measures fall into two main categories: single-item measures of transgender status and two-step measures of sex assigned at birth and gender identity. Experts recommend the two-step approach, as it improves identification of trans individuals by capturing those who self-identify only as women or men (10, 19, 77, 144) (see the sidebar titled Self-Report Measures). In research using administrative data systems that lack structured gender identity fields, diagnostic codes are often used to identify trans people (see the sidebar titled Diagnostic Codes). A recent review provides recommendations for trans-inclusive EHR infrastructure and practices for both research and clinical purposes (75).

Beyond assigned sex and gender identity, additional variables are often needed to characterize health-relevant dimensions of sex and gender, including hormonal milieu, genital and reproductive organs, and gender expression (18, 19). Collection of these variables is needed to improve understanding of both transgender and cisgender health. For example, using female sex as a proxy

SELF-REPORT MEASURES

The following is a single-item measure of transgender status from the 2021 BRFSS Sexual Orientation and Gender Identity module:

Do you consider yourself to be transgender?

- Yes, transgender, male-to-female
- Yes, transgender, female-to-male
- Yes, transgender, gender nonconforming
- No
- Don't know/not sure

The following is a two-step measure of assigned sex and gender identity from the 2021 California Health Interview Survey:

1. On your original birth certificate, was your sex assigned as male or female?
 - Male
 - Female
2. Do you currently describe yourself as male, female, or transgender?
 - Male
 - Female
 - Transgender
 - None of these

Note that participants indicating “none of these” on question 2 are offered the opportunity to describe their identity, and those whose answers to questions 1 and 2 are not the same are asked to confirm their answer to avoid misclassification. Regarding the “transgender” option in question 2, “another gender” or “nonbinary” may be a more appropriate third option for gender identity, as reflected in a New Zealand statistical standard (133).

DIAGNOSTIC CODES

Researchers employing medical records and administrative databases such as insurance claims can use a variety of codes to identify trans people. Relevant ICD-9 diagnostic codes include transsexualism (302.5x), gender identity disorder in children (302.6), and gender identity disorder in adolescents and adults (302.85). ICD-10 diagnostic codes include transsexualism (F64.0); gender identity disorder in adolescence or adulthood (F64.1); gender identity disorder in childhood (F64.2); other gender identity disorders (F64.8); gender identity disorder, unspecified (F64.9); and personal history of sex reassignment (Z87.890). ICD-11 codes include gender incongruence of adolescence or adulthood (HA60); gender incongruence of childhood (HA61); and gender incongruence, unspecified (HA6Z). Procedure codes for gender-affirming procedures, National Drug Code entries for hormone medications, and ICD diagnostic codes for indications such as endocrine disorders have also been used. Code-based approaches identify only trans people who have sought health care, typically services related to gender affirmation. Thus, studies based on these approaches, while useful, are likely to be highly unrepresentative of the trans population at large (75). Whenever possible, self-reported demographic data on gender identity or trans status are the preferred method to identify and conduct research with trans people.

for having a cervix underestimates racial disparities in cervical cancer mortality (23), and gender expression is associated with health among cisgender persons (81, 131). Recommendations specific to intersex identity and traits are available from intersex organizations (66); note that intersex is not a sex designation assigned at birth and as such should be queried separately.

6.2. Challenges and Opportunities

Perhaps the most common reason that research and data systems do not include questions or data fields for identifying trans people is that data collectors overlook the relevance of knowing who is trans. However, as described above, the trans population is sizable and growing, and trans people face myriad health and health care disparities that require data to identify, monitor, and address. Variables to identify trans people should be standard along with other demographic variables.

Concerns around collecting data to identify trans individuals are often methodological, including whether respondents will understand the questions, whether the questions will cause survey break-off, and whether there will be enough statistical power to analyze the data. Numerous studies have laid these concerns to rest by demonstrating that both trans and cisgender people will readily respond to these questions in surveys and clinical settings (19, 77, 112, 142, 144). Statistical power can be improved by combining data from multiple data sets or multiple years.

A true challenge is the rapid pace with which concepts, definitions, and terminology evolve; in contrast, measures tend to change at a glacial pace. For instance, nonbinary is now the most common identity label used by people who might be classified as GNC (67), but it is not reflected in current population surveys in the USA (see the sidebar titled Self-Report Measures). Another challenge is concern among trans people about how data are collected and used (7). Sex assigned at birth influences health across the life course through biological and social pathways; thus, it is generally relevant in health-related data collection. In employment, education, or other settings, however, trans people may consider asking about sex assigned at birth intrusive, and measures of trans status alone may be more appropriate and acceptable. Trans people may also reasonably fear a loss of privacy or the misuse of research findings to harm them individually or further stigmatize trans populations. As efforts to collect data on trans people expand, it is incumbent upon researchers collecting data to engage trans community experts and carefully monitor the

responsible sharing, analysis, and interpretation of data. Trans-inclusive nondiscrimination protections are also critical to ensure that trans people are protected from harm when disclosing information related to their identity or experience.

7. FUTURE DIRECTIONS

Federal, state, and local health surveillance and research should routinely include data elements to identify and disaggregate information on the health of transfeminine, transmasculine, and non-binary persons. Federally, the USA now lags behind countries such as Canada and New Zealand, which have begun to collect gender identity data at the national level in federal surveys and the census. Such data are needed to characterize and monitor health disparities. At the same time, it is crucial that trans health research move beyond documenting disparities to evaluating interventions. Priority areas include comparative effectiveness of gender-affirming treatment options and models, mental health promotion and suicide prevention, and formal policy evaluation studies.

