Discover Social Science and Health

Discover

Research

Factors associated with poor quality of life of transgender people

Kaio H. C. Coswosck[1,2] · Juliana A. Moreira[1,2] · Joel H. N. Navarro[3] · Valdete R. Guandalini[1,2] · Jose L. Marques-Rocha[1,2,4]

Received: 16 May 2022 / Accepted: 15 September 2022
Published online: 03 October 2022

Abstract

Background The term transgender (TRANS) may be used for people whose gender identity differs from the one assigned at birth. A large part of this population segment faces social (lack of social support, discrimination, rejection, transphobia) and psychological (anxiety, depression) challenges. These factors, in turn, may negatively impact the quality of life (QoL) of these individuals. In this context, the aim of this study is to identify the factors associated with QoL of TRANS people.
Methods Cross-sectional study with non-probability sample, conducted with TRANS and cisgender (CIS) adults living in a southeastern Brazilian state. The research questionnaire was accessed electronically and comprised sociodemographic, health, and QoL information. QoL was assessed through the Short-Form 6 dimensions (SF-6D) instrument. Multivariable linear regression analysis (forward method) was applied to determine the influence of independent variables on QoL (outcome variable). All variables that presented $p < 0.10$ in the bivariate analyses were included. The analyses were carried out in the Statistical Package for the Social Sciences (SPSS)® software, version 22.0, with a significance level of 5%.
Results The sample included 65 TRANS individuals and 78 CIS individuals. The CIS group showed a predominance of people with higher education ($p = 0.002$) and higher income ($p = 0.000$) when compared with the TRANS sample. TRANS participants had worse QoL score ($p = 0.014$) and the same was observed when QoL was assessed by all dimensions ($p \leq 0.05$). In addition, the place of residence and the report of recent prejudice remained associated with QoL even after adjusting for age, gender identity, occupation, and follow-up by a health professional ($p < 0.05$).
Conclusion The TRANS population showed worse QoL when compared with the CIS population. Moreover, living in the state's capital and having suffered episodes of prejudice were the factors remain statistically associated with the QoL among TRANS individuals.

Keywords Gender dysphoria · Transgender · Health · Female to male · Male to female · Gender identity

Abbreviations

BMI	Body mass index
CEP	Research Ethics Committee
CES	Complete elementary school
CHE	Complete higher education
CHS	Complete high school

✉ Jose L. Marques-Rocha, jose.l.rocha@ufes.br; Kaio H. C. Coswosck, kaiocesconetto@gmail.com; Juliana A. Moreira, nutricionista.juliana@outlook.com; Joel H. N. Navarro, navarrofisioterapeuta@gmail.com; Valdete R. Guandalini, valdete.guandalini@ufes.br | [1]Postgraduate Program in Nutrition and Health, Health Sciences Center, Federal University of Espírito Santo, Vitória, ES, Brazil. [2]Department of Integrated Health Education, Health Sciences Center, Federal University of Espírito Santo, Vitória, ES, Brazil. [3]Postgraduate Program in Public Health, Federal University of Espírito Santo, Vitória, ES, Brazil. [4]Department of Integrated Health Education at Health Sciences Center, Federal University of Espirito Santo, Av. Marechal Campos, 1468 - Maruípe, Vitoria 29.043-900, Espírito Santo, Brazil.

CI	Confidence intervals
CIS	Cisgender
CPG	Complete post-graduation
IBGE	Brazilian Institute of Geography and Statistics
LGBT	Lesbian, gay, bisexual and transgender
LGBTQI+	Lesbian, gay, bisexual, transgender, queer and intersex
MW	Minimum wage
OR	Odds ratio
QoL	Quality of life
SUS	Unified Health System
TRANS	Transgender
UFES	Federal University of Espírito Santo
USD	United States dollar
WHO	World Health Organization

1 Background

The term transgender (TRANS) may be used for people whose gender identity differs from the one assigned at birth [1]. Estimates of the size of the TRANS population vary with study design and location. Studies that focus on self-report among nonclinical populations have reported estimates ranging between 0.1 and 2% [2]. A large part of this population segment faces social (lack of social support, discrimination, rejection, transphobia) and psychological (anxiety, depression) challenges [3, 4]. These factors, in turn, may negatively impact the quality of life (QoL) of these individuals [3]. However, a few publications have found no difference in QoL or psychological functioning between TRANS individuals and the general population [5–7].

QoL is a complex term that includes mental health, well-being, physical and/or social function, happiness, and satisfaction. It can be described as quality or satisfaction regarding living conditions, or a combination of these factors [8]. Previous reviews have indicated that gender-affirming therapy is associated with psychological benefits that include reduction in depression and anxiety and improvements in QoL among TRANS individuals [3, 9–11]. Moreover, other factors such as employment, education, residence, economic status, and access to health services are also associated with the QoL of the TRANS population [12].

In Brazil, the Unified Health System (SUS) universalizes health care and is structured by two components: primary health care and specialized care. For outpatient procedures on TRANS patients, the minimum age is 18 years, while for hospital procedures, it increases to 21 years. However, despite advances in recent decades, there is much to be done regarding the inclusion and rights of the TRANS population in Brazil [13].

