

## **Eating behavior, body satisfaction and perception of quality of life in Brazilian transgender population**

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**Abstract:** This study aims to elucidate the relationship between the quality of life (QOL), body satisfaction and eating disorders (ED) in trans people. 181 people participated, responding to questionnaires sociodemographic, WHOQOL-bref, EDE-Q and ESSC. 48.07% of the sample was diagnosed as “needing improvement in the QOL”; 12.7% score indicating the presence of ED, with the highest scoring domains related to weight and body shape. Female gender presented worse scores in all instruments, demonstrating greater body dissatisfaction, higher risk for ED and worse QOL compared to male gender. Non-binary gender reporting greater body satisfaction, lower risk of ED and better QOL. Notably, individuals who were more satisfied with their own appearance tended to present lower risk for ED and better QOL indices. Females suffer more from the culture of the “ideal body”, being important to create and improve public policies that welcome this population, by incentivizing seek and permanence in health services.

**Keywords:** Transgender; Body image; Eating Behavior; Eating Disorders; Life Quality.

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Transgenderism is a self recognition with a different gender from the one assigned at birth (SOCIEDADE BRASILEIRA DE PEDIATRIA, 2020). Trans women and transvestites are people who were born male and identify themselves with the female gender; trans men and transmasculine have been assigned the female sex and recognize themselves as male (JESUS, 2012), and the non-binarism represents multiple gender identities which do not fit into the gender binary system (exclusively male or female) (NAGATA *et al.*, 2020a).

Gender dysphoria is characterized by the feeling of extreme discomfort and psychic anguish caused by body dissatisfaction, since the desired body image does not correspond to the individual's actual physical shape (SOCIEDADE BRASILEIRA DE PEDIATRIA, 2020).

The concept of body image has particular relevance in the trans population as gender dysphoria is closely related to poor body image, and might be a risk factor for eating disorders (ED) development (WITCOMB *et al.*, 2015). By presenting high levels of body dissatisfaction due gender dysphoria and the cultural ideal of female and male bodies, this population is at increased risk for the adoption of radical eating behaviors, such as food restriction, purging and extreme physical exercise practices, in an attempt to soften physical characteristics from the sex at birth, and at the same time to show physical traits of the gender which they identify themselves (AMODEO *et al.*, 2022). These behaviors can lead to serious consequences on the individual's quality of life (QOL), such as depression, ED and suicide attempts (SILVA *et al.*, 2016).

Given the possibility of making gender transition, it is proven that access to health services for the transsexualizing process provides a reduction in gender dysphoria, increase in body satisfaction, reduction of body and general anxiety, improvement of depression, and therefore significant improvement in QOL of the trans population (JONES *et al.*, 2016; PAPADOPULOS *et al.*, 2017). However, it is not clear

how this process affects the person's eating behavior before, during and after gender affirmation therapies.

To this date, studies about trans population health are limited. Most researches on eating behavior are focused on the cisgender population (gender identified at birth), especially cis women. In Brazil, the scarcity of studies on this topic is even worse. Data from studies conducted in the United States (PRIDE Study) using the Eating Disorder Examination-Questionnaire (EDE-Q) showed that trans people, in comparison to heterosexual cisgender women, are at increased risk for developing ED symptoms and muscle dysmorphia, are more likely to be diagnosed with a ED, more purgative behaviors (vomiting and/or laxatives) and greater use of diet pills (NAGATA *et al.*, 2022).

Similarly, studies evaluating self-reported QOL of transgender people, using the WHOQOL-bref instrument, reinforced the evidence that this population is considerably affected by mental health disorders presented as high rates of depressive symptoms, drug abuse and suicidal ideation (ZUCCHI *et al.*, 2019).

In order to fill gaps in the field of trans population health, the present research aimed to elucidate factors associated with the QOL of the trans population, including gender dysphoria, body image perception, body satisfaction level and self-reported eating behavior.

## **Methods**

This is a cross-sectional observational study, using a quantitative approach, based on collection of primary data and non-probabilistic sample design. The survey was publicized through online social media, inviting Brazilian trans adults. Data collection was performed from August to October 2021, and February to April 2022, resulting in 181 submissions, received from all regions of the country, Southeast (n =

85), South (n = 43), Northeast (n = 20), Midwest (n = 16), North (n = 14) and Federal District (n = 3).

Inclusion criteria included self-declaration as transgender individuals, Brazilian, adults (18+), and agreed to participate by signing the Free and Informed Consent Form (ICF). Non responses have been deleted.

For data collection, a semi-structured form was used to collect sociodemographic data; to assess QOL, the WHOQOL-bref questionnaire was used, a cross-cultural psychometric instrument that assesses the respondent's perception considering four domains: psychological state, physical aspects, social relationships and environment. The higher the score, the better the QOL (WORLD HEALTH ORGANIZATION, 2020).

For the analysis of body satisfaction, the Situational Scale of Body Satisfaction (Brazilian acronym ESSC) was used, which is a pre-validated Brazilian psychometric instrument in order to assess the level of body satisfaction in a four-factor structure: lower parts, satisfaction and muscle, external parts, and dissatisfaction and fat. The participant can be classified as: very dissatisfied, dissatisfied, indifferent, satisfied and very satisfied for each one of the respective scale factors (HIRATA; PILATI, 2010). However, it is important to note that the questionnaire was not used as general scoring format and by domain, since it is not validated for the trans population. Previous analyzes of the group showed incompatibility in the domains generated for the present studied population and that presented by the authors of the instrument. So, in the present study, questions were used in a punctual and isolated way for the analysis of body satisfaction.

