

Navigating aging as transgender and gender diverse individuals: current realities and future public health challenges. A narrative review

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Received 1 July 2024; accepted 2 October 2024

Summary. Transgender and gender diverse (TGD) people represent a broad spectrum of individuals whose gender identity differs from their recorded sex at birth. Despite recommendations from major international organizations, like the World Health Organization, TGD individuals still face harassment and discrimination in all areas of their lives. This includes difficulties in accessing healthcare services and essential resources such as education, employment, and housing, which adversely affect their physical and mental health. For this population, aging presents unique social, physical and mental health challenges. The absence of culturally competent healthcare and the effects of minority stress often result in delayed medical care, which can potentially exacerbate conditions associated with aging. Unfortunately, to date, there is a paucity of literature on older TGD people, which has resulted in a lack of understanding of the impact of their lifelong experiences of marginalization and social rejection, as well as the long-term health effects of gender affirming care. This narrative review seeks to contribute to the field, providing an overview of the condition of older TGD people, identifying critical health needs, and highlighting areas requiring urgent attention as the TGD population and global aging trends continue to rise. It underscores the importance of developing inclusive healthcare policies that promote access to culturally competent services, support ongoing education and training for healthcare providers, and integrate gender affirming care into standard aging protocols. Furthermore, future research should not only address the specific health concerns of older TGD individuals but also explore the intersectionality between aging, gender identity, and gender affirming care, examining the cumulative impact of these factors on overall health outcomes.

Keywords. Transgender and gender diverse people, aging, healthcare disparities, gender affirming care, caregiving.

Introduction

Transgender and gender diverse (TGD) people represent a broad spectrum of individuals whose gender identities differ from the recorded sex at birth; cisgender people, on the other hand, are those whose gender identity aligns with the sex assigned at birth.¹

The estimation of the number of TGD individuals remains challenging due to several factors. Primarily, the

absence of gender identity information in the data collection, beginning at the population censuses, and the heterogeneity of the population itself represent significant obstacles.²⁻⁴ Past studies have focused on more easily identifiable subgroups of the TGD population, such as individuals accessing clinical centers for hormonal and/or surgical gender affirmation treatment. This approach has resulted in an underestimation of the data because not all TGD people seek hormonal and/or surgical gender affirming treatment. More recent studies have been conducted on general population samples, with participants asked about their gender identity. This was done employing a broader and more inclusive definition of gender identity based on self-reported gender identities. These studies, conducted predominantly in North America and Europe, indicate values for the adult TGD population ranging from 0.3% to 4.5%.¹ This wide range can be attributed to a number of factors, including the methodology employed to collect data on gender identities across different studies, the age of the population considered, and the geographical location. Nevertheless, these findings indicate that the TGD population has a consistent numerical profile.

It is crucial to highlight that the healthcare needs of this population are partly similar to those of the cisgender population (e.g., participation in cancer screenings) and partly distinct, pertaining to the hormonal and/or surgical gender affirming pathway. Consistently, international recommendations emphasize the importance of an inter- and multidisciplinary approach to healthcare for TGD individuals. This approach involves collaboration among professionals from various fields to support gender affirming interventions, preventive care, and the management of chronic diseases.¹

The gender affirming pathway is the process that leads to the affirmation of one's gender identity. It is not a fixed, inflexible process; rather, it is a tailored approach that is responsive to the unique needs, expectations, and requirements of each individual.^{1,5} Some TGD individuals may experience a reduction in distress by coming out, which refers to the act of revealing one's gender identity or sexual orientation, and through social transition, which is the process by which a person begins to assume a gender role that aligns with their gender iden-

tity. Others may require different levels of bodily changes to align as much as possible the body with the experienced gender through hormones or surgery, which is referred to as the gender affirming medical pathway.¹

A recent survey conducted by the European Union Agency for Fundamental Rights on the LGBT+ population indicates that up to 60% of TGD individuals have experienced discrimination across various aspects of life, including access to healthcare services.⁶ This pervasive discrimination has an adverse impact on their mental and physical health, resulting in a lower quality of life compared to their cisgender counterparts.⁷⁻⁹ Although it is widely recognized that TGD individuals face adverse health outcomes, older TGD adults constitute a vulnerable subgroup often neglected.¹⁰⁻¹² As already stated, estimating the size of the TGD population is complex, but specifying the size of this subgroup is even harder. However, as the life expectancy of the general population increases, the number of elderly TGD individuals is expected to rise in the coming decades.¹³ In addition to the separate effects of factors like minority stress and social determinants of health in later years, there is a paucity of data on particular health issues for TGD individuals who use gender affirming hormonal therapy (GAHT) later in life. This includes those who started GAHT at a younger age and those who aim to continue or begin GAHT in their 60s, 70s, 80s, or beyond.