The effectiveness of public policies that offer services and actions that guarantee rights and protection to this part of the Brazilian population is still lacking [14], and few specialized centers provide care for the TRANS population [15]. Furthermore, the main difficulties in the implementation of these policies and programs lie in the prejudice and unpreparedness of professionals to deal with the specific demands of the TRANS public, as well as the lack of knowledge by a huge part of managers and health professionals about the sexual orientation and gender identity of SUS users [14].

The understanding of the factors associated with the QoL of the TRANS population can aid in the elaboration of specific protocols that guarantee the best management of this population by the health service. In this context, the aim of this study is to identify the main factors associated with QoL of TRANS people who live in a southeastern Brazilian state.

2 Methods

The present study has a cross-sectional design with non-probability snowball sampling, involving the Transgender (TRANS) and Cisgender (CIS) population living in a southeastern Brazilian state. As inclusion criteria, the individuals should be older than 18 years and be residents in the Espírito Santo state. The TRANS group included all participants who selected "trans man or trans woman or non-binary gender" as their gender identity. The CIS group consisted of all participants who selected "cisgender man or cisgender woman" as their gender identity. For the TRANS population, the invitation to participate in the study was initially made through an electronic link disseminated on the Internet through

digital media such as social networks aimed at the lesbian, gay, bisexual, transgender, queer and intersex (LGBTQI+) segment. The CIS population—the control group—was similarly recruited through an electronic link via social media. The volunteers answered questionnaires drafted by the researchers via the online platform between March and October 2021. The first part of the form consisted of the Informed Consent Form in which the study objectives and procedures were presented; it also clarified risks and benefits and included other relevant information about the study.

Next, information about their identification (e-mail and place of residence, whether in the countryside or in the state's capital), sociodemographic characteristics (race/color according to the Brazilian Institute of Geography and Statistics—IBGE [16], categorized as white, black and brown; age in years; sex assigned at birth, categorized as male or female; schooling, divided into complete elementary school, complete high school, complete higher education, and post-graduation; marital status as single and stable union; occupation, divided into student, employed, and unemployed; family income in United States dollars (USD) categorized as < 1 minimum wage (MW), 1–3 MW, and ≥ 3 MW); health (presence of comorbidities; history of surgeries; medical follow-up, asked if yes or no; follow-up with other health professionals such as nutritionist, speech therapist, psychologist/psychiatrist, and more than one professional; system in which he/she does the follow-up—if public, private or both; use of psychiatric or other medications; smoking, asked if yes, no or recently stopped; body weight; height; experience of prejudice; situations faced in the health environment, categorized as shortage of qualified professionals, stigma and discrimination by professionals, or none; and health demands such as the need for surgery and specialized care). Nutritional status was assessed through body mass index (BMI) using the World Health Organization (WHO) criteria, categorized as low weight, eutrophic or overweight.

Some questions were asked only for the TRANS population: use of hormone therapy, timing of hormone therapy, and surgery for sexual reassignment, because this information does not apply to the CIS population. Gender identity was categorized as TRANS man or TRANS woman or non-binary, and the refusal to use the individual's social name was added as one of the situations faced in the health environment. To assess the relationship between prejudice and QoL, TRANS participants were also asked if they experienced recent transphobia as an experience of prejudice.

The sociodemographic characteristics questionnaire was adapted for the CIS population for gender identity information, characterized as CIS woman or CIS man. Moreover, the prejudice experience was categorized in whether the CIS individual suffered some other type of recent prejudice (for example, racism, fatphobia, or other) or not.

This study was submitted to and approved by the Research Ethics Committee (CEP) of the Federal University of Espírito Santo (UFES), CAAE No. 36320620.6.0000.5060, in accordance with the Declaration of Helsinki, 1997 [17]. The informed consent to participate in the study was obtained from all participants.

2.1 Quality of life assessment

The Short-Form Six-Dimension (SF-6D) questionnaire, derived from the Short-Form 36 (SF-36) questionnaire, is used to describe health states and generates utility indices, evaluating six dimensions: functional capacity (six levels), social aspects (five levels), global limitation (four levels), pain (six levels), mental health (five levels), and vitality (five levels) [18]. A health state is defined by selecting one statement from each dimension, starting with physical functioning and ending with vitality; a total of 18,000 health states can be drawn from this method [19–21]. The SF-6D scores were obtained according to the recommendation of CRUZ et al. [22] The algorithm of SF-6D produces a preference-based index of different health states for a reference population, ranging from 0 to 1 on a scale in which zero equals the worst health state and 1 represents the best health state [18].

Preference measures in healthcare were assessed using the SF-6D Brazil questionnaire from 2002 a translated and validated version for the Portuguese language [23]. This questionnaire is useful to assess quality of life in a sample of the Brazilian population, providing a reliable measure of health status [22].