Regarding assessing the risk for ED, the EDE-Q was used, which was designed to assess the variety and severity of psychopathological characteristics associated with an ED diagnosis using four subscales (restriction, food concern, shape concern, and weight concern) and an overall score. Higher scores on the global scale and subscales



represent more concerning eating behaviors and attitudes, and a cutoff of 4 on the global score is used clinically significant (FAIRBURN; BEGLIN, 1994).

All data were collected and tabulated on the encrypted JotForms® website, and the identity of the individuals involved was encoded to ensure the confidentiality of the participants' data. The analysis of the tabulated data was performed using the Stata 17.0® program. Data were transformed into continuous and categorical units, according to the need for each information stored. Data analysis was first conducted in a descriptive way, using measures of frequency, central tendency and dispersion. All variables were tested for normality distribution using the Kolmogorov-Smirnov test.

In order to analyze the scales used in the study, participants were grouped into three groups, based on self-reported gender identity. The first group, named “female gender”, was formed by trans women, transvestites and transfeminine; the second, “male gender”, composed of trans men and transmasculines; and the third group by people who self-reported as non-binary and others, grouped as “non-binary”. The grouping was done by the similarity of the results of the individuals of each group.

For analysis of the studied scales, tests of difference between measures of central tendency and prevalence among the three groups of gender identity were carried out, according to the normality of the variable. ANOVA was used to compare means, Kruskal Wallis test for medians, and Pearson's chi-square for prevalence. For still descriptive analyses, Pearson's correlation was performed between variables that determined weight (Body Mass Index - BMI), variables that determined gender affirmation process (surgery and hormonal therapies) with the scores of the three scales and their calculated subdimensions.

Afterwards, a bivariate analysis plan was drawn up (for causality and determinants of ED) and another plan for multivariate analysis (linear regression analysis) to determine the profiles of body satisfaction, QOL and ED and their social and health determinants. Significance level of 5% ( $p < 0.05$ ) was adopted.

The present research was submitted to the Research Ethics Committee of the Federal University of Mato Grosso do Sul, under CAAE: 47949621.7.0000.0021, according to resolution nº 466/12 of the National Council of the Ministry of Health (brazilian acronym CNS/MS), and it is in accordance to guidelines for research on human beings in Brazil. All participants signed a Free and Informed Consent Form (ICF) before accessing the questionnaire.

## **Results**

Regarding sample characterization (n=181), participants presented an average age of 25 years (between 18 and 44 years). Most individuals were self-reported as white (73.5%), trans man (44.4%), bisexual or pansexual (55.9%) and presented incomplete higher education, meaning in course, complete or with a postgraduate degree (77.5%). Other characterization data can be analyzed in table 1 below.

**Table 1.** Characterization of sociodemographic data, Brazil, 2022.

Variable	n(%)
<b>Gender identity</b>	
Trans man	80 (44,2)
Trans masculine	16 (8,9)
Trans woman/tranvestites	21 (11,6)
Non-binary	61 (33,7)
Other	3 (1,7)
<b>Sex assigned at birth</b>	
Male	36 (19,9)
Female	144 (79,5)
Intersex	1 (0,6)
<b>Ethnicity/Race</b>	
White	133 (73,5)
Black	17 (9,4)
Brown	24 (13,3)
Yellow	6 (3,3)
Indigenous	1 (0,5)
<b>Religion</b>	
None	119 (65,8)
Umbanda/Candomblé	15 (8,3)
Spiritist	16 (8,8)
Catholic	10 (5,5)
Other	21 (11,6)
<b>Schooling</b>	
Complete primary education	3 (1,7)
Incomplete high school	3 (1,7)
Complete high school	35 (19,3)
Incomplete higher education/in progress	80 (44,2)
Complete higher education	36 (19,9)
Post graduation	24 (13,2)
<b>Sexuality</b>	
Heterosexual	46 (25,7)
Homosexual	14 (7,8)
Bisexual/Pansexual	100 (55,9)
Asexual	13 (7,3)
Other	6 (3,3)
<b>Marital status</b>	
Single	137 (75,7)
In stable union/ Married	41 (22,7)
Divorced	3 (1,6)

*n=181 valid responses.*

Source: Authors, 2022.

Regarding self-reported anthropometric characteristics, an overall mean BMI of  $26.1 \pm 6.01$  kg/m<sup>2</sup> (ranging from 15.7 to 50.2 kg/m<sup>2</sup>) was found. It can be observed that the processes of gender transition are different in binary and non-binary gender, due to the prevalence of hormone therapy and body reaffirmation surgery in binary people. A total of 48.2% of people reported they were undergoing some type of hormone therapy, and the average time was about 12.7 months, ranging from one to 120 months of treatment. About 13.3% reported having already performed gender affirmation surgeries and 53.6% expressed the intention to do so in the future (n=166 individuals who answered the question about hormone therapy). The data are found in table 2 below.