It is therefore necessary to discuss the aforementioned issues and to plan studies that address the existing gaps. This review aims to contribute to the topic by shedding light on the specific healthcare needs and the impact of aging and gender affirming care on the steadily growing aging TGD population.

Materials and methods

A thorough search of the literature was performed between October 2023 and June 2024 on Pubmed database using the following MeSH terms: (aging OR older) AND (transgender OR gender diverse OR gender non-conforming); (aging OR older) AND (transgender OR gender diverse OR gender non-conforming) AND (gender affirming care OR gender affirming hormone therapy OR gender affirming surgery OR health); (aging OR older) AND (transgender OR gender diverse OR gender non-conforming) AND (caregiving OR caregiver).

The articles considered (including reviews, research articles, and editorials) were those that included quantitative or qualitative data on older TGD individuals, published between 1996 and 2024, and available in the English language. We chose not to apply tools for assessing the quality of the studies because our primary aim was to provide a comprehensive overview of the current literature and highlight key themes and trends in the research.

The World Health Organization defines 'older adults' or 'elderly' as individuals aged 60 years and above.¹⁴ However, in the scientific literature concerning aging within the TGD population, the commonly adopted age threshold often includes individuals aged 55 years and older, with some studies defining older adults as those aged 45 years and above. Accordingly, this review adopted this broader age range, particularly in light of the limited literature available on older individuals within this population.

Impact of the historical and social context on the life and health experiences of older TGD individuals

The life trajectories, challenges faced, and health needs of older TGD individuals, particularly those of earlier generations, have been profoundly shaped by the historical, cultural, social, and economic contexts in which they grew up and formed their identities. TGD individuals born in the early decades of the last century experienced a significantly more hostile environment compared to those born in the 1960s, who grew up during periods of profound historical and cultural transformations. This shift spans from an era where awareness of gender and sexual minorities was largely absent, to a phase marked by the criminalization and institutionalization of LGBT+ individuals in psychiatric facilities,¹⁵ leading up to events such as the 1969 Stonewall riots in the United States,¹⁶ and in Europe, legislative changes like the 1967 Sexual Offences Act in Britain,¹⁷ as well as social movements, such as the founding of FUORI (Fronte Unitario Omosessuale Rivoluzionario Italiano) in 1971 in Italy. These developments were significant in advancing the visibility and rights of LGBT+ people. Due to the necessity of concealing their identities in order to survive, older generations may have experienced fewer instances of overt discrimination compared to their successors. However, they report higher levels of internalized stigma.¹⁶ Subsequent generations, raised in more inclusive environments, tend to disclose their gender identity at an earlier age. This decision, however, has had ambivalent consequences: while it has led to a reduction in internalized stigma, it has also resulted in increased experiences of discrimination and social isolation over time.¹⁶

Risk factors affecting older TGD individuals' health

There is increasing evidence that the TGD as a whole population faces significant general stressors, such as life adversity and financial stress, which negatively impact their health throughout their lives.^{9,18} These general

stressors, combined with multiple levels of minority stress – including self-stigma, expectations of rejection, concealment of gender identity, discrimination, family rejection, and violence – contribute to higher rates of disability and chronic health conditions among TGD individuals, leading them to report poorer quality of life compared to their cisgender counterparts.¹⁹⁻²⁵

The lack of competence of healthcare providers in the field of TGD health issues may contribute to the overall health outcomes of this population. The provision of healthcare for TGD individuals requires the acquisition of specific skills that are not adequately addressed in educational programs at any stage of training, including undergraduate, graduate, residency and continuing education. Consequently, the training of healthcare professionals on this topic is largely dependent on personal initiative and sensitivity.^{8,26-30} Because of this and the fear of seeing their dignity undermined, often TGD individuals drop out of their treatment or are discouraged from seeking healthcare.³¹