2.2 Statistical analysis

The Shapiro–Wilk test was used to evaluate the normality of the data. Descriptive and baseline characteristics (frequencies and means) were calculated across gender identity (TRANS and CIS individuals). Little's test was used to missing-data analysis and expected maximization was performed. Differences between gender identity categories were explored using χ^2, Mann–Whitney tests, and Student's t-test. Sociodemographic and health data was evaluated according to the median QoL score of CIS individuals (0.834) and TRANS individuals (0.749). Multivariable linear regression analysis (forward method) was applied to determine the influence of independent variables on QoL (outcome variable). All variables that presented $p < 0.10$ in the bivariate analyses were included. Categorical variables were transformed into dummy

variables. In addition to the unadjusted values, two fitted models were presented. Model 1 was adjusted for age and gender identity. Model 2 was adjusted for age, gender identity, occupation, and follow-up with a health professional. p values and standardized differences were used to test whether groups were statistically different from one another, with significance set to $p < 0.05$ in 2-tailed tests. All analyses were performed in the SPSS® (Statistical Package for the Social Sciences) software, version 22.0.

3 Results

The sample included 65 self-declared TRANS individuals. Of these, 42 were TRANS men, 11 were TRANS women, and 11 were non-binary. The CIS participants included 78 individuals self-declared as such, among whom 22 were CIS men and 56 were CIS women. The median age of the TRANS participants was 24 years (18–44) and of the CIS participants, 23.5 years (19–55) ($p > 0.05$). A significant difference was observed between the groups regarding schooling, in which the CIS group showed a predominance of people with complete higher education when compared with the TRANS individuals ($p = 0.002$) (Table 1).

The TRANS participants reported having had a greater number of medical follow-ups or with other health professionals in the Brazilian Unified Health System—SUS ($p < 0.001$) when compared with CIS participants (Table 2). As for the data on the follow-up with other health professionals besides the physician, we observed a higher number of TRANS people within this category than CIS people ($p \leq 0.001$), which reflects the care with a psychologist and/or psychiatrist in TRANS individuals ($p \leq 0.001$). In addition, CIS participants had fewer comorbidities when compared with TRANS participants ($p \leq 0.001$) (Table 2). Regarding the prejudice suffered, TRANS individuals were more affected when compared with CIS individuals ($p < 0.001$). There was also a difference between the groups regarding smoking, with a higher number of smokers in the TRANS group ($p \leq 0.001$) (Table 2).

When assessing QoL, we observed that CIS individuals showed better QoL when compared with TRANS individuals ($p = 0.014$) (Table 3). When assessing QoL by dimension, a significant difference between groups was detected for all dimensions: functional capacity ($p < 0.001$), global limitation ($p = 0.007$), social aspects ($p \leq 0.001$), pain ($p < 0.001$), mental health ($p < 0.001$), and vitality ($p = 0.023$).

The sociodemographic and health data distributed according to the median QoL score are presented in Table 4. The median QoL scores were 0.749 (0.627–0.929) for the TRANS participants and 0.834 (0.721–1.00) for the CIS participants. CIS individuals scored better on QoL and had lower age (24.1 ± 4.3 years; $p \leq 0.05$) and BMI (22.99 ± 3.17 kg/m^2; $p \leq 0.05$). When checking the data for the TRANS population, we found that those with higher QoL scores had an income ≥ 3 MW ($n = 16$; 72.7%) ($p \leq 0.05$), no comorbidities ($n = 27$; 58.7%) ($p \leq 0.05$), lived in the countryside ($n = 13$; 81.2%) ($p \leq 0.05$), and did not suffer prejudice ($n = 6$; 85.7%) ($p \leq 0.05$) (Table 4).

Table 5 presents the multivariable linear regression analysis. In the final model, the place of residence and the report of recent prejudice remained associated with QoL even after adjusting for age, gender identity, occupation, and follow-up by a health professional ($p < 0.05$). Thus, living in the state's capital and having suffered episodes of prejudice were the factors remain associated with QoL in TRANS participants.

4 Discussion

Our results show that TRANS individuals have less QoL compared with CIS individuals. Significant differences were observed in relation to QoL dimensions between groups. This result corroborates a previous study, which assessed QoL through the SF-36 questionnaire and identified lower QoL in the dimensions physical functioning, social functioning, and function limitations due to physical health and vitality for the TRANS group when compared with the control group [12].

In the present study, the median QoL score for the TRANS participants was 0.749. Individuals who received lower scores had lower income, comorbidities, and lived in the state's capital. Previous studies have shown that 44% of trans people reported QoL scores below the median cut-off value of 6 (scale from 0 to 10) [24]. A systematic review concluded that TRANS people have low QoL, regardless of the domain [3]. In addition, transgender persons report worse QoL in relation to mental health when compared with the general population [3].

Another study observed that the discrimination reported by the TRANS population was significantly associated with worse QoL in the social and environmental domains, in addition to a negative association between discrimination and

Table 1 Sociodemographic characteristics of transgender and cisgender population of a southeastern Brazilian state