Much work remains to achieve health equity for trans populations, requiring the commitment of both trans-identified and allied researchers and practitioners. Trans people bring invaluable expertise but have too often been excluded from leadership roles in research and public health (118, 124). Consequently, trans health research continues to be dominated by cisgender researchers (although we note with encouragement that most of the authors of this review are trans). It is critical that funders, academic institutions, and individual scholars support funding, training, and leadership opportunities for trans researchers and practitioners, particularly those belonging to underrepresented racial/ethnic groups. Regardless of the composition of research or practice teams, community-based participatory approaches can help ensure the meaningful involvement of diverse trans communities and improve projects' relevance for affirming and health-promoting policies and programs (100).

Finally, at this time of great social and political change—and, consequently, backlash—for trans communities in the USA, it is incumbent upon public health organizations and leaders to actively pursue public policies that support trans inclusion and dignity in health care, education, housing, criminal justice, and other domains that can constrain or enhance trans people's ability to live long, safe, and healthy lives.

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LITERATURE CITED

1. ACLU (Am. Civ. Lib. Union). 2021. *Legislation affecting LGBT rights across the country*. Legis. Update, ACLU, Washington, DC. <https://www.aclu.org/legislation-affecting-lgbt-rights-across-country>
2. Alzahrani T, Nguyen T, Ryan A, Dwairy A, McCaffrey J, et al. 2019. Cardiovascular disease risk factors and myocardial infarction in the transgender population. *Circ. Cardiovasc. Qual. Outcomes* 12(4):e005597
3. AMA (Am. Med. Assoc.). 2016. *Removing financial barriers to care for transgender patients*. Policy H-185.950, AMA, Chicago. <https://policysearch.ama-assn.org/policyfinder/detail/Removing%20Financial%20Barriers%20to%20Care%20for%20Transgender%20Patients%20H-185.950?uri=%2FAMADoc%2FHOD.xml-0-1128.xml>
4. APA (Am. Psychiatr. Assoc.). 2013. *Diagnostic and Statistical Manual of Mental Disorders*. Arlington, VA: APA. 5th ed.

5. APA (Am. Psychiatr. Assoc.). 2018. *APA position statement on access to care for transgender and gender diverse individuals*. Position Statement, APA, Arlington, VA. <https://transhealthproject.org/resources/medical-organization-statements/american-psychiatric-association-statements/>
6. Aristegui I, Radusky PD, Zalazar V, Romero M, Schwartz J, Sued O. 2017. Impact of the Gender Identity Law in Argentinean transgender women. *Int. J. Transgenderism* 18(4):446–56
7. Ashley F. 2021. Recommendations for institutional and governmental management of gender information. *N. Y. Univ. Rev. Law Soc. Change* 44(4):489–528
8. Asscheman H, Giltay EJ, Megens JAJ, de Ronde W, van Trotsenburg MAA, Gooren LJG. 2011. A long-term follow-up study of mortality in transsexuals receiving treatment with cross-sex hormones. *Eur. J. Endocrinol.* 164(4):635–42
9. Azagba S, Latham K, Shan L. 2019. Cigarette, smokeless tobacco, and alcohol use among transgender adults in the United States. *Int. J. Drug Policy* 73:163–69
10. Badgett MVL, Baker KE, Conron KJ, Gates GJ, Gill A, Greytak E. 2014. *Best practices for asking questions to identify transgender and other gender minority respondents on population-based surveys*. Rep., Williams Inst., UCLA, Los Angeles. <https://williamsinstitute.law.ucla.edu/publications/geniuss-trans-pop-based-survey/>
11. Baker KE. 2015. *Open doors for all*. Rep., Cent. Am. Prog., Washington, DC. <https://www.americanprogress.org/issues/lgbtq-rights/reports/2015/04/30/112169/open-doors-for-all/>
12. Baker KE. 2017. The future of transgender coverage. *N. Engl. J. Med.* 376(19):1801–4
13. Baker KE. 2019. Findings from the Behavioral Risk Factor Surveillance System on health-related quality of life among US transgender adults, 2014–2017. *JAMA Intern. Med.* 179(8):1141–44
14. Baker KE, Streed CG, Durso LE. 2021. Ensuring that LGBTQI+ people count. *N. Engl. J. Med.* 384(13):1184–86
15. Baker KE, Wilson LM, Sharma R, Dukhanin V, McArthur K, Robinson KA. 2021. Hormone therapy, mental health, and quality of life among transgender people: a systematic review. *J. Endocr. Soc.* 5(4):bvab011
16. Baral SD, Poteat T, Strömdahl S, Wirtz AL, Guadamuz TT, Beyrer C. 2013. Worldwide burden of HIV in transgender women: a systematic review and meta-analysis. *Lancet Infect. Dis.* 13(3):214–22
17. Bartholomaeus C, Riggs DW. 2017. Whole-of-school approaches to supporting transgender students, staff, and parents. *Int. J. Transgenderism* 18(4):361–66
18. Bauer GR. 2012. Making sure everyone counts: considerations for inclusion, identification, and analysis of transgender and transsexual participants in health surveys. In *What a Difference Sex and Gender Make: A Gender, Sex and Health Research Casebook*, pp. 59–67. Vancouver, Can.: Inst. Gen. Health, Can. Inst. Health Res. <https://cihr-irsc.gc.ca/e/44734.html>
19. Bauer GR, Braimoh J, Scheim AI, Dharma C. 2017. Transgender-inclusive measures of sex/gender for population surveys: mixed-methods evaluation and recommendations. *PLOS ONE* 12(5):e0178043
20. Bauer GR, Churchill SM, Mahendran M, Walwyn C, Lizotte D, Villa-Rueda AA. 2021. Intersectionality in quantitative research: a systematic review of its emergence and applications of theory and methods. *SSM Popul. Health* 14:100798
21. Bauer GR, Scheim AI. 2013. Sampling bias in transgender studies. *Lancet Infect. Dis.* 13(10):832
22. Bauer GR, Scheim AI, Pyne J, Travers R, Hammond R. 2015. Intervenable factors associated with suicide risk in transgender persons: a respondent driven sampling study in Ontario, Canada. *BMC Public Health* 15(1):525
23. Beavis AL, Gravitt PE, Rositch AF. 2017. Hysterectomy-corrected cervical cancer mortality rates reveal a larger racial disparity in the United States. *Cancer* 123(6):1044–50
24. Becasen JS, Denard CL, Mullins MM, Higa DH, Sipe TA. 2019. Estimating the prevalence of HIV and sexual behaviors among the US transgender population: a systematic review and meta-analysis, 2006–2017. *Am. J. Public Health* 109(1):e1–8
25. Bowleg L. 2012. The problem with the phrase women and minorities: intersectionality—an important theoretical framework for public health. *Am. J. Public Health* 102(7):1267–73
26. Boyer TL, Youk AO, Haas AP, Brown GR, Shipherd JC, et al. 2021. Suicide, homicide, and all-cause mortality among transgender and cisgender patients in the Veterans Health Administration. *LGBT Health* 8(3):173–80