In addition to all of the above, older TGD individuals face further difficulties due to their advanced age.^{12,25,32} In general, as individuals grow older, they face a heightened risk of encountering age-related discrimination.³³ Similar to discrimination against TGD individuals, ageism is a societal construct grounded in negative stereotypes that depict older adults as unproductive, dependent, and challenging to manage.³³ This form of discrimination is associated with increased cardiovascular stress responses,^{34,35} higher mortality risk,³⁶ elevated psychological distress,³⁷ diminished self-care behaviors,³⁸ lower physical activity levels,³⁹ reduced will to live,⁴⁰ and numerous other adverse psychosocial and mental health outcomes.^{39,41} Nevertheless, the intersection of age and gender identity and its impact on TGD population remains under-researched. The existing literature on the lifestyles and experiences of older TGD people, primarily drawn from studies conducted in the US and selected European countries within the LGBT+ community, lacks exclusive data representative of this demographic, and accurate statistics remain elusive.³²

The available data suggest that older TGD adults often face financial insecurity, which contributes to delayed care-seeking and poor healthcare access and utilization.⁴² They also report poor access to education, leading to periods of housing instability and reduced employment opportunities.⁴³ Even among those with higher levels of education, poverty remains a significant issue.⁴⁴ Discrimination, stigma, and fear of mistreatment are frequently reported,⁴⁵ also among those with substantial resources (e.g., access to care, high education levels, or high annual income). Moreover, the intersection of TGD identity and age often hinder older individuals from disclosing their gender identity also to relatives and friends.⁴⁶ In this regard, it is important to

emphasize that people disclosing their gender identity, even if later in life, report an increased self-confidence, a greater sense of personal freedom, and an enhanced sense of inner peace and self-acceptance.⁴⁶

In light of the aforementioned observations, it is not unexpected that older TGD individuals are at a higher risk for poor physical health, particularly cardiovascular diseases, along with increased rates of dementia, anxiety, depressive symptoms, obesity, smoking, and risky sexual behaviors compared to their non-transgender peers.^{12,45,47-49}

Gender affirming care and its impact on older TGD people's health

Gender affirming care is a multifaceted field that necessitates a specialized, multidisciplinary, and interdisciplinary approach. This approach integrates expertise from a range of disciplines, including endocrinology, surgery, voice and communication, primary care, reproductive, sexual and mental health. These disciplines work in collaboration to provide comprehensive support for gender affirming interventions, preventive care, and the management of chronic diseases.¹ Details regarding gender affirming hormonal and surgical treatments and adverse outcome prevention fall outside the scope of this review and can be found in previous publications on the subject.^{1,5,50} Briefly, GAHT consists in administering androgen hormones for assigned female at birth (AFAB) TGD individuals or estrogen and antiandrogens for assigned male at birth (AMAB) TGD individuals.^{1,5,50}

Gender affirming surgery (GAS) may encompass chest surgery ('top surgery') and genital surgery ('bottom surgery'), along with other procedures. Top surgery includes interventions such as chest masculinization and breast augmentation, while bottom surgery refers to surgical procedures aimed at modifying the appearance of the external genitalia (e.g., vaginoplasty or phalloplasty), as well as procedures involving the removal of internal genitalia, such as orchiectomy or hysterectomy.^{1,5}

Evidence suggests that older adults undergoing such treatments experience a significantly higher quality of life, even compared to younger TGD individuals.^{51,52} Notwithstanding this benefit, data pertaining to older TGD individuals and gender affirming therapy remain scarce and controversial, as most studies on these treatments focus on the younger population and are limited by a short follow-up. In particular, polypharmacy presents challenges for older TGD individuals, and to date there is a lack of research on the pharmacological interaction between GAHT and medications taken by older TGD adults for existing medical conditions. In light of the aforementioned observations, recommendations on hormone treatment in aging TGD individuals are large-