Variables	All n = 143 (%)	Transgender n = 65 (45.5%)	Cisgender n = 78 (54.5%)	p
Age[a,c,d]	24 (18–57)	24.0 (18–44)	23.5 (19–57)	0.852
Sex assigned at birth				0.360
Male	36 (25.2)	14 (21.5)	22 (28.2)	
Female	107 (74.8)	51 (78.5)	56 (71.8)	
Race				0.353
White	63 (44.0)	28 (43.0)	35 (44.9)	
Black	20 (14.0)	12 (18.5)	8 (10.3)	
Brown	60 (42.0)	25 (38.5)	35 (44.9)	
Occupation				**0.012**
Student	59(41.3)	25 (38.5)	34 (43.6)	
Employee	77(53.8)	33 (50.8)	44 (56.4)	
Unemployed	7 (4.9)	7 (10.8)	–	
Income (USD)[b]				**< 0.001**
< 1 MW	9 (6,7)	8 (12,9)	1 (1,4)	
1 to 3 MW	33 (24,4)	25 (40,3)	8 (11,0)	
≥ 3 MW	93 (68,9)	29 (46,8)	64 (87,3)	
Schooling				**0.002**
CES	6 (4.2)	6 (9.2)	–	
CHS	89(62.2)	46 (70.8)	43 (55.1)	
CHE	41 (28.7)	11 (16.9)	30 (38.5)	
CPG	7 (4.9)	2 (3.1)	5 (6.4)	
Marital status				0.574
Single	113 (79.0)	50 (76.9)	63 (80.8)	
Stableunion	30(21.0)	15 (23.1)	15 (19.2)	
Place of residence[a]				0.279
State's capital	100(70.4)	48 (75.0)	52 (66.7)	
Countryside	42(29.6)	16 (25.0)	26 (33.3)	

Values in bold are less than 0.05

CES, complete elementary school; CHS, complete high school; CHE, complete higher education; CPG, complete post-graduation; MW, minimum wage

[a]N = 142

[b]N = 135: Income in USD

[c]Median (minimum and maximum). Chi-square test(X^2)

[d]U of Mann–Whitney test

indices of well-being [25]. Violent and non-violent discrimination experienced by TRANS people is associated with adverse mental health outcomes, such as depression, anxiety, psychological distress, and substance abuse [26, 27], which damage the emotional state and life of these persons [26]. These results corroborate our outcomes, by pointing out that not suffering prejudice is significantly related to higher QoL scores in TRANS individuals.

In the present study, TRANS volunteers living in the countryside reported having better QoL. Access to health care may be one explanation for this result. Recent data from IBGE show that people who live in the countryside have higher percentage (77.0%) of attendance in health services when compared with people who live in urban areas (73.0%) [28]. According to a systematic review, there are still gaps in the literature on the impact of living in rural areas on the health of LGBT (lesbian, gay, bisexual and transgender) people [29]. Previous studies that evaluated the QoL of TRANS people in a clinic located in a rural area observed a significantly lower score in the mental health and the social and emotional functioning domains when compared to the general population, whether urban or rural. On the other hand, they found higher scores in the domains of functional capacity, pain, and general health for the TRANS population [30].

In Brazil, there are a few specialized places in the SUS for multidisciplinary care for the TRANS population [31–33]. This scenario explains why our study found a higher proportion of TRANS people attended by health professionals when

Table 2 Health characteristics of the transgender and cisgender population of a southeastern Brazilian state

Variables	All n = 143 (%)	Transgender n = 65 (45.5%)	Cisgender n = 78 (54.5%)	p
Comorbidities				**0.001**
Yes	25 (17.5)	19 (29.2)	6 (7.7)	
No	118 (82.5)	46 (70.8)	72 (92.3)	
Professional health follow-up				**< 0.001**
Yes	73 (54.1)	47 (72.3)	30 (38.5)	
No	62 (45.9)	18 (27.7)	48 (61.5)	
Medical follow-up				0.424
Yes	80 (55.9)	34 (52.3)	46 (59.0)	
No	63 (44.1)	31 (47.7)	32 (41.0)	
Other professional health follow-up				**< 0.001**
Psychologist/psychiatrist	33 (24.3)	22 (33.8)	13 (16.7)	
Nutritionist	7 (5.1)	3 (4.6)	4 (5.1)	
Speech therapist	2 (1.5)	1 (1.5)	1 (1.3)	
Others	10 (7.4)	4 (6.2)	7 (9.0)	
With more than one professional	22 (16.2)	18 (27.7)	5 (6.4)	
None	62 (45.6)	17 (26.2)	48 (61.5)	
Follow-up system				**< 0.001**
Public	45 (31.9)	32 (49.2)	14 (17.9)	
Private	52 (36.9)	18 (27.7)	35 (44.9)	
Both	44 (31.2)	15 (23.1)	29 (37.2)	
Medication				0.067
Psychiatric medications	16 (11.3)	11 (16.9)	6 (7.7)	
None	96 (67.6)	45 (69.2)	51 (65.4)	
Others	30 (21.1)	9 (13.8)	21 (26.9)	
Smoking				**< 0.001**
Yes	24 (16.8)	20 (30.8)	4 (5.1)	
No	100 69.9)	30 (46.2)	70 (89.7)	
Recently stopped	19 (13.3)	15 (23.1)	4 (5.1)	
Prejudice				**< 0.001**
Yes	93 (65.0)	58 (89.2)	35 (44.9)	
No	50 (35.0)	7 (10.8)	43 (55.1)	
Situations faced in the health environment				**0.004**
Stigma/prejudice	17 (11.9)	12 (18.5)	5 (6.4)	
Shortage of qualified professionals	82 (57.3)	41 (63.1)	41 (52.6)	
None	44 (30.8)	12 (18.5)	32 (41.0)	
Health demands				**< 0.001**
Surgical need	4 (2.8)	4 (6.2)	-	
Hormone therapy	8 (5.6)	8 (12.3)	-	
Specialized care	46 (32.2)	35 (53.8)	11 (14.1)	
None	4 (2.8)	-	4 (5.1)	
Missing data	81 (56.6)	18 (27.7)	63 (80.8)	
Nutrition status				0.246
Low weight	9 (6.4)	8 (12.3)	4 (5.1)	
Eutrophy	71 (50.7)	29 (44.6)	42 (53.8)	
Overweight	60 (42.9)	28 (43.1)	32 (41.1)	