27. Braun H, Nash R, Tangpricha V, Brockman J, Ward K, Goodman M. 2017. Cancer in transgender people: evidence and methodological considerations. *Epidemiol. Rev.* 39(1):93–107
28. Bränström R, Pachankis JE. 2021. Country-level structural stigma, identity concealment, and day-to-day discrimination as determinants of transgender people's life satisfaction. *Soc. Psychiatry Psychiatr. Epidemiol.* 56(9):1537–45
29. Breslow AS, Brewster ME, Velez BL, Wong S, Geiger E, Soderstrom B. 2015. Resilience and collective action: exploring buffers against minority stress for transgender individuals. *Psychol. Sex. Orientat. Gend. Divers.* 2(3):253–65
30. Brooks VR. 1981. *Minority Stress and Lesbian Women*. Lanham, MD: Lexington
31. Caceres BA, Jackman KB, Edmondson D, Bockting WO. 2020. Assessing gender identity differences in cardiovascular disease in US adults: an analysis of data from the 2014–2017 BRFSS. *J. Behav. Med.* 43(2):329–38
32. Cahill S, Grasso C, Keuroghlian A, Sciortino C, Mayer K. 2020. Sexual and gender minority health in the COVID-19 pandemic. *Am. J. Public Health* 110(9):1360–61
33. Cahill SR, Baker K, Deutsch MB, Keatley J, Makadon HJ. 2016. Inclusion of sexual orientation and gender identity in stage 3 meaningful use guidelines: a huge step forward for LGBT health. *LGBT Health* 3(2):100–2
34. Carpenter LF, Marshall RB. 2017. Walking while trans: profiling of transgender women by law enforcement, and the problem of proof. *Wm. Mary J. Women Law* 24:5–38
35. Cicero EC, Reisner SL, Merwin EI, Humphreys JC, Silva SG. 2020. The health status of transgender and gender nonbinary adults in the United States. *PLOS ONE* 15(2):e0228765
36. Cicero EC, Reisner SL, Silva SG, Merwin EI, Humphreys JC. 2019. Healthcare experiences of transgender adults: an integrated mixed research literature review. *Adv. Nurs. Sci.* 42(2):123–38
37. Clark KA, Blosnich JR, Haas AP, Cochran SD. 2019. Estimate of lesbian, gay, bisexual, and transgender youth suicide is inflated. *J. Adolesc. Health* 64(6):810
38. Coleman E, Bockting WO, Botzer M. 2012. Standards of care for the health of transsexual, transgender, and gender-nonconforming people, version 7. *Int. J. Transgenderism* 13(4):165–232
39. Collins PH. 1990. *Black Feminist Thought: Knowledge, Consciousness and the Politics of Empowerment*. New York: Routledge
40. Crenshaw K. 1989. Demarginalizing the intersection of race and sex: a Black feminist critique of antidiscrimination doctrine, feminist theory and antiracist politics. *Univ. Chic. Leg. Forum* 1989(1):8
41. Crissman HP, Stroumsa D, Kobernik EK, Berger MB. 2019. Gender and frequent mental distress: comparing transgender and non-transgender individuals' self-rated mental health. *J. Women's Health* 28(2):143–51
42. Dhejne C, Lichtenstein P, Boman M, Johansson ALV, Långström N, Landén M. 2011. Long-term follow-up of transsexual persons undergoing sex reassignment surgery: cohort study in Sweden. *PLOS ONE* 6(2):e16885
43. Dinno A. 2017. Homicide rates of transgender individuals in the United States: 2010–2014. *Am. J. Public Health* 107(9):1441–47
44. Downing JM, Przedworski JM. 2018. Health of transgender adults in the U.S., 2014–2016. *Am. J. Prev. Med.* 55(3):336–44
45. Dowshen N, Nguyen GT, Gilbert K, Feiler A, Margo KL. 2014. Improving transgender health education for future doctors. *Am. J. Public Health* 104(7):e5–6
46. Durwood L, McLaughlin KA, Olson KR. 2017. Mental health and self-worth in socially transitioned transgender youth. *J. Am. Acad. Child Adolesc. Psychiatry* 56(2):116–23
47. Flores AR, Herman JL, Gates GJ, Brown T. 2016. *How many adults identify as transgender in the United States?* Rep., Williams Inst., UCLA, Los Angeles. <https://williamsinstitute.law.ucla.edu/publications/trans-adults-united-states/>
48. Getahun D, Nash R, Flanders WD, Baird TC, Becerra-Culqui TA, et al. 2018. Cross-sex hormones and acute cardiovascular events in transgender persons. *Ann. Intern. Med.* 169(4):205–10
49. Gilbert PA, Pass LE, Keuroghlian AS, Greenfield TK, Reisner SL. 2018. Alcohol research with transgender populations: a systematic review and recommendations to strengthen future studies. *Drug Alcohol Depend.* 186:138–46