**Table 2.** Characterization about the gender transition process, Brazil, 2022.

Variable	Groups			P
	Female gender (n=19)	Male gender (n=89)	Non-binary gender (n=58)	
	n(%)	n(%)	n(%)	
Undergo hormone therapy (use of hormones)?				
Yes	15 (78,9)	61 (68,5)	4 (6,9)	-
No, but I intend to do	4 (21,1)	25 (28,1)	18 (31,0)	
No, and I don't intend to do	0 (0,0)	3 (3,37)	36 (62,1)	
Have you had gender affirmation surgery(s)?				
Yes	1 (5,3)	20 (22,5)	1 (1,7)	0,001**
No, but I intend to do	14(73,7)	50 (56,2)	25 (43,1)	
No, and I don't intend to do	4 (21,0)	19 (21,3)	32 (55,2)	
	<b>Average/Median (SD/ Min-Max)</b>	<b>Average/Median (DP/ Min-Max)</b>	<b>Average/Median (DP/ Min-Max)</b>	
Median Hormonization Time (n=166)	28,8 (0 - 108)	17,1 (0-120)	0,84 (0-21)	0,0001 <sup>b*</sup>
Average BMI values (kg/m <sup>2</sup> ) (n=180)	25,6±3,3	26,6±5,88	25,6±6,9	0,559 <sup>b</sup>

\*p<0,05. / <sup>a</sup>Chi-square test. / <sup>b</sup> One-way ANOVA.

Source: Authors, 2022.

In a general analysis of WHOQOL-bref scale, not dividing the sample in groups, the respondents obtained an average score of  $3.08 \pm 0.6$  points, indicating a neutral perception of QOL, neither as good nor as bad. Overall, when we look at the domains of the questionnaire, the psychological domain was the worst evaluated ( $2.77 \pm 0.73$ ), while the environment domain was better evaluated ( $3.12 \pm 0.80$ ). The physical and social domains scored similarly ( $3.05 \pm 0.74$  and  $3.09 \pm 0.92$ , respectively).

When cut off points were applied to the scale, none of the participants were classified as presenting “Very good QOL”, and about 48.07% obtained the diagnosis of



“Needing to improve QOL”. In their self-evaluation, 57.46% marked their QOL as “good” or “very good” (n=104), 23.76% as “neither bad nor good” (n=43) and 18.79% (n=34) said that was “bad” or “very bad”. The value of the indicator of satisfaction with one's own health is the worst evaluated, meaning 28.17% marked “good” or “very good” (n=51), 34.25% marked “neither good nor bad” (n=62) and 37.57% report it as “bad” or “very bad” (n=68).

There are statistical differences between the three groups in all domains of WHOQOL-bref, showing heterogeneity between the groups and a first indication that trans people should not be evaluated from a single health perspective. Comparing the average scores for each domain, we can see a statistical difference in the general score of the questionnaire and in the social and environmental domains, with females scoring less on the WHOQOL-bref scale in all domains in the sample studied. Further information about the WHOQOL-bref scale can be seen in Table 3 below.

**Table 3.** Assessment of WHOQOL-bref, Brazil, 2022.

	Female gender (n=21)	Male gender (n=96)	Non-binary gender (n=64)	Statistica l test
	n(%)/ Average±SD	n(%)/ Average±SD	n(%)/ Average±SD	p <sup>A</sup>
<b>WHOQOL-Bref -Diagnosis</b>				
General				
Needs to improve	18 (85,7)	42 (43,8)	27 (42,2)	0,001 *
Regular or Good/ Very good	3 (14,3)	54 (56,2)	37 (57,8)	
Physical				
Needs to improve	15 (71,4)	45 (46,9)	25 (39,1)	0,036 *
Regular or Good/ Very good	6 (28,6)	51 (53,1)	39 (59,9)	
Psychological				
Needs to improve	19 (90,5)	52 (54,2)	43 (67,2)	0,005 *
Regular or Good/ Very good	2 (9,5)	44 (55,5)	21 (32,8)	
Social				
Needs to improve	15 (71,4)	33 (35,5)	19 (30,7)	0,003 *
Regular or Good/ Very good	6 (28,6)	60 (64,5)	43 (69,3)	
Enviroment				
Needs to improve	14 (66,7)	36 (37,5)	24 (37,5)	0,038 *
Needs to improve	7 (33,3)	60 (62,5)	40 (63,5)	
<b>WHOQOL-bref - Score</b>				
General score	2,58 ± 0,76	3,08 ± 0,65	3,07 ± 0,49	0,002*
Physical domain	2,77 ± 0,83	3,08 ± 0,77	3,09 ± 0,63	0,177
Psychological domain	2,59 ± 0,67	2,83 ± 0,81	2,75 ± 0,60	0,353
Social domain	2,45 ± 1,06	3,14 ± 0,89	3,23 ± 0,82	0,001*
Enviromental domain	2,5 ± 1,04	3,2 ± 0,76	3,2 ± 0,66	0,0004*

n= 181 valid responses. / \*p<0,05. / <sup>A</sup>Chi-square test.

Source: Authors, 2022.

Regarding the EDE-Q, the mean score considering the four domains of the questionnaire was 2.24 (ranging from 0.81 to 5.6). The results showed that 12.7% (n=23) of the participants presented a score above 4, suggesting the presence of an ED. About each domain, considering a general analysis (without dividing into groups), we observed that “Concern with body weight” and “Concern with body shape” scored higher, appearing to be more sensitive points in this population.