Chi-square test(X^2). Values in bold are less than 0.05

compared with CIS individuals. However, many Brazilian TRANS persons are still not looked after because the access to procedures requires a psychiatric diagnosis [34]. There is still a huge stigma among health professionals about the procedures for gender transition [35, 36]. Furthermore, a recent integrative review concluded that, for the TRANS population, there are seven main challenges to ensure access to health: discrimination in health services; pathologizing transsexuality and inadequate reception; the requirement for surgery; qualification of professionals; absence of a primary care policy

Table 3 Quality of life score (SF-6D) and quality of life dimension scores for cisgender and transgender populations

Variables	Cisgender n = 78 Median (Min–Max)	Transgender n = 65 Median (Min–Max)	p
Score of QoL	0.834 (0.721 to 1.00)	0.749 (0.627 to 0.929)	**< 0.001**
Dimensions			
Functional capacity	0.00 (– 0.05 to 0.00)	– 0.51 (– 0.05 to 0.00)	**< 0.001**
Global limitation	0.00 (– 0.05 to 0.00)	– 0.48 (– 0.05 to 0.00)	**0.007**
Social aspects	– 0.03 (– 0.06 to 0.00)	– 0.04 (– 0.07 to 0.00)	**< 0.001**
Pain	– 0.06 (– 0.06 to 0.00)	– 0.06 (– 0.09 to 0.00)	**< 0.001**
Mental health	– 0.47 (– 0.07 to 0.00)	– 0.47 (– 0.07 to 0.00)	**< 0.001**
Vitality	– 0.03 (– 0.05 to 0.00)	– 0.03 (– 0.05 to – 0.03)	**0.023**

QoL = quality of life. U of Mann–Whitney test. Values in bold are less than 0.05

and that of a health network; and the scarcity of resources to finance transsexualized processes and policies to promote equity and respect for transgender identities [37].

TRANS persons also have lower levels of employment and household income when compared with CIS persons [38]. Our results showed that income was associated with QoL for the TRANS population. This information is consistent with data from a previous study, which observed lower QoL scores for TRANS persons who were unemployed and had a low family income [39]. Another study pointed out that 47.5% of TRANS people had household incomes at or below the poverty level when compared with CIS people [40]. In addition, TRANS adults are more likely to be unemployed and living on a lower income than non-TRANS individuals [41].

Several factors contribute to unemployment and lower income in the TRANS population, such as employer discrimination, mental health conditions, and gender-conflicting name [42]. Therefore, it is necessary to develop public policies that ensure the inclusion of this population in the formal labor market. These policies should also ensure the permanence in employment and the creation of a safe environment where these people feel respected and included, both in the labor market and in society.

This study has some limitations. First, because this is a cross-sectional study in which both exposure and outcome are assessed at a single moment in time, it is difficult to establish an atemporal relationship between the events and the degree of certainty in the causality of this relationship. As this is a study with online sampling, there is selection bias. In addition, when applying the online questionnaire, there may be a reduction in the reliability of the data, since many respondents can falsify demographic information, which is not verifiable. However, to minimize sample bias, an age-matched control group was used.

Another important limitation is related to the small sample size, which, not being representative of the state population, allows us to consider the results only for the population in question. However, to increase sample size, a CIS control group with the same characteristics as the TRANS group was used. Finally, since the SF-6D questionnaire has not been used previously to assess the QoL of the TRANS population, we cannot compare the results of our study with any other study for this population. However, we did consider studies that assessed QoL with other instruments such as the SF-36, which is the instrument from which the SF-6D is derived. The present study provides new information about the variables that impact the QoL of TRANS individuals and can direct future public policies to improve the well-being of this population segment.

5 Conclusion

Our results indicate that the TRANS population had worse QoL when compared with the CIS population. Moreover, living in the state's capital and having suffered episodes of prejudice were the factors remain statistically associated with QoL among TRANS participants, controlling for age, gender identity, occupation, and follow-up with a health professional. Therefore, one concludes that place of residence and social exclusion due to discrimination may negatively affect the QoL of this population.