50. Glynn TR, Gamarel KE, Kahler CW, Iwamoto M, Operario D, Nemoto T. 2016. The role of gender affirmation in psychological well-being among transgender women. *Psychol. Sex. Orientat. Gend. Divers.* 3(3):336–44
51. Goldenberg T, Reisner SL, Harper GW, Gamarel KE, Stephenson R. 2020. State policies and healthcare use among transgender people in the U.S. *Am. J. Prev. Med.* 59(2):247–59
52. Gonzales G, Henning-Smith C. 2017. Barriers to care among transgender and gender nonconforming adults. *Milbank Q.* 95(4):726–48
53. Haas AP, Lane AD, Blosnich JR, Butcher BA, Mortali MG. 2019. Collecting sexual orientation and gender identity information at death. *Am. J. Public Health* 109(2):255–59
54. Hamilton CM, Strader LC, Pratt JG, Maiese D, Hendershot T, et al. 2011. The PhenX Toolkit: Get the most from your measures. *Am. J. Epidemiol.* 174(3):253–60
55. Harari L, Lee C. 2021. Intersectionality in quantitative health disparities research: a systematic review of challenges and limitations in empirical studies. *Soc. Sci. Med.* 277:113876
56. Hatzenbuehler ML, Phelan JC, Link BG. 2013. Stigma as a fundamental cause of population health inequalities. *Am. J. Public Health* 103(5):813–21
57. Hembree WC. 2011. Guidelines for pubertal suspension and gender reassignment for transgender adolescents. *Child Adolesc. Psychiatr. Clin. N. Am.* 20(4):725–32
58. Hembree WC, Cohen-Kettenis PT, Gooren L, Hannema SE, Meyer WJ, et al. 2017. Endocrine treatment of gender-dysphoric/gender-incongruent persons: an Endocrine Society Clinical Practice Guideline. *J. Clin. Endocrinol. Metab.* 102(11):3869–903
59. Henderson ER, Blosnich JR, Herman JL, Meyer IH. 2019. Considerations on sampling in transgender health disparities research. *LGBT Health* 6(6):267–70
60. Hendricks ML, Testa RJ. 2012. A conceptual framework for clinical work with transgender and gender nonconforming clients: an adaptation of the minority stress model. *Prof. Psychol. Res. Pract.* 43(5):460–67
61. Herbst JH, Jacobs ED, Finlayson TJ, McKleroy VS, Neumann MS, et al. 2008. Estimating HIV prevalence and risk behaviors of transgender persons in the United States: a systematic review. *AIDS Behav.* 12(1):1–17
62. Hoffman BR. 2014. The interaction of drug use, sex work, and HIV among transgender women. *Subst. Use Misuse* 49(8):1049–53
63. Hong K. 2002. Categorical exclusions: exploring legal responses to health care discrimination against transsexuals. *Wm. Mary J. Women Law* 11:88–126
64. Hughto JMW, Quinn EK, Dunbar MS, Rose AJ, Shireman TI, Jasuja GK. 2021. Prevalence and co-occurrence of alcohol, nicotine, and other substance use disorder diagnoses among US transgender and cisgender adults. *JAMA Netw. Open* 4(2):e2036512
65. Human Rights Campaign. 2020. *Fatal violence against the transgender and gender non-conforming community in 2020*. Resource, Human Rights Campaign, Washington, DC. <https://www.hrc.org/resources/violence-against-the-trans-and-gender-non-conforming-community-in-2020>
66. Carpenter M. 2012. *Researching intersex populations*. Guide, Intersex Hum. Rights, Altona, Vic., Aust. <https://ihra.org.au/research/>
67. James SE, Herman JL, Rankin S, Keisling M, Mottet L, Anafi M. 2016. *The Report of the 2015 U.S. Transgender Survey*. Washington, DC: Natl. Cent. Transgender Equal. <https://transequality.org/sites/default/files/docs/usts/USTS-Full-Report-Dec17.pdf>
68. Johns MM, Lowry R, Andrzejewski J, Barrios LC, Demissie Z, et al. 2019. Transgender identity and experiences of violence victimization, substance use, suicide risk, and sexual risk behaviors among high school students—19 states and large urban school districts, 2017. *Morb. Mortal. Wkly. Rep.* 68(3):67–71
69. Jt. Comm. Accred. Healthc. 2010. *Advancing Effective Communication, Cultural Competence, and Patient- and Family-Centered Care: A Roadmap for Hospitals*. Oakbrook Terrace, IL: Jt. Comm. Accred. Healthc.
70. Kcomt L. 2019. Profound health-care discrimination experienced by transgender people: rapid systematic review. *Soc. Work Health Care* 58(2):201–19
71. Kia H, MacKinnon KR, Abramovich A, Bonato S. 2021. Peer support as a protective factor against suicide in trans populations: a scoping review. *Soc. Sci. Med.* 279:114026
72. King WM, Gamarel KE. 2020. A scoping review examining social and legal gender affirmation and health among transgender populations. *Transgender Health* 6(1):5–22