Comparing the groups, the female gender presented greater risk behaviors for ED ( $p=0.067$ ), especially regarding the domain of the scale that deals with weight concern ( $p=0.056$ ). No significant differences between the groups regarding the scores on the ED scale were observed and the three groups showed very similar scores in the four domains of the EDE-Q questionnaire. We believe this finding due to less female adhesion to the research. More details can be seen in Table 4 below.

**Table 4.** Assessment of EDE-Q, Brazil, 2022.

	Female gender (n=21)	Male gender (n=96)	Non-binary gender (n=64)	Statistical test
	n(%)/ Average±SD	n(%)/ Average±SD	n(%)/ Average±SD	<i>p</i>
<b>EDE-Q - Diagnosis</b>				
General >4 points	6 (28,6)	10 (10,4)	7 (10,9)	0,067 <sup>a*</sup>
General <4 points	15	86	57	
Food restriction > 4 points	2 (9,5)	11 (11,5)	8 (12,5)	0,932 <sup>a*</sup>
Food restriction < 4 points	19	85	56	
Concern about food > 4 points	4 (19,1)	8 (8,3)	3 (4,7)	0,117 <sup>a</sup>
Concern about food < 4 points	17	88	61	
Concern about body shape > 4 points	9 (42,9)	36 (37,5)	19 (29,7)	0,447 <sup>a</sup>
Concern about body shape < 4 points	12	60	45	
Concern about body weight > 4 points	9 (42,9)	18 (18,8)	14 (21,9)	0,056 <sup>a</sup>
Concern about body weight < 4 points	12	78	50	
<b>EDE-Q - Score</b>				
General scores	2,55 ± 1,56	2,25 ± 1,29	2,13 ± 1,38	0,460 <sup>c</sup>
Concern about body weight score	2,83 ± 1,86	2,52 ± 1,60	2,33 ± 1,59	0,458 <sup>c</sup>
Concern about body shape score	3,47 ± 1,68	3,26 ± 1,59	2,87 ± 1,53	0,197 <sup>c</sup>
Concern about food score	1,88 ± 1,92	1,52 ± 1,41	1,76 ± 1,38	0,464 <sup>c</sup>
Food restriction score	2,00 ± 1,56	1,70 ± 1,61	1,54 ± 1,69	0,516 <sup>c</sup>
<b>In the last 28 days, how many days did you:</b>				
Did you eat what other people would consider an unusually large amount of food (given the circumstances)?	3 (0 - 28)	5 (0 - 28)	5 (0 - 28)	0,981 <sup>b</sup>
How many times have you had the feeling that you had lost control over your food (while you were eating)?	4 (0 - 28)	3,5 (0 - 28)	7,5 (0 - 28)	0,216 <sup>b</sup>
On how many days did these episodes of overeating occur (i.e., did you eat an unusual amount of food and felt a sense of loss of control at that time)?	4 (0 - 28)	3 (0 - 28)	5 (0 - 28)	0,444 <sup>b</sup>
How many times have you vomited as a way of controlling your body shape or body weight?	0 (0 - 28)	0 (0 - 28)	0 (0 - 28)	0,896 <sup>b</sup>
How many times have you taken laxatives as a way of controlling your body shape or body weight?	0 (0 - 28)	0 (0 - 28)	0 (0 - 28)	0,937 <sup>b</sup>
How many times have you exercised 'forced' or 'compulsively' as a way of controlling your body shape or body weight?, or amount of fat, or to burn calories?	0 (0 - 28)	0 (0 - 28)	0 (0 - 28)	0,228 <sup>b</sup>

n= 181 valid responses. / \*p>0,05. / <sup>a</sup>Chi-square test. / <sup>b</sup>Kruskal Wallist test. / <sup>c</sup>One-way ANOVA.

Source: Authors, 2022.

Despite the application of the ESSC, its subdomains were not calculated for this analysis, since the questionnaire is still in the validation stage for the trans population. Instead of subscales, the average scores of responses for each item were analyzed. It was possible to observe that there are several points that represent significant differences between the three groups analyzed. Regarding dissatisfaction with weight and body fat, we observed that “the desire to change the body” ( $p=0.013$ ), “feeling ashamed of your own body” ( $p=0.007$ ), “waistline dissatisfaction” ( $p=0.007$ ), “with the belly” ( $p=0.006$ ) and “having too much fat on the body” ( $p=0.047$ ) are points answered in different ways by the three groups, and the female gender group scores were systematically higher, showing greater dissatisfaction.

It is important to note that groups differ on satisfaction with their muscle mass size ( $p=0.020$ ) and definition ( $p=0.003$ ), and on external appearance, such as satisfaction with hair ( $p=0.029$ ), chest ( $p=0.011$ ), hips ( $p=0.021$ ) and on finding their own body attractive ( $p=0.018$ ). Highest scores were found for muscles (males) and general satisfaction with the body (non-binary). Therefore, it is necessary further analysis to better define the use of the ESSC scale in this population before recommending its use on a clinical scale. More details can be seen in Table 5 below.