ly speculative and primarily based on experience with hormone replacement therapy in other aging populations.^{1,51,52} The available data indicate that age per se is not an absolute contraindication or limitation to gender affirming medical treatment.⁵² For older TGD individuals who commenced GAHT at a younger age, it remains uncertain whether dose reductions are necessary as they age.^{1,53} In instances where modifications to the treatment regimen are necessary, it is advisable that dosages be maintained at levels adequate to preserve the secondary sex characteristics that have developed.¹ These characteristics represent a significant milestone for many TGD individuals following their complex journey.⁵² Nevertheless, it is imperative to carry out a thorough evaluation of the potential medication risks, treatment objectives, existing comorbidities, history of GAS, psychosocial factors, and the impact of social determinants of health.^{1,53,54} Below, we focus on three critical aspects of the health of older TGD individuals that are particularly significant in the context of GAHT: cardiovascular health, bone health, and cancer prevention. The cardiovascular health of TGD individuals presents unique challenges, which have been highlighted by recent publications,⁵⁵ including a scientific statement from the American Heart Association.⁵⁶ TGD individuals experience heightened cardiovascular risks due to a combination of social, economic, and medical factors. Notably, a population-based study involving participants aged 40 years and older found that TGD individuals are more likely to experience discrimination, psychological distress, and adverse childhood experiences, all of which were associated with an increased likelihood of developing cardiovascular conditions.⁵⁷ In individuals aged 45 and older, research by Balcerek et al.⁵⁸ found that the most prevalent cardiovascular risk factor among TGD people was hypertension (29%), followed by smoking (24%), obesity (20%), dyslipidemia (16%), and diabetes (9%). Another study by Alzahrani et al.⁵⁹ reported that TGD individuals over the age of 50 had a higher incidence of myocardial infarction compared to the cisgender population, with the exception of AMAB TGD individuals compared to AMAB cisgender individuals. The role of GAHT in cardiovascular outcomes has been investigated, but further research is needed to fully understand the long-term risks and benefits, particularly in aging TGD populations and across different hormone therapy. Data consistently show that TGD individuals receiving estrogen-based GAHT, particularly older individuals or those using oral estrogens, are at an increased risk for venous thromboembolism. The risk is particularly pronounced in those using ethinyl estradiol.^{60,61} Based on these findings, current recommendations suggest that estradiol should be administered transdermally rather than orally for AMAB TGD individuals aged 45 and older. Additionally, the use of ethinyl estradiol in GAHT is discouraged due to

its elevated risk profile.^{1,5} While existing evidence indicates a possible link between estrogen-based GAHT and a higher risk of heart attack and stroke,^{60,61} it is still uncertain whether this risk is caused by the hormone therapy itself or by pre-existing cardiovascular conditions in these individuals.^{1,55} Furthermore, it remains inconclusive whether testosterone administration increases the risk of cardiovascular diseases in AFAB TGD people.^{1,53}

Another critical aspect of health in aging TGD individuals is bone health, which can be affected by both the aging process and the use of GAHT. The existing literature on this topic in TGD individuals remains relatively limited, with a notable scarcity of comprehensive studies focused on the long-term skeletal health of this population. Some studies suggest that TGD individuals, particularly AMAB individuals, tend to have lower bone mineral density (BMD) compared to cisgender individuals.^{62,63} This lower BMD potentially increases the risk of developing osteoporosis and experiencing fractures as they age. Regarding GAHT, research such as that by Wiepjes et al.⁶⁴ demonstrates that after one year of GAHT, both AMAB and AFAB TGD individuals showed significant increases in BMD. This increase was especially pronounced in AFAB individuals over the age of 50 who were postmenopausal before starting GAHT. In these subjects, low estrogen levels typically lead to increased bone turnover and loss. When testosterone is introduced during GAHT, it is converted to estradiol, restoring estrogen levels and helping to inhibit bone resorption, which explains the pronounced BMD increase in this older population. These findings underscore the beneficial effects of hormonal therapy on bone health, particularly in older TGD individuals. In addition to these insights, recent research by Motta et al.⁶⁵ highlights the high prevalence of low BMD in AMAB TGD individuals undergoing estrogen therapy after GAS. In this study, low adherence to estrogen therapy was identified as a key factor contributing to the reduced BMD in this population. Unfortunately, there is a lack of data on the long-term effects of GAHT on bone health in older TGD populations. The risk of osteoporosis and fractures remains a significant concern, especially for those who initiate GAHT with already low BMD. Furthermore, lifestyle factors such as smoking, physical inactivity, and vitamin D deficiency continue to negatively impact bone health in this population.

