

# Does hormone treatment help Polish transgender individuals cope with stress?

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## Abstract

**Introduction:** The results of Polish studies indicate that transgender individuals have lower quality of life than cisgender people. Research shows that hormone treatment and transition-related surgeries can buffer the stress' impact on the quality of life of transgender people. The objective of this study was to explore whether hormone treatment and transition-related surgeries moderate in the relationship between stress and life satisfaction in transgender individuals.

**Material and methods:** One hundred twenty-four transgender individuals in the age between 18 and 53 years old ( $M = 23.60$ ;  $SD = 6.32$ ) participated in the presented study — 41 transgender women and 83 transgender men. Recruitment of the respondents took place via the Internet. SWLS, PSS-10 and authors' own questionnaire on hormone treatment were used.

**Results:** There were significant differences in the level of stress between transgender individuals using hormone treatment and those who did not. The ones who used hormone treatment had lower levels of perceived stress than those, who did not. The analysis showed the negative and strong relationship between perceived stress and life satisfaction in studied sample. Results of hormone treatment were negatively and weakly related to transgender individuals' life satisfaction. The relationship between hormone treatment and perceived stress was not significant.

**Conclusions:** This manuscript draws attention to the important role of coping strategies in Polish transgender people. Psychologists and specialists working with transgender people should try to find significant predictors of transgender people's life satisfaction. This is important because finding significant resources will improve transgender individuals' quality of life.

**Key words:** transgender; transition-related surgeries; hormone treatment; stress; life satisfaction

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## Introduction

According to ILGA Europe (*International Lesbian, Gay, Bisexual, Trans and Intersex Association*), Poland scored the lowest number of points out of all EU countries on the Rainbow Europe report — an annual benchmarking tool created to monitor the legal and policy situation of LGBTQ+ people in Europe [1]. Family, hate crime and hate speech categories, as well as equality and non-discrimination, are those categories of the index in which Poland needs to improve the most [2]. The statistics might illustrate the situation of transgen-

der individuals in the country quite well, as there are various challenges they have to face during the process of affirming their gender. Aside from the costs of medical procedures, married transgender people need to divorce their partners, as same-sex marriages are not legally allowed in Poland. Adding an annotation to the birth certificate requires a trial against one's parents; however, documents such as proof of employment are not eligible for change — meaning that an employer has access to sensitive data, which a transgender person might not be willing to disclose [3–5]. There are no strict anti-discrimination laws in Poland, as there is no punishment for incitement to hatred against LGBTQ+ people [2]. In addition, the perceived stress of the community may also be influenced by the current political situation in Poland. The President of Poland

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in the years 2015–2020 and 2020–2025, Andrzej Duda, publicly labels the LGBTQ+ community as an ideology that is worse and more harmful than communism [6,7].

Transgender people in Poland have a lower quality of life and worse mental health compared to cisgender individuals, replicating patterns in other countries [8–10]. One Polish study reports that among transgender people who took part in the research, two-thirds declared poor quality of life [11]. These findings go on par with foreign researches, which states that Polish transgender people are more prone to psychiatric problems than the cisgender population, with **with affective disorders and anxiety being the most common ones** and anxiety being the most common ones. They are also at risk of substance misuse and suicide attempt [12–14]. The prevalence of psychiatric morbidity in this group may be caused by discrimination [15] in various spheres of life — such as health care, employment, and housing [16] — or gender dysphoria [17]. It is a state of distress related to the misalignment of assigned and experienced sex [18], and it impacts functioning in many areas of life (ranging from social to occupational) in those who experience it [19]. Body image, which is positively correlated with quality of life, is also impacted by gender dysphoria (GD), as body dissatisfaction is one of the predictors of psychopathology in transgender people. An Iranian study showed a significant improvement in body image and quality of life among GD individuals who underwent transition-related surgeries, compared with those who did not [20].

Being a minority group, transgender people are prone to minority stress [21]. According to Meyer, it is caused by an excess of social stressors associated with prejudice and stigma [22]. It is directly linked to the general environmental circumstances of a person, as both general (such as their socioeconomic status), and minority stressors (i.e., discrimination in the workplace) are present. A person's minority status is an important part of Meyer's theory. Those who identify themselves with the minority status, and thus experience additional stressors more directly — since they are related with their perception of themselves — will feel stigmatized and devalued, which may lead to expectations of rejection, concealment, and internalized homophobia [22]. Minority stigma may not only be perceived on an individual level but also interpersonal and structural. The former relates to prejudice and discrimination expressed towards the minority, as well as hate crimes and microaggressions, while structural forms of stigma are cultural norms, policies, and societal-level conditions [23].