**Table 5.** Situational Body Satisfaction Scale – (brazilian acronym ESSC), Brazil, 2022.

	Female gender (n=21)	Male gender (n=96)	Non-binary gender (n=64)	Statistical test
Situational Body Satisfaction Scale – ESSC <sup>a</sup>	Average ± SD	Average ± SD	Average ± SD	<i>p</i> <sup>b</sup>
I would like to change many things in my body	4,24 ± 1,04	4,05 ± 1,06	3,59 ± 1,15	0,013*
I feel ashamed about my body	4,10 ± 1,04	3,61 ± 1,38	3,14 ± 1,23	0,007*
I'm unhappy with my waist	3,81 ± 1,25	3,74 ± 1,57	3,06 ± 1,54	0,016*
If I were thinner, I would feel much better	3,86 ± 1,11	3,00 ± 1,64	3,10 ± 1,66	0,150
I'm unhappy with my belly	4,38 ± 0,97	3,90 ± 1,37	3,35 ± 1,55	0,006*
I think I have too much fat on my body	3,90 ± 1,18	3,48 ± 1,62	3,01 ± 1,60	0,047*
I'm unhappy with my measurements	3,90 ± 1,14	3,46 ± 1,63	3,01 ± 1,60	0,050
I am satisfied with my hair	3,05 ± 1,77	1,99 ± 1,24	2,40 ± 1,36	0,029*
I am satisfied with my face	2,47 ± 1,57	2,47 ± 1,28	2,42 ± 1,34	0,128
I feel satisfied with my skin	2,76 ± 1,48	2,45 ± 1,28	2,79 ± 1,36	0,231
I am satisfied with the amount of hair on my body	3,00 ± 1,79	3,00 ± 1,24	2,82 ± 1,45	0,518
I am satisfied with the thickness of my arms	3,43 ± 1,60	4,15 ± 1,10	3,92 ± 1,29	0,051
I like the weight I have now	3,38 ± 1,56	3,57 ± 1,37	3,00 ± 1,44	0,650
Overall, I am satisfied with my muscle definition	3,00 ± 1,52	3,00 ± 1,12	3,78 ± 1,16	0,003*
I like the width of my shoulders	2,90 ± 1,58	2,89 ± 1,46	2,42 ± 1,18	0,097
I am satisfied with my breasts	3,05 ± 1,50	4,04 ± 1,44	3,89 ± 1,20	0,011*
I find my body attractive	3,47 ± 1,36	3,47 ± 1,31	3,04 ± 1,28	0,018*
Overall, I am satisfied with the size of my muscles	3,29 ± 1,65	3,95 ± 1,13	3,47 ± 1,34	0,020*
I am satisfied with my body	3,43 ± 1,36	3,90 ± 1,20	3,51 ± 1,20	0,074
I am satisfied with the size of my hips	3,05 ± 1,72	3,79 ± 1,38	3,25 ± 1,45	0,021*
I am satisfied with my glutes	3,10 ± 1,70	2,98 ± 1,42	3,32 ± 1,45	0,337
I think my legs are too flabby	2,52 ± 1,25	2,52 ± 1,50	2,45 ± 1,54	0,504
I think I have too much cellulite	3,00 ± 1,45	3,00 ± 1,64	3,09 ± 1,68	0,470

<sup>a</sup>Score presented in Likert scale, in which: 1 – I totally disagree; 2 – I partially disagree; 3 – I do not agree nor disagree; 4 – I partially agree; 5 – I totally agree. <sup>b</sup>One-Way ANOVA. \**p*<0,05.

Source: Authors, 2022.

Regarding anthropometry as a marker of ED and worse perception of QOL, we conducted Pearson's correlation test using self-reported BMI, however, the correlations between the two scales in this population were very low or null ( $r < 0.3$ ), implying lack

of evidence for the use of BMI as the main measure of dissatisfaction in this population. The same result was observed for the EDE-Q and WHOQOL-bref scales when the correlation was conducted considering time of hormone treatment and gender affirmation surgeries.

Considering multivariate analysis, we constructed a linear regression model for each studied group, based on the general EDE-Q score variables that measured the presence of ED throughout the four subdomains. The multivariate is presented in table 6 below.

**Table 6.** Factors associated with the EDE-Q, Brazil, 2022.

Variable	$\beta$	IC95%	P value	R <sup>2</sup> adjusted
<b>Female gender (n=21)</b>				
Age (years)	0,622	-0,048 – 0,172	0,248	
WHOQOL-Bref - Social domain	0,407	-0,067 – 0,88	0,087	
ESSC - I think I have too much fat on my body	0,73	0,303 – 1,16	0,003	0,680
EDE-Q - Did you eat what other people would consider an unusually large amount of food (given the circumstances)?	0,058	0,006 – 0,110	0,029	
EDE-Q - How many times have you vomited as a way of controlling your shape or weight?	0,138	0,047 – 0,228	0,006	
<b>Male gender (n=96)</b>				
Age (years)	0,001	-0,03 – 0,336	0,933	
WHOQOL-Bref - Psychological domain	-0,490	-0,732 – -0,247	0,000	
ESSC - If I were thinner, I would feel much better.	0,256	0,060 – 0,452	0,011	0,545
ESSC - I think I have too much fat on my body	0,257	0,056 – 0,458	0,013	
EDE-Q - How many times have you exercised 'forced' or 'compulsively' as a way of controlling your shape or weight, or amount of fat, or to burn calories?	0,026	0,004 – 0,052	0,046	
<b>Non-binary gender (n=64)</b>				
Age (years)	-0,002	-0,047 – 0,033	0,719	
Ethnicity	-0,243	-0,494 – -0,067	0,056	
WHOQOL-Bref - Psychological domain	-0,389	-0,691 – -0,087	0,012	0,754
ESSC - If I were thinner, I would feel much better.	0,343	0,174 – 0,512	0,000	
ESSC - I think I have too much fat on my body	0,306	0,129 – 0,483	0,001	
EDE-Q - How many times have you had the feeling that you had lost control over your food (while you were eating)?	0,017	0,008 – 0,036	0,061	

Source: Authors, 2022.