Table 4 Sociodemographic and health data distributed according to the median quality of life score of cisgender and transgender groups

Variables	Cisgender (n = 78)		Transgender (n = 65)	
	< 0.834	≥ 0.834	< 0.749	≥ 0.749
	n (%)	n (%)	n (%)	n (%)
	mean (SD)	mean (SD)	mean (SD)	mean (SD)
Age[a]	27.57 (± 8.76)	24.08 (± 4.31)	24.34 (± 4.68)	26.58 (± 7.70)
p	**0.027**		0.164	
Occupation				
Student	15 (44.1)	19 (55.9)	16 (64.0)	9 (36.0)
Employee	23 (52.3)	21 (47.7)	15 (45.5)	18 (54.5)
Unemployed	–	–	1 (14.3)	6 (85.7)
p	0.457		0.055	
Place of residence				
State's capital	24 (46.2)	28 (53.8)	29 (59.2)	20 (40.8)
Countryside	14 (53.8)	12 (46.2)	3 (18.8)	13 (81.2)
p	0.522		**0.008**	
Marital Status				
Single	29 (46.0)	34 (54.0)	25 (50.0)	25 (50.0)
Stable union	9 (60.0)	6 (40.0)	7 (46.7)	8 (53.3)
p	0.331		0.821	
Race				
White	16 (45.7)	19 (54.3)	12 (42.9)	16 (57.1)
Black	3 (37.5)	5 (62.5)	4 (33.3)	8 (66.7)
Brown	19 (54.3)	16 (45.7)	16 (64.0)	9 (36.0)
P	0.618		0.146	
Schooling				
CES	–	–	2 (33.3)	4 (66.7)
CHS	20 (46.5)	23 (53.5)	26 (56.5)	20 (43.5)
CHE	17 (56.7)	13 (43.3)	3 (27.3)	8 (72.7)
CPG	1 (20.0)	4 (80.0)	1 (50.0%)	1 (50.0)
p	0.288		0.295	
Income				
< 1 MW	–	–	3 (75.0)	1 (25.0)
1 a 3 MW	14 (53.8)	12 (46.2)	23 (59.0)	16 (41.0)
≥ 3 MW	24 (46.5)	28 (53.8)	6 (27.3)	16 (72.7)
p	0.632		**0.031**	
Comorbidities				
Yes	4 (66.7)	2 (33.3)	13 (68.4)	6 (31.6)
No	34 (47.2)	38 (52.8)	19 (41.3)	27 (58.7)
p	0.360		**0.047**	
Medical follow-up				
Yes	22 (47.8)	24 (52.2)	15 (44.1)	19 (55.9)
No	16 (50.0)	16 (50.0)	17 (54.8)	14 (45.2)
p	0.850		0.388	
Professional health follow-up				
Yes	18 (60.0)	12 (40.0)	27 (57.4)	20 (42.6)
No	20 (41.7)	28 (58.3)	5 (27.8)	13 (72.2)
p	0.163		0.051	
Follow-up system				
Public	8 (57.1)	6 (42.9)	18 (56.3)	14 (43.8)
Private	14 (40.0)	21 (60.0)	8 (44.4)	10 (55.6)
Both	16 (55.2)	13 (44.8)	6 (40.0)	9 (60.0)

Table 4 (continued)

Variables	Cisgender (n = 78)		Transgender (n = 65)	
	< 0.834	≥ 0.834	< 0.749	≥ 0.749
	n (%)	n (%)	n (%)	n (%)
	mean (SD)	mean (SD)	mean (SD)	mean (SD)
p	0.378		0.554	
Smoking				
Yes	1 (25.0)	3 (75.0)	12 (60.0)	8 (40.0)
No	34 (48.6)	36 (51.4)	16 (53.3)	14 (46.7)
Recently stopped	3 (75.0)	1 (25.0)	4 (26.7)	11 (73.3)
P	0.367		0.123	
Prejudice				
Yes	21 (60.0)	14 (40.0)	31 (53.4)	27 (46.6)
No	17 (39.5)	26 (60.5)	1 (14.3)	6 (85.7)
p	0.072		**0.050**	
BMI (Kg/m^2)[a]	26.36 (± 5.05)	22.99 (± 3.17)	25.27 (± 6.55)	24.55 (± 5.05)
p	**0.001**		0.621	

Values in bold are less than 0.05; Chi-square test(X2)

BMI, body mass index; MW, minimum wage. CES, complete elementary school; CHS, complete high school; CHE, complete higher education; CPG, complete post-graduation

[a]Student's T test

Table 5 Variables associated with the quality of life of transgender people based on multivariable linear regression

Variáveis	Unadjusted			Model 1			Model 2		
(n = 65)	B	IC (95%)	p valor	B	IC (95%)	p valor	B	IC (95%)	p valor
Residence									
Countryside	1			1			1		
State's capital	− 0.056	− 0.097 to − 0.014	**0.009**	− 0.058	− 0.099 to − 0.016	**0.007**	− 0.055	− 0.101 to − 0.010	**0.017**
Prejudice									
No	1			1			1		
Yes	− 0.072	− 0.126 to − 0.017	**0.011**	− 0.074	− 0.128 to − 0.019	**0.009**	− 0.073	− 0.134 to − 0.012	**0.020**

Model 1: adjusted for age and gender identity. Model 2: adjusted for age, gender identity, occupation and follow-up by a health professional

Values in bold are less than 0.05

Acknowledgements None.

Authors contributions KHCC: Conception or design of the work; Data collection; Data analysis and interpretation; Drafting the article; Critical revision of the article. JAM: Conception or design of the work; Data collection. JHNN: Conception or design of the work. VRG: Conception or design of the work; Data analysis and interpretation; Critical revision of the article. JLM-R: Conception or design of the work; Data collection; Data analysis and interpretation; Drafting the article; Critical revision of the article. All authors read and approved the final manuscript.