Even though stress and experience of discrimination may impact transgender people's quality of life, deve-

loping positive coping skills may lead to positive outcomes [24]. Coping can be defined as the behavioral and cognitive efforts of a person, used to manage external or internal demands perceived as transcending possessed resources. It has two main functions — it can be used to regulate stressful emotions or change the person-environment relation, responsible for the distress [25]. Researchers have been looking into factors which may have an impact on transgender people's stress and quality of life. Social support, community connectedness, and effective coping strategies are beneficial for transgender people's well-being [14]. Social support may play the role of a stress-buffering mechanism in a situation where multiple sources of stress can potentially outweigh a person's coping ability [26]. It may either prevent or reduce the stress appraisal response or diminish the potential pathological outcome on the individual. Emotional and informational support, as well as social companionship, can all mitigate the harmful effects of a stressful event [27]. However, research on the Polish sample showed that only the strategy of venting emotions moderates the relationship between perceived stress and quality of life in the group of transgender people, while social support did not turn out to be a significant moderator at all [9]. An increasing amount of data suggest that transition-related surgeries can benefit transgender people's well-being. Studies suggest that mental health, life satisfaction, and quality of life improve after transition-related surgeries [28, 29]. One study suggests that therapy can positively impact body image and meaningfulness, one of the components of a sense of coherence [30]. Hormone treatment help ease social and emotional distress, compared to those who have not undergone it [31], and have an overall positive effect on their mental health, reducing anxiety, depression, other psychological symptoms, and functional impairment [32]; however, transgender women seem to benefit more from the procedure [33]. When started in young adulthood, transition-related surgeries help with gender dysphoria and improve the psychological functioning of the individual as well as their postsurgical subjective well-being [34]. The most significant improvement was revealed to take place after 3–6 months to a year after the initiation of hormone treatment [35].

### The present study

The objective of the presented study was to explore whether hormone treatment and transition-related surgeries moderate the relationship between stress and life satisfaction in transgender people. Three hypotheses were formulated based on the information presented in the introduction: (H1) Stress has a direct negative association with life satisfaction; (H2) Hor-

hormone treatment and transition-related surgeries have a direct positive association with life satisfaction; (H3) Hormone replacement and transition-related surgeries act as a buffer in the relationship between stress and life satisfaction.

## Material and methods

### Participants and procedure

One hundred twenty-four transgender people in the age between 18 and 53 years ( $M = 23.60$ ;  $SD = 6.32$ ) participated in the presented study — 41 transgender women and 83 transgender men. Participants who declared a different gender identity than being transgender women or transgender men (e.g., non-binary, genderfluid, agender, or intersex) were excluded from the analysis due to the low sample size of those groups ( $n < 10$ ). Due to clerical error, other sociodemographic variables (e.g., education, financial status, or relationship status) not were examined.

Recruitment of the respondents took place via the Internet. The administration of the Polish online support groups for transgender people was asked to share an online survey among their participants. It was decided to use this method of data collection due to the greater privacy of study participants. Previous studies have shown that the traditional paper-pencil method did not provide the examined transgender people with a sufficient sense of security and they did not want to answer questions about the transition-related surgeries [8]. The study participants were informed about the anonymity of the study. They could stop filling out the survey at any time and without giving any reason. All respondents gave informed consent to participate in this study. The presented study was carried out in accordance with the guidelines of the Bioethics Committee at the Institute of Medical Sciences of the Opole University in Poland. According to the Committee (application number 2/KB/12/2019), due to the cross-sectional and survey nature of the presented study, it did not raise any ethical concerns.

### Measures

Three measures were used in the presented study. Life satisfaction was measured with the Satisfaction with Life Scale (SWLS). It is a 5 question questionnaire with a seven-point scale (1 — “I strongly disagree”; 4 — “I neither agree nor disagree”; 7 — “I strongly agree”) [36]. In the presented study, the questionnaire showed good psychometric properties (Cronbach’s  $\alpha = 0.88$ ; McDonald’s total  $\omega = 0.88$ ).