By observing the multiple regression analysis, we found an association for female gender between EDE-Q score and the social domain of the WHOQOL-bref ( $p=0.087$ ), factor “considering that there is too much fat in their body” ( $p=0.003$ ), quantitative EDE-Q variables (not included in the final score), number of days of excessive food consumption (0.029) and number of vomiting episodes ( $p=0.006$ ). Thus, all variables significantly related to the regression model represented an increase in the overall EDE-Q score, with an adjusted  $R^2$  of 0.680.

When we consider male gender, we found a positive association for EDE-Q score, factors “wishing to be thinner” ( $p=0.011$ ) and “considering that there is too much fat in their body” ( $p=0.013$ ) and exercising forcefully ( $p=0.046$ ). The Psychological domain of the WHOQOL-bref was negatively associated with EDE-Q score ( $p < 0.001$ ), and each point of the WHOQOL-bref scale psychological was accompanied by an average decrease of 0.490 points of the ED score. Regarding non-binary people, we observed that “wishing to be thinner” ( $p < 0.001$ ) and “considering that there is too much fat in their body” was positively associated with the increase in the EDE-Q score ( $p = 0.001$ ).

## **Discussion**

The present study evaluated risk behaviors for ED, QOL and body dissatisfaction related to gender dysphoria in the trans population. Results showed poor perception of body image and self-assessment of QOL, tending to neutrality. The results on gender affirmation processes indicate that most of the trans population is dissatisfied at some level with body parts or with the whole body, resorting to medical therapies in order to modify these attributes. In total, 76.5% of the sample is looking forward to or is already using hormones, which modify secondary sexual characteristics, and 66.9% want or have already undergone surgeries to change primary sexual characteristics.

The female gender is the one that most desires therapeutic measures, being the group with greater access to hormone therapy and less access to surgical procedures. These findings can be explained by the fact that the drugs often used by this population present affordable prices and no need for medical prescription, raising concern about the use of hormones without medical supervision, potentially leading to illness in a population with limited access and permanence in health services (ROCON *et al.*, 2019).

Transmales presented greater access to surgeries. Only three respondents did not intend to undergo hormone therapy and more than  $\frac{3}{4}$  of the sample had already performed or intended to perform a surgical procedure. Non-binary people presented the least intention of body interventions, 62.1% did not wish to take hormones and 55.2% did not plan any surgeries, deducing less body dissatisfaction. This result is in accordance with another study that found higher levels of body satisfaction in non-binary trans people when compared to binary trans people (AMODEO *et al.*, 2022). Our data brings to light that the process of gender dysphoria in the three different groups might be expressed differently, requiring a different look for better understanding how gender dysphoria might influence body acceptance and ED.

The female gender presented higher levels of body dissatisfaction, especially in questions about weight and body measurements, which coincides with the literature and confirms that the internalization of beauty ideals targeted at the female gender reinforcing thinness as a beauty pattern and markedly affects the transfemale portion (BARROS *et al.*, 2019), leading to more negative self-assessment of their bodies.

The male gender scored greater satisfaction about muscle size and definition, suggesting that the ideal of virility and manhood is not intensely negative internalized in this sample (AMODEO *et al.*, 2022). Non-binary people scored equally or greater in general satisfaction with the body and its parts, meaning less body anxiety when compared to binary people (AMODEO *et al.*, 2022).

In a Brazilian study about body satisfaction in transgender men and women, no significant differences were found between obese and non-obese individuals, indicating that body BMI does not influence the aesthetic satisfaction with their own bodies or the QOL of these people (SILVA *et al.*, 2021), similar to the findings of the present study (no correlation was seen between these factors). We imply that body dissatisfaction might be related much more to body shape than to body size considering excess weight and fat accumulation. Furthermore, processes of altering body mass and its composition might be welcomed for relating to desired androgynous characteristics.

By applying other questionnaires assessing body satisfaction in trans people, Barros *et al.* (2019) found that non-binary people scored higher means of “body satisfaction” and “appearance satisfaction” in comparison to other groups, which is in line with the results obtained using isolated ESSC questions in the present study. We found that non-binary people scored higher on questions of general body satisfaction, and scored lower than trans and transmale men on questions about muscles and dimensions.

Regarding QOL assessment, the participants showed perception that might be classified as neutral (“neither good nor bad”) in most of the domains of the questionnaire. None of them rated QOL as “very good” and 48% were diagnosed as “Needs to improve the QOL” in their self-assessment. We also observed that the psychological domain of the WHOQOL-bref was the most poorly evaluated and the environment domain was the best evaluated in this population. Our results may indicate that the QOL is strongly influenced by the level of body satisfaction, and that there are different social pressures on female and male gender related to body image. Body dissatisfaction, linked to social problems of transphobia, generates intense psychic suffering, justifying psychological domain being the most poorly evaluated aspect of QOL in the studied population.