A specific area of interest also concerns the potential cancer risk in older TGD individuals, particularly those undergoing GAHT.^{66,67} Hormonal factors can affect cancer risk, although it's essential to consider lifestyle factors as well, such as dietary habits, alcohol consumption, cigarette smoking, and lack of physical activity.^{68,69} In this regard, some studies report higher rates of alcohol consumption and cigarette smoking, and lack of physical activity in older TGD individuals as compared to

their LGB counterparts of the same age.^{12,32} Additionally, the relationship between GAHT and cancer has been studied over the past few decades. However, the quality of available evidence is limited, and there is insufficient data to conclusively establish any link between GAHT and cancer risk in the TGD population across all age groups.^{66,67,70} Although some studies suggest a potential increase in breast cancer risk among AMAB TGD individuals undergoing estrogen therapy, this risk does not seem to reach the levels observed in AFAB cisgender individuals.⁶⁶ Additionally, prolonged use of the antiandrogen cyproterone acetate has been linked to a possible association with meningiomas and prolactinomas.⁷¹ On the other hand, antiandrogens in AMAB TGD people may provide protective effects against prostate cancer.⁷² In all instances, additional research is required to fully comprehend the underlying mechanisms and determine a relationship between GAHT and cancer risk.

It is important to highlight that, due to the lack of reliable data on the prevalence of tumors in the TGD population, cancer screening recommendations for these individuals are derived from existing data on the cisgender population, with some modifications depending on the type and duration of GAHT and/or surgical interventions.⁷³ Compounding this issue, TGD individuals often face significant barriers in accessing cancer screenings, resulting in low adherence, delayed diagnoses and treatments, and consequently poorer survival rates compared to their cisgender peers.⁷⁴⁻⁷⁹ For example, barriers may include increased dysphoria, particularly during cervical screenings, and misinformation among general practitioners and patients about the importance of such screenings.^{80,81} Additionally, AFAB TGD individuals registered as male with their general practitioners are often excluded from national call and recall systems for cervical and breast cancer screenings, posing a further barrier to accessing these services, at least in countries where such systems exist.

Older TGD individuals and the challenges of caregiving

Isolation and loneliness are prevalent among the general older population. However, individuals with a TGD identity often experience these challenges to a greater extent due to heightened concerns about their care. Older TGD individuals are less likely to have children who can provide care and support during periods of adversity and in the final stages of life. This is compounded by the fact that they are less likely to rely on the support of other family members, as they were likely rejected years earlier due to their gender identity. While biological family members play a primary role in supporting the older family members in the general

population, usually older TGD individuals rely on their community (partners or friends) for caregiving as they age.⁸² However, this implies that people of their networks are frequently elder too and the connections among them are often less or not at all legally recognized (especially in hospitals, care centers, or living arrangements).⁸²

While the general literature on caregiving indicates that women are the primary caregivers and providers of support, within LGBT+ communities, men are just as likely to engage in caregiving roles, matching the level of involvement observed among women.⁸³

Among older TGD individuals requiring long-term care, concerns frequently arise regarding the preservation of their identity.⁴⁶ For example, apprehensions may focus on the caregiver's potential refusal to use the individual's chosen name or insistence on clothing that is incongruent with their gender identity.⁴⁶ Additionally, older TGD individuals may have concerns that as the years progress, the potential onset of physical and mental disabilities could render them vulnerable and reliant on personnel who may hold trans-exclusionary attitudes and even exhibit violent behavior, particularly in nursing home settings.⁸⁴⁻⁸⁶ In such instances, the issue of privacy becomes a significant concern, as there is a risk of caregivers disclosing personal information about the individual without their consent.⁸⁴ Consequently, older TGD individuals may be compelled to conceal their gender identity from caregivers for their safety. They may be apprehensive about the potential development of dementia, which could result in the loss of their identity and memory. Additionally, there is a concern that healthcare professionals may associate their TGD identity with the disoriented state caused by the condition.^{87,88} A further distressing consequence of the fear of not being accepted is the concern about end-of-life and funerals. This is in relation to the fact that the death certificate, the gravestone or the funeral itself will not report the individual's chosen name and their correct gender identity.⁸⁹

Discussion

Older TGD individuals encounter substantial challenges in everyday life, including limited access to healthcare services and a dearth of targeted programs designed to address their specific health needs. The increasing representation of TGD individuals in mainstream media, along with the rising awareness of TGD-related issues among the general population, has contributed to a safer social environment where a growing number of TGD individuals can embrace and publicly affirm their true gender identities.⁹⁰ Concurrently, life expectancy is progressively lengthening, and the older TGD population is expected to grow in the coming years.