Funding None.

Data availability All data generated or analyzed during this study are included in this published article [and its additional files].

Declarations

Ethics approval and consent to participate This study was submitted to and approved by the Research Ethics Committee (CEP) of the Federal University of Espírito Santo (UFES), CAAE No. 36320620.6.0000.5060 and opinion No. 4.896.835. And informed consent to participate in the evaluation research was obtained from all participants.

Consent for publication Not applicable.

Competing interests No competing financial interests exist.

References

1. Aguirre-Sánchez-Beato S. Trans terminology and definitions in research on transphobia: a conceptual review. Quad Psicol. 2018;20(3):295.
2. Goodman M, Adams N, Cornell T, Kreukels B, Motmans J, Coleman E. Size and distribution of transgender and gender nonconforming populations: a narrative review. Endocrinol Metab Clin North Am. 2019;48(2):303–21.
3. Nobili A, Glazebrook C, Arcelus J. Quality of life of treatment-seeking transgender adults: a systematic review and meta-analysis. Rev Endocr Metab Disord. 2018;19(3):199–220.
4. Walter B, Coleman E, Deutsch MB, Guillamon A, Meyer I, et al. Adult development and quality of life of transgender and gender nonconforming people. Physiol Behav. 2017;176(3):139–48.
5. De Cuypere G, Elaut E, Heylens G, Van Maele G, Selvaggi G, T'Sjoen G, et al. Long-term follow-up: psychosocial outcome of Belgian transsexuals after sex reassignment surgery. Sexologies. 2006;15(2):126–33.
6. Wierckx K, Van Caenegem E, Elaut E, Dedecker D, Van de Peer F, Toye K, et al. Quality of life and sexual health after sex reassignment surgery in transsexual men. J Sex Med. 2011;8(12):3379–88.
7. Weyers S, Elaut E, De Sutter P, Gerris J, T'sjoen G, Heylens G, et al. Long-term assessment of the physical, mental, and sexual health among transsexual women. J Sex Med. 2009;6(3):752–60.
8. Borthwick-Duffy SA. Quality of life and quality of care in mental retardation. In: Rowitz L, editor. Mental retardation in the year 2000. Disorders of human learning, behavior, and communication. Berlin: Springer; 2000. p. 52–3.
9. Wilson LM, Sharma R, Dukhanin V, McArthur K, Robinson KA, Baker KE. Hormone therapy, mental health, and quality of life among transgender people: a systematic review. J Endocr Soc. 2021;5(4):1–16.
10. Rowniak S, Bolt L, Sharifi C. Effect of cross-sex hormones on the quality of life, depression and anxiety of transgender individuals: a quantitative systematic review. JBI Database Syst Rev Implement Rep. 2019;17(9):1826–54.
11. Mahfouda S, Moore JK, Siafarikas A, Hewitt T, Ganti U, Lin A, et al. Gender-affirming hormones and surgery in transgender children and adolescents. Lancet Diabetes Endocrinol. 2019;7(6):484–98. https://doi.org/10.1016/S2213-8587(18)30305-X.
12. Valashany BT, Janghorbani M. Quality of life of men and women with gender identity disorder. Health Qual Life Outcomes. 2018;16(1):1–9.
13. Ferreira GG, Aguinsky BG. Movimentos sociais de sexualidade e gênero: análise do acesso às políticas públicas. Rev Katálysis. 2013;16(2):223–32.
14. Bezerra MVR, Moreno CA, Prado NMBL, dos Santos AM. Política de saúde LGBT e sua invisibilidade nas publicações em saúde coletiva. Saúde Debate. 2019;43(8):305–23.
15. Mello L, Perilo M, de Braz CA, Pedrosa C. Políticas de saúde para lésbicas, gays, bissexuais, travestis e transexuais no Brasil: em busca de universalidade, integralidade e equidade. Sex Salud y Soc. 2011;9:7–28.
16. Instituto Brasileiro De Geografia E Estatística. Características Étinico-Raciais da População Classificações e Identidades. Rio de Janeiro; 2013. https://biblioteca.ibge.gov.br/visualizacao/livros/liv63405.pdf. Accessed 7 Jul 2020.
17. World Medical Association. Declaration of Helsinki: recommendation guiding physicians in biomedical research involving humans subjects. Japanese Pharmacol Ther. 1997;28(12):983–6.
18. Berwanger DD, Filippin LI, Saldanha RP. SF-6D quick as a measure of quality of life: a descriptive study on health primary care. REUFSM. 2016;11:20–6.
19. Brazier J, Roberts J, Deverill M. The estimation of a preference-based measure of health from the SF-36. J Health Econ. 2002;21(2):271–92.
20. Campolina AG, Bortoluzzo AB, Ferraz MB, Ciconelli R. O questionárioSF-6D Brasil: modelos de construção e aplicações em economia da saúde. Rev Assoc Med Bras. 2010;56(4):409–14.
21. Campolina AG, López RVM, Nardi EP, Ferraz MB. Internal consistency of the SF-6D as a health status index in the Brazilian Urban Population. Value Heal Reg Issues. 2018;17:74–80. https://doi.org/10.1016/j.vhri.2018.02.003.
22. Cruz LN, Camey SA, Hoffmann JF, Rowen D, Brazier JE, Fleck MP, et al. Estimating the SF-6D value set for a population-based sample of Brazilians. Value Heal. 2011;14(5 SUPPL):S108-14. https://doi.org/10.1016/j.jval.2011.05.012.
23. Campolina AG, Bortoluzzo AB, Ferraz MB, Ciconelli RM. Validation of the brazilian version of the generic six-dimensional short form quality of life questionnaire (SF-6D Brazil). Cienc e Saude Coletiva. 2011;16(7):3103–10.
24. Zeluf G, Dhejne C, Orre C, Nilunger Mannheimer L, Deogan C, Höijer J, et al. Health, disability and quality of life among trans people in Sweden—a web-based survey. BMC Public Health. 2016;16(1):1–15.
25. Başar K, Öz G, Karakaya J. Perceived discrimination, social support, and quality of life in gender dysphoria. J Sex Med. 2016;13(7):1133–41.
26. Grant JM, Mottet LA, Tanis J, Harrison J, Herman JL, Keisling M. Injustice at every turn: a report of the National Transgender Discrimination Survey. Natl Cent Transgender Equal Natl Gay Lesbian Task Force. 2011;11(8):450–4.