73. Kiran T, Davie S, Singh D, Hranilovic S, Pinto AD, et al. 2019. Cancer screening rates among transgender adults: cross-sectional analysis of primary care data. *Can. Fam. Physician* 65(1):e30–37
74. Klein PW, Psihopaidas D, Xavier J, Cohen SM. 2020. HIV-related outcome disparities between transgender women living with HIV and cisgender people living with HIV served by the Health Resources and Services Administration's Ryan White HIV/AIDS Program: a retrospective study. *PLOS Med.* 17(5):e1003125–16
75. Kronk CA, Everhart AR, Ashley F, Thompson HM, Schall TE, et al. 2021. Transgender data collection in the electronic health record (EHR): current concepts and issues. *J. Am. Med. Inform. Assoc.* 29(2):271–84
76. Lagos D. 2018. Looking at population health beyond “male” and “female”: implications of transgender identity and gender nonconformity for population health. *Demography* 55(6):2097–117
77. Lagos D, Compton D. 2021. Evaluating the use of a two-step gender identity measure in the 2018 General Social Survey. *Demography* 58(2):763–72
78. Lerner JE, Robles G. 2017. Perceived barriers and facilitators to health care utilization in the United States for transgender people: a review of recent literature. *J. Health Care Poor Underserved* 28(1):127–52
79. Lett E, Asabor EN, Beltrán S, Dowshen N. 2021. Characterizing health inequities for the U.S. transgender Hispanic population using the Behavioral Risk Factor Surveillance System. *Transgender Health.* 6(5):275–83
80. Lett E, Dowshen NL, Baker KE. 2020. Intersectionality and health inequities for gender minority blacks in the U.S. *Am. J. Prev. Med.* 59(5):639–47
81. Lowry R, Johns MM, Gordon AR, Austin SB, Robin LE, Kann LK. 2018. Nonconforming gender expression and associated mental distress and substance use among high school students. *JAMA Pediatr.* 172(11):1020–28
82. Mahfouda S, Moore JK, Siafarikas A, Zepf FD, Lin A. 2017. Puberty suppression in transgender children and adolescents. *Lancet Diabetes Endocrinol.* 5(10):816–26
83. Mallory C, Tentindo W. 2019. *Medicaid coverage for gender-affirming care*. Rep., Williams Inst., UCLA, Los Angeles. <https://williamsinstitute.law.ucla.edu/publications/medicaid-trans-health-care/>
84. Marcellin RL, Bauer GR, Scheim AI. 2013. Intersecting impacts of transphobia and racism on HIV risk among trans persons of colour in Ontario, Canada. *Ethn. Inequal. Health Soc. Care* 6(4):97–107
85. Marshall E, Claes L, Bouman WP, Witcomb GL, Arcelus J. 2016. Non-suicidal self-injury and suicidality in trans people: a systematic review of the literature. *Int. Rev. Psychiatry* 28(1):58–69
86. McNeil J, Ellis SJ, Eccles FJR. 2017. Suicide in trans populations: a systematic review of prevalence and correlates. *Psychol. Sex. Orientat. Gend. Divers.* 4(3):341–53
87. Meerwijk EL, Sevelius J. 2017. Transgender population size in the United States: a meta-regression of population-based probability samples. *Am. J. Public Health* 107(2):e1–8
88. Meyer IH. 1995. Minority stress and mental health in gay men. *J. Health Soc. Behav.* 36(1):38–56
89. Meyer IH. 2001. Why lesbian, gay, bisexual, and transgender public health? *Am. J. Public Health* 91(6):856–59
90. Meyer IH. 2003. Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: conceptual issues and research evidence. *Psychol. Bull.* 129(5):674–97
91. Meyer IH, Brown TNT, Herman JL, Reisner SL, Bockting WO. 2017. Demographic characteristics and health status of transgender adults in select US regions: Behavioral Risk Factor Surveillance System, 2014. *Am. J. Public Health* 107(4):582–89
92. Millet N, Longworth J, Arcelus J. 2016. Prevalence of anxiety symptoms and disorders in the transgender population: a systematic review of the literature. *Int. J. Transgenderism* 18(1):27–38
93. Movement Advancement Project. 2021. *Snapshot: LGBTQ equality by state*. Equal. Map, Movement Advancement Project, Boulder, CO. <https://www.lgbtmap.org/equality-maps>
94. Murad MH, Elamin MB, Garcia MZ, Mullan RJ, Murad A, et al. 2010. Hormonal therapy and sex reassignment: a systematic review and meta-analysis of quality of life and psychosocial outcomes. *Clin. Endocrinol.* 72(2):214–31