In addition to the statistical difference in the general score of the questionnaire and in the social and environmental domains, it is relevant to note that the female gender scored lower in all domains of the scale, correlating with the worst perception of body satisfaction. The male gender scored higher in the psychological domain, represented by 55.5% that classified as “regular or good/very good”. Non-binary people scored better overall QOL and better quality in the physical, social and environmental domains, which might be related to better levels of body satisfaction.

In a similar study in which the authors evaluated the quality of life of trans people using the WHOQOL-bref, the most significant findings included that females showed higher mean scores when compared to males or non-binary genders for the question “How would you rate your QOL” for the Physical Domain and Environment of the WHOQOL-bref (BARROS *et al.*, 2019). This result is different from what we found in the present research, in which female gender scored lower in all domains of the scale, meaning worse QOL in general and in each domain when compared to the two other groups.

Silva *et al.* (2021) also applied WHOQOL-bref to assess the QOL of transsexual people treated at the Porto Alegre Clinical Hospital (HCPA), in Brazil, and found scores below 60% in self-perception of QOL, rating them as “needs to improve”, and not significant differences between trans men and women were found. The domain that presented the worst evaluation was the environmental one, followed by psychological and physical domains. The social domain was rated as the best aspect of QOL, and in general assessment, trans women scored higher than trans men, indicating greater satisfaction in this group, a result in accordance with Eftekhari *et al.* (2020). The authors also found better scores in physical, psychological and social domains for individuals who were in a stable relationship when compared to single individuals, which highlights further studies about the impact of affective relationships on the QOL of transgender people (SILVA *et al.*, 2021).

We hypothesized that such discrepancies might be related to the difference in sample size of the study groups, as the present research was composed of a smaller number of female people in comparison to the other two groups. In addition, it is well documented that the body image and QOL of trans people improve considerably after hormone therapy and surgeries (EFTEKHAR *et al.*, 2020; NAGATA *et al.*, 2020a). Taking into account that the female group reported reduced access to surgical procedures, it is understood that the perception of QOL was worse in comparison to the other groups who described better access to these services.

When assessing eating behaviors, average mean score was 2.24, meaning no risk attitudes for ED in this population. However, 12.7% of the sample obtained a score above 4, indicating the presence of some type of ED. By considering the domains of the instrument, “Concern with body weight” and “Concern with body shape” proved to be of greater sensitivity in this population. These results converge with the results obtained in the ESSC and WHOQOL-bref tools, since individuals with worse aesthetic satisfaction reported worse QOL and greater risk for ED behaviors.

Even with reduced participation of trans women in the research, our EDE-Q results are in accordance with those found in the other instruments. The female gender was the group with the highest score, indicating a higher risk of developing ED when compared to the male and non-binary genders. In all groups, the domain worst evaluated was “concern with body shape”, indicating that poor perception of body image might be related to gender dysphoria and body dimensions, and not only to body weight (NAGATA *et al.*, 2020b).

Considering that the idealized male body is muscular, and the ideal female body is thin, this beauty pattern is perceived as even more unattainable for the trans population, since there are certain parts of the body that are not modifiable with the use of hormones and surgeries. Thus, trans men often present compulsive physical

conditioning practices and food restriction and trans women admit intense fasting to achieve ideal thinness (NAGATA *et al.*, 2020a, 2020b).

In this sense, “eating restriction” and “eating compulsion” were the most common ED behaviors between trans women and men (respectively, 24% and 11% in trans men and 28% and 13% in trans women) (NAGATA *et al.*, 2020b). Regarding non-binary population, few differences were found in relation to the binary sample: trans women presented higher scores on “food restriction” and “concern about body shape”, but the overall scores and other subscales were similar between the groups (NAGATA *et al.*, 2020a). These findings are in accordance to the results of the present research, suggesting greater concern with weight and body shape by trans women and transvestites, who scored more on the general scale and in EDE-Q subdomains, with little difference between the scores of trans men and non-binary people, who also reported lower rates of ED.

Considering the results found, it should be noted that even within such a vulnerable population, transphobia crosses intersectionalities in different ways and therefore, despite all participants being trans people, the three groups delimited here face different challenges from the point of view of acceptance, social and environmental inclusion, access to education and health services, and these aspects influence health outcomes.

Among these determinants, we highlight the pathologization of transgenderism, discrimination in health equipment and inadequate reception, lack of qualification of professionals (including verbal and physical abuse and wrong use of names and pronouns), lack of access to hormones and generalization of the population (FERGUSON *et al.*, 2018; GORDON *et al.*, 2016; ROCON *et al.*, 2019; THOMPSON *et al.*, 2015). Such ways of discrimination by the health professional community might lead a portion of the population not to reveal their gender identity to receive care, or even to postpone and avoid health care (FERGUSON *et al.*, 2018).