27. Lombardi EL, Wilchins RA, Priesing DMD. Gender violence: transgender experiences with violence and discrimination. J Homosex. 2012;2001:37–41.
28. Instituto Brasileiro De Geografia E Estatística. Síntese de indicadores sociais: uma análise das condições de vida da população brasileira: 2021. Rio de Janeiro: IBGE; 2021.
29. Rosenkrantz DE, Black WW, Abreu RL, Aleshire ME, Fallin-Bennett K. Health and health care of rural sexual and gender minorities: a systematic review. Stigma Heal. 2017;2(3):229–43.
30. O'Bryan J, Scribani M, Leon K, Tallman N, Wolf-Gould C, Wolf-Gould C, et al. Health-related quality of life among transgender and gender expansive youth at a rural gender wellness clinic. Qual Life Res. 2020;29(6):1597–607. https://doi.org/10.1007/s11136-020-02430-8.
31. Cruz TM. Assessing access to care for transgender and gender nonconforming people: a consideration of diversity in combating discrimination. Soc Sci Med. 2014;110:65–73. https://doi.org/10.1016/j.socscimed.2014.03.032.
32. Sampaio LLP, Coelho MTÁD. Transexualidade: Aspectos psicológicos e novas demandas ao setor saúde. Interface Commun Heal Educ. 2012;16(42):637–49.
33. Ministério da saúde. Portaria nº 2.803, DE 19 DE NOVEMBRO DE 2013: Redefine e amplia o Processo transexualizador no Sistema Único de Saúde (SUS). Diário Oficial da União. 2013. https://bvsms.saude.gov.br/bvs/saudelegis/gm/2013/prt2803_19_11_2013.html. Acccessed 11 Aug 2022.
34. Sousa D, Cavalcanti C. Entre normas e tutelas: pensando (im)possibilidades da Psicologia em interface com transgeneridades. A Denega, D S V Andrade, H M Santos (Orgs), Gênero na Psicol Saberes e práticas. 2016;126–39.
35. Vieira ES, Pereira CASR, Dutra CV, Cavalcanti CS. Psicologia e Políticas de Saúde da População Trans: Encruzilhadas, Disputas e Porosidades. Psicol Ciência e Profissão. 2019;39(3):161–73.
36. Rocon PC, Rodrigues A, Zamboni J, Pedrini MD. Dificuldades vividas por pessoas trans no acesso ao Sistema Único de Saúde. Cienc e Saude Coletiva. 2016;21(8):2517–25.
37. Rocon PC, Wandekoken KD, de Barros MEB, Duarte MJO, Sodré F. Acesso À Saúde Pela População Trans No Brasil: Nas Entrelinhas Da Revisão Integrativa. Trab Educ e Saúde. 2020;18(1):1–18.
38. Gonzales G, Henning-Smith C. Barriers to care among transgender and gender nonconforming adults. Milbank Q. 2017;95(4):726–48.
39. Motmans J, Meier P, Ponnet K, T'Sjoen G. Female and male transgender quality of life: socioeconomic and medical differences. J Sex Med. 2012;9(3):743–50.
40. Fredriksen-Goldsen KI, Kim HJ, Barkan SE, Muraco A, Hoy-Ellis CP. Health disparities among lesbian, gay, and bisexual older adults: results from a population-based study. Am J Public Health. 2013;103(10):1802–9.
41. Conron KJ, Scott G, Stowell GS, Landers SJ. Transgender health in massachusetts: results from a household probability sample of adults. Am J Public Health. 2012;102(1):118–22.
42. Strauss P, Cook A, Winter S, Watson V, Wright Toussaint D, Lin A. Trans Pathways: the mental health experiences and care pathways of trans young people. Summary of results. Telethon Kids Inst. 2017. https://www.telethonkids.org.au/projects/past/trans-pathways/.