95. Natl. Acad. Sci. Eng. Med. 2020. *Understanding the Well-Being of LGBTQI+ Populations*. Washington, DC: Natl. Acad. Press
96. Natl. Cent. Transgender Equal. 2020. *Summary of state birth certificate gender change laws*. Legis. Summ., Natl. Cent. Transgender Equal., Washington, DC. <https://transequality.org/sites/default/files/docs/resources/Summary%20of%20State%20Birth%20Certificate%20Laws%20Jan%202020.pdf>
97. Nokoff NJ, Scarbro S, Juarez-Colunga E, Moreau KL, Kempe A. 2018. Health and cardiometabolic disease in transgender adults in the United States: Behavioral Risk Factor Surveillance System 2015. *J. Endocr. Soc.* 2(4):349–60
98. Nuttbrock L, Bockting WO, Rosenblum A, Hwahng SJ, Mason M, et al. 2015. Gender abuse and incident HIV/STI among transgender women in New York City: buffering effect of involvement in a transgender community. *AIDS Behav.* 19(8):1446–53
99. Obedin-Maliver J, Goldsmith ES, White W, Tran E, Stewart L, et al. 2011. Lesbian, gay, bisexual, and transgender-related content in undergraduate medical education. *JAMA* 306(9):971–77
100. Ortiz K, Nash J, Shea L, Oetzel J, Garoutte J, et al. 2020. Partnerships, processes, and outcomes: a health equity-focused scoping meta-review of community-engaged scholarship. *Annu. Rev. Public Health* 41:177–99
101. Passos TS, Teixeira M, Almeida-Santos MA. 2020. Quality of life after gender affirmation surgery: a systematic review and network meta-analysis. *Sex. Res. Soc. Policy* 17(2):252–62
102. Peitzmeier SM, Malik M, Kattari SK, Marrow E, Stephenson R, et al. 2020. Intimate partner violence in transgender populations: systematic review and meta-analysis of prevalence and correlates. *Am. J. Public Health* 110:e1–14
103. Perez-Brumer A, Hatzenbuehler ML, Oldenburg CE, Bockting WO. 2015. Individual- and structural-level risk factors for suicide attempts among transgender adults. *Behav. Med.* 41(3):164–71
104. Pflum SR, Testa RJ, Balsam KF, Goldblum PB, Bongar B. 2015. Social support, trans community connectedness, and mental health symptoms among transgender and gender nonconforming adults. *Psychol. Sex. Orientat. Gen. Divers.* 2(3):281–86
105. Phillips G, Peterson J, Binson D, Hidalgo J, Magnus M, YMSM of Color SPNS Initiative Study Group. 2011. House/ball culture and adolescent African-American transgender persons and men who have sex with men: a synthesis of the literature. *AIDS Care* 23(4):515–20
106. Poteat T, Hanna DB, Rebeiro PF, Klein M, Silverberg MJ, et al. 2019. Characterizing the HIV care continuum among transgender women and cisgender women and men in clinical care: a retrospective time-series analysis. *Clin. Infect. Dis.* 70(6):1131–38
107. Poteat T, Reisner SL, Radix A. 2014. HIV epidemics among transgender women. *Curr. Opin. HIV AIDS* 9(2):168–73
108. Poteat T, Scheim A, Xavier J, Reisner SL, Baral SD. 2016. Global epidemiology of HIV infection and related syndemics affecting transgender people. *J. Acquir. Immune Defic. Syndr.* 72(Suppl. 3):S210–19
109. Rafferty J, Comm. Psychosoc. Aspects Child Fam. Health, Comm. Adolesc. 2018. Ensuring comprehensive care and support for transgender and gender-diverse children and adolescents. *Pediatrics* 142(4):e20182162
110. Reed GM, Drescher J, Krueger RB, Atalla E, Cochran SD, et al. 2016. Disorders related to sexuality and gender identity in the ICD-11: revising the ICD-10 classification based on current scientific evidence, best clinical practices, and human rights considerations. *World Psychiatry* 15(3):205–21
111. Reisner SL, Bailey Z, Sevelius J. 2014. Racial/ethnic disparities in history of incarceration, experiences of victimization, and associated health indicators among transgender women in the U.S. *Women Health* 54(8):750–67
112. Reisner SL, Biello K, Rosenberger JG, Austin SB, Haneuse S, et al. 2014. Using a two-step method to measure transgender identity in Latin America/the Caribbean, Portugal, and Spain. *Arch. Sex. Behav.* 43(8):1503–14
113. Reisner SL, Bradford J, Hopwood R, Gonzalez A, Makadon H, et al. 2015. Comprehensive transgender healthcare: the gender affirming clinical and public health model of Fenway Health. *J. Urban Health* 92(3):584–92
114. Reisner SL, Deutsch MB, Bhasin S, Bockting WO, Brown GR, et al. 2016. Advancing methods for US transgender health research. *Curr. Opin. Endocrinol. Diabetes Obes.* 23(2):198–207