Available studies highlight protective factors, such as social support, participation in community activities, and robust social networks, which collectively enhance well-being.^{10,12,43} Nevertheless, these factors can only yield tangible benefits when coupled with structured, inclusive healthcare and social programs specifically designed to meet the needs of the TGD population. Healthcare professionals play a pivotal role in this process: adopting a respectful and non-discriminatory approach is crucial to preserving the integrity of TGD individuals' identities across all healthcare settings, especially in long-term care facilities. In this regard, it is suggested that policymakers and educational institutions explore the possibility of incorporating comprehensive training modules on the health and well-being of older TGD individuals into medical and nursing curricula. Furthermore, it may be helpful to establish specialized professional development courses to ensure that current healthcare providers are prepared to meet the unique needs of this population. These training programs could extend beyond general awareness and provide practical guidance on offering competent, respectful, and compassionate care tailored to the experiences of older TGD individuals. From a policy standpoint, the introduction of Diagnostic Therapeutic Care Pathways that are inclusive of TGD individuals would be advisable. These pathways could be designed to improve access to healthcare services and help

ensure that TGD individuals are not unintentionally excluded from important programs, such as national cancer screening initiatives, due to gender marker discrepancies in healthcare databases. Considering administrative reforms to address such barriers might help promote more equitable access to preventive care services. It would also be valuable to place greater emphasis on targeted research. Future investigations could usefully focus not only on the specific health concerns of older TGD individuals, but also on the intersectionality between aging, gender identity, and gender affirming care, exploring the cumulative effects of these factors on overall health outcomes. Studies that monitor health outcomes in TGD individuals who initiate gender affirming treatment earlier in life and continue into older age would offer critical insights. Such research is indispensable for evaluating the long-term health implications of sustained care and for informing the development of evidence-based guidelines regarding hormone therapy management in older adults. However, these research objectives may be constrained by the ethical challenges of conducting randomized controlled trials in this population.² Consequently, comprehensive, robust, and extended prospective cohort studies are expected to yield the most meaningful findings in the future.

In conclusion, addressing the healthcare needs of older TGD individuals necessitates a comprehensive and inclusive approach. This requires collaboration between healthcare professionals, policymakers, and researchers to ensure that TGD individuals have equitable access to services that respect their identities and meet their unique health needs. The integration of inclusive training, the development of Diagnostic Therapeutic Care Pathways, and the prioritization of targeted research are essential steps in achieving this goal.

Key messages

- As life expectancy rises, more transgender and gender diverse (TGD) individuals will be in older age brackets. This brings unique challenges in social interactions, physical health, and mental wellbeing that have not been properly addressed.
- Older TGD individuals frequently encounter discrimination, stigma, and fear of mistreatment in their daily lives, which affect their willingness to disclose their gender identity and seek care. Residential care and assisted living environments are also places where such discrimination and stigma can occur.
- Older TGD individuals are at higher risk for poor physical health, increased perceived stress, and depressive symptomatology compared to their cisgender and LGB counterparts.
- Training healthcare professionals to respect and understand the specific requirements of older TGD individuals, and implementing targeted care pathways, are fundamental to enhancing healthcare accessibility and quality.
- There is a pressing need for targeted research on the aging experiences and health concerns of TGD individuals to ensure that their quality of life and rights are comprehensively addressed and respected.

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Authors' contribution statement. Data extraction and synthesis, writing-original draft preparation: AR, MatM; data extraction and synthesis: MM; writing-original draft preparation, supervision: MP. All authors participated in conceiving the content and in the final review.

Conflicts of interest statement. All authors declare no conflicts of interest.

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