Even though being part of a very vulnerable group, the subgroup of trans women and transvestites suffers the most from these determinants, presenting the lowest rates of completion of high school and access to higher education, higher prevalence of black and brown ethnicities and greater presence in prostitution (BENEVIDES, 2022). In addition, Brazil is the world leader in the number of murders of trans and transvestites, reaching the mark of 140 murders in 2021, albeit underreporting; 96% were committed against people who express the female gender, evidencing the problems of this fraction of the population (BENEVIDES, 2022).

The population that participated in the study is mostly white (73.5%) and with access to higher education (77.5%), which brings an optimistic and discordant view of the Brazilian reality, in which school dropout is common for the trans population (BENEVIDES, 2022). The influence of educational and socioeconomic levels on ED risk behaviors was still not completely elucidated and poorly described. Few available data are mainly restricted to the adolescent and female population, presenting contradictory data regarding the real interference of income in ED (OLIVEIRA, 2009; OLIVEIRA; HUTZ, 2010; SILVA *et al.*, 2021), demonstrating the need for further scientific production in this area.

In a study including young and university students of both sexes, authors observed that risk behaviors for developing ED were present in 15% of men and 19% of women, suggesting that participants with fewer years of study presented greater chance of risk behaviors, but with no significant difference regarding socioeconomic class (OLIVEIRA, 2009). Likewise, Oliveira and Hutz (2010) agree that transcultural, socioeconomic and racial factors are significant for constructing body image and influence eating attitudes, however, the evidence found is still not accurate.

In the multiple regression analysis, the results were treated with separate regressions for each group of individuals, as they understood that the process of gender dysphoria influences body satisfaction in different ways and possibly the development

of ED. For transgender women and transvestites, an association was observed between increasing the EDE-Q score with believing that there is too much fat in your body, number of days of excessive food consumption and number of vomiting episodes, demonstrating, in general, that the risk of ED increases in this population with pressure for thinness and female social aesthetic standards, causing this population to increase the risk of erectile dysfunction because they want to lose weight.

Regarding trans men and non-binary people, increased EDE-Q score was associated with decreased score of the psychological domain of the WHOQOL-bref, indicating that individuals who worst evaluated their QOL in the psychological aspect were more likely to present ED. Similarly to trans women and transvestites, trans men and non-binary people presented higher scores on the EDE-Q and ED risk when they agreed with the statements “I think I have too much fat in my body” and “If I were thinner, I would feel better”. This data demonstrates the possibility that this body dissatisfaction originates from social pressure for thinness and the transphobia process itself, since these people undergo vexatious situations in relation to their body, leading to the belief of inadequacy and, consequently, increasing the chances of ED (FERGUSSON *et al.*, 2018; GORDON *et al.*, 2016; NAGATA *et al.*, 2020b).

### **Conclusions**

To our knowledge, this is the first study that investigates the intersections between the variables eating behavior, body image and QOL in a Brazilian sample of trans people, comparing the results between transfemale, transmale and non-binary genders, with and without hormones and surgeries. This investigation provides valuable results on the health of the trans population, which, added to what was found in previous literature, point to fundamental aspects to provide appropriate medical, psychological and nutritional care to trans people.



Body dissatisfaction issues are not intrinsic to transgender people, but rather are associated with social contexts of social understanding and imagination about female and male bodies. These beauty patterns, already unreachable for cis population, appears to be even more striking for the trans population, which predisposes them to body dissatisfaction resulting from social and media pressure, body objectification, stigma and transphobia.

We infer that individuals who are more satisfied with their own bodies and appearance tend to lower risk of ED behaviors and better QOL indices in all optics. Notably, people aligned with the female gender suffer more from the internalization of the body ideal culture, being important to institute and improve public policies to attentively receive this population, incentivizing the seek and permanence in health services for all sexual and gender minorities.

We emphasize that there are limitations in this study, including data collection, which was carried out completely online, with self-reported data collection, providing opportunities for the subjectivity of responses and, eventually, inaccurate information depending on questions' content. Online research might also have led to limited adhesion of trans women and transvestites, people of other ethnicities and with lower education. This observation is corroborated by sample homogeneity, composed mostly of male gender, white ethnicity and with higher education.

Another limitation found was the fact that the instruments used have many points sensitive to under-reporting, as they are controversial and tabulated topics, especially the EDE-Q, which addresses very subjective issues, such as induced vomiting and prolonged fasting. In addition, the fact that this is a population that is quite unfeasible in the country and that suffers from the unpreparedness of the health system to deal with their respective particularities may have led to resistance in participating in the research. For the research agenda, there is a need for more complex studies

involving more layers of the trans population, with greater diversity of ethnicity and education, valuing the heterogeneity of the community.

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### **Comportamento alimentar, satisfação corporal e percepção da qualidade de vida na população transgênera brasileira**

**Resumo:** Pessoas trans apresentam níveis elevados de insatisfação corporal devido à disforia de gênero e fatores sociais, podendo gerar pior percepção da qualidade de vida e risco para desenvolvimento de Transtornos Alimentares (TA). Esta pesquisa objetiva elucidar os fatores associados à qualidade de vida da população trans, entre eles a disforia de gênero, percepção da imagem corporal, nível de satisfação corporal e comportamento alimentar.

**Palavras-chave:** Transgênero. Imagem Corporal. Comportamento Alimentar. Transtornos Alimentares. Qualidade de vida.

**Submitted: 30/01/2023**

**Accepted: 03/04/2023**