115. Reisner SL, Poteat T, Keatley JA, Cabral M, Mothopeng T, et al. 2016. Global health burden and needs of transgender populations: a review. *Lancet* 388(10042):412–36
116. Restar A, Jin H, Breslow A, Reisner SL, Mimiaga MJ, et al. 2020. Legal gender marker and name change is associated with lower negative emotional response to gender-based mistreatment and improve mental health outcomes among trans populations. *SSM Popul. Health* 11:100595
117. Restar A, Jin H, Breslow AS, Surace A, Antebi-Gruszka N, et al. 2019. Developmental milestones in young transgender women in two American cities: results from a racially and ethnically diverse sample. *Transgender Health* 4(1):162–67
118. Restar A, Operario D. 2019. The missing trans women of science, medicine, and global health. *Lancet* 393(10171):506–8
119. Rich AJ, Salway T, Scheim A, Poteat T. 2020. Sexual minority stress theory: remembering and honoring the work of Virginia Brooks. *LGBT Health* 7(3):124–27
120. Rosenwohl-Mack A, Tamar-Mattis S, Baratz AB, Dalke KB, Ittelson A, et al. 2020. A national study on the physical and mental health of intersex adults in the U.S. *PLOS ONE* 15(10):e0240088
121. Rotondi NK, Bauer GR, Scanlon K, Travers A, Kaay M, Travers R. 2013. Nonprescribed hormone use and self-performed surgeries: “do-it-yourself” transitions in transgender communities in Ontario, Canada. *Am. J. Public Health* 103(10):1830–36
122. Russell ST, Pollitt AM, Li G, Grossman AH. 2018. Chosen name use is linked to reduced depressive symptoms, suicidal ideation, and suicidal behavior among transgender youth. *J. Adolesc. Health* 63(4):503–5
123. Safer JD, Coleman E, Feldman JL, Garofalo R, Hembree W, et al. 2016. Barriers to healthcare for transgender individuals. *Curr. Opin. Endocrinol. Diabetes Obes.* 23(2):168–71
124. Scheim AI, Appenroth MN, Beckham SW, Goldstein Z, Grinspan MC, et al. 2019. Transgender HIV research: nothing about us without us. *Lancet HIV* 6(9):e566–67
125. Scheim AI, Bauer GR. 2015. Sex and gender diversity among transgender persons in Ontario, Canada: results from a respondent-driven sampling survey. *J. Sex Res.* 52(1):1–14
126. Scheim AI, Perez-Brumer AG, Bauer GR. 2020. Gender-concordant identity documents and mental health among transgender adults in the USA: a cross-sectional study. *Lancet Public Health* 5(4):e196–203
127. Schulz SL. 2018. The informed consent model of transgender care: an alternative to the diagnosis of gender dysphoria. *J. Humanist Psychol.* 58(1):72–92
128. Schwend AS. 2020. Trans health care from a depathologization and human rights perspective. *Public Health Rev.* 41(1):3
129. Sevelius J. 2012. Gender affirmation: a framework for conceptualizing risk behavior among transgender women of color. *Sex Roles* 68(11/12):675–89
130. Sevelius J, Chakravarty D, Neilands TB, Keatley J, Shade SB, et al. 2021. Evidence for the model of gender affirmation: the role of gender affirmation and healthcare empowerment in viral suppression among transgender women of color living with HIV. *AIDS Behav.* 25(Suppl. 1):64–71
131. Shakya HB, Domingue B, Nagata JM, Cislighi B, Weber A, Darmstadt GL. 2019. Adolescent gender norms and adult health outcomes in the USA: a prospective cohort study. *Lancet Child Adolesc. Health* 3(8):529–38
132. Silverberg MJ, Nash R, Becerra-Culqui TA, Cromwell L, Getahun D, et al. 2017. Cohort study of cancer risk among insured transgender people. *Ann. Epidemiol.* 27(8):499–501
133. StatsNZ. 2021. *Statistical standard for gender, sex, and variations of sex characteristics*. Stat. Stand., StatsNZ, Gov. N. Z., Wellington. <https://www.stats.govt.nz/methods/statistical-standard-for-gender-sex-and-variations-of-sex-characteristics>
134. Steinmetz K. 2014. The transgender tipping point. *Time Magazine*, May 29. <https://time.com/135480/transgender-tipping-point/>
135. Stotzer RL. 2017. Data sources hinder our understanding of transgender murders. *Am. J. Public Health* 107(9):1362–63
136. Streed CG Jr, Harfouch O, Marvel F, Blumenthal RS, Martin SS, Mukherjee M. 2017. Cardiovascular disease among transgender adults receiving hormone therapy. *Ann. Intern. Med.* 167(4):256–67

137. Streed CG Jr., McCarthy EP, Haas JS. 2018. Self-reported physical and mental health of gender non-conforming transgender adults in the United States. *LGBT Health* 5(7):443–48
138. Streed CG, Hedian HF, Bertram A, Sisson SD. 2019. Assessment of internal medicine resident preparedness to care for lesbian, gay, bisexual, transgender, and queer/questioning patients. *J. Gen. Intern. Med.* 34(6):893–98
139. Stroumsa D, Crissman HP, Dalton VK, Kolenic G, Richardson CR. 2020. Insurance coverage and use of hormones among transgender respondents to a national survey. *Ann. Fam. Med.* 18(6):528–34
140. Subst. Abuse Ment. Health Serv. Adm. 2018. *Key Substance Use and Mental Health Indicators in the United States: Results from the 2017 National Survey on Drug Use and Health*. Rockville, MD: Cent. Behav. Health Stat. Qual., Subst. Abuse Ment. Health Serv. Adm.
141. Tan KKH, Treharne GJ, Ellis SJ, Schmidt JM, Veale JF. 2019. Gender minority stress: a critical review. *J. Homosex.* 67(10):1471–89
142. Tate CC, Ledbetter JN, Youssef CP. 2013. A two-question method for assessing gender categories in the social and medical sciences. *J. Sex Res.* 50(8):767–76
143. Testa RJ, Habarth J, Peta J, Balsam K. 2015. Development of the Gender Minority Stress and Resilience Measure. *Psychol. Sex. Orientat. Gend. Divers.* 2(1):65–77
144. Tordoff DM, Morgan J, Dombrowski JC, Golden MR, Barbee LA. 2019. Increased ascertainment of transgender and non-binary patients using a 2-step versus 1-step gender identity intake question in an STD clinic setting. *Sex. Transm. Dis.* 46(4):254–59
145. Turban JL, Beckwith N, Reisner SL, Keuroghlian AS. 2020. Association between recalled exposure to gender identity conversion efforts and psychological distress and suicide attempts among transgender adults. *JAMA Psychiatry* 77(1):68–76
146. Turban JL, King D, Reisner SL, Keuroghlian AS. 2019. Psychological attempts to change a person's gender identity from transgender to cisgender: estimated prevalence across US states, 2015. *Am. J. Public Health* 109(10):1452–54
147. Turner CM, Arayasirikul S, Wilson EC. 2021. Disparities in HIV-related risk and socio-economic outcomes among trans women in the sex trade and effects of a targeted, anti-sex-trafficking policy. *Soc. Sci. Med.* 270:113664
148. Valentine SE, Shipherd JC. 2018. A systematic review of social stress and mental health among transgender and gender-non-conforming people in the United States. *Clin. Psychol. Rev.* 66:24–38
149. Wang T, Cahill S. 2018. Antitransgender political backlash threatens health and access to care. *Am. J. Public Health* 108(5):609–10
150. Wernick JA, Busa S, Matouk K, Nicholson J, Janssen A. 2019. A systematic review of the psychological benefits of gender-affirming surgery. *Urol. Clin. N. Am.* 46(4):475–86
151. Wesp LM, Malcoe LH, Elliott A, Poteat T. 2019. Intersectionality research for transgender health justice: a theory-driven conceptual framework for structural analysis of transgender health inequities. *Transgender Health* 4(1):287–96
152. White Hughto JM, Reisner SL. 2016. A systematic review of the effects of hormone therapy on psychological functioning and quality of life in transgender individuals. *Transgender Health* 1(1):21–31
153. White Hughto JM, Reisner SL, Pachankis JE. 2015. Transgender stigma and health: a critical review of stigma determinants, mechanisms, and interventions. *Soc. Sci. Med.* 147:222–31
154. Wilson E, Rapues J, Jin H, Raymond HF. 2014. The use and correlates of illicit silicone or “fillers” in a population-based sample of transwomen, San Francisco, 2013. *J. Sex. Med.* 11(7):1717–24
155. Wilson EC, Chen Y-H, Arayasirikul S, Raymond HF, McFarland W. 2016. The impact of discrimination on the mental health of trans*female youth and the protective effect of parental support. *AIDS Behav.* 20(10):2203–11
156. Wolford-Clevenger C, Frantell K, Smith PN, Flores LY, Stuart GL. 2018. Correlates of suicide ideation and behaviors among transgender people: a systematic review guided by ideation-to-action theory. *Clin. Psychol. Rev.* 63:93–105

RELATED RESOURCES

American Association of Medical Colleges. <https://store.aamc.org/implementing-curricular-and-institutional-climate-changes-to-improve-health-care-for-individuals-who-are-lgbt-gender-nonconforming-or-born-with-dsd-a-resource-for-medical-educators.html>

Center of Excellence in Transgender Health at the University of California, San Francisco. <https://prevention.ucsf.edu/transhealth>

Centers for Disease Control and Prevention. <https://www.cdc.gov/lgbthealth/transgender.htm>

Human Rights Campaign Corporate Equality Index. <https://www.hrc.org/resources/corporate-equality-index>

Human Rights Campaign Healthcare Equality Index. <https://www.hrc.org/resources/healthcare-equality-index>

National LGBTQIA+ Health Education Center at Fenway Health. <https://fenwayhealth.org/the-fenway-institute/education/the-national-lgbtia-health-education-center/>

National Resource Center on LGBT Aging. <https://www.lgbtagingcenter.org>

Substance Abuse and Mental Health Services Administration. <https://www.samhsa.gov/behavioral-health-equity/lgbt>

World Professional Association for Transgender Health. <https://www.wpath.org>