The perceived level of stress was measured with the Perceived Stress Scale (PSS-10). PSS-10 consists of 10

**Table 1. Characteristics of the studied sample (N = 124)**

Age	M	SD	Min	Max
	23.60	6.32	18	53
	n		%	
<b>Gender Identity</b>				
Transgender Women	41		33.06%	
Transgender Men	83		66.94%	
<b>Hormone Treatment</b>				
Yes	25		20.16%	
No	99		79.84%	
<b>Chest-related surgery/ /top surgery</b>				
Yes	8		6.45%	
No	116		93.55%	
<b>Transition surgeries related to the genitals</b>				
Yes	4		3.23%	
No	120		96.77%	

questions on a five-point scale (0 — “never”; 4 — “very often”) [37]. In the presented study, the scale presented good reliability (Cronbach’s  $\alpha = 0.89$ ; McDonald’s total  $\omega = 0.89$ ).

In addition, **an original questionnaire developed by the first author of the presented manuscript** [8, 9] was submitted to the study participants. The study participants were asked to declare their gender identity in the empty field. No form of response was suggested. Additionally, respondents were asked to indicate which transition-related surgeries they had in the past. The respondents were offered the following forms of answers: (1) Hormone treatment; (2) Chest-related surgery/Top surgery (e.g., mastectomy, breast enlargement, etc.); (3) Transition-related surgeries related to the genitals (e.g., panhysterectomy, neophalloplasty, metoidioplasty, vaginoplasty). None of the respondents declared any other forms of transition-related surgeries than the suggested ones. The presented author’s survey received positive feedback from the studied community of transgender individuals.

Due to the small number of responses, only hormone treatment was used as a variable in the statistical analysis. For more detailed information, see Table 1.

## Results

### Group differences

First, it was decided to verify if there were significant group differences in the level of perceived stress and life satisfaction. Analysis done with the *t*-test did not show any significant differences between transgender women and transgender men. There were statistically significant differences in the level of stress between

**Table 2.** Results of the t-test analysis (N = 124)

	Gender Identity				t <sub>122</sub>	p	LLCI	ULCI	d <sub>Cohen</sub>	BF <sub>10</sub>
	Trans Women		Trans Men							
	M	SD	M	SD						
<b>Stress</b>	21.44	6.51	22.83	10.07	0.81	0.422	-2.031	4.815	0.15	0.27
<b>Life Satisfaction</b>	15.80	6.25	15.46	7.54	-0.26	0.799	-3.046	2.352	0.05	0.21

  

	Hormone Treatment				t <sub>122</sub>	p	LLCI	ULCI	d <sub>Cohen</sub>	BF <sub>10</sub>
	Yes		No							
	M	SD	M	SD						
<b>Stress</b>	16.88	8.62	23.76	8.65	3.55	< 0.001	-10.709	-3.046	0.79	49.97
<b>Life Satisfaction</b>	17.56	7.73	15.07	6.90	-1.57	0.118	-0.645	5.623	0.35	0.67

Note: d<sub>Cohen</sub> — Cohen’s effect size measure for the t-test; BF<sub>10</sub> — Bayes Factor

**Table 3.** Results of the Pearson’s chi-squared test (N = 124)

		Hormone Treatment		χ <sup>2</sup> (1 ; 124)	p	phi
		Yes (n = 25)	No (n = 99)			
<b>Trans Women</b> (n = 41)	n observed	11	30	1.69	0.193	0.12
	n expected	8.27	32.73			
	% from the column	44.00%	30.30%			
	% from the line	26.83%	71.17%			
<b>Trans Men</b> (n = 83)	n observed	14	69			
	n expected	16.73	66.27			
	% from the column	56.00%	69.70%			
	% from the line	16.87%	83.13%			

Note: phi — Yule’s effect size measure for the Pearson’s chi-squared test

**Table 4.** Results of the Pearson’s r correlation and PROCESS Model 1 moderation analysis (N = 124)

Correlation	M	SD	X	Y	W
X — Dependent Variable — Stress	22.37	9.05	–		
Y — Independent Variable — Life Satisfaction	15.57	7.11	-0.67***	–	
W — Moderator — Hormone Treatment (Dummy Coded)	0.20	0.40	0.14	-0.31***	–

  

Moderation	b	SE	p	LLCI	ULCI
X	-0.54	0.05	< 0.001	-0.645	-0.453
W	-1.25	1.33	0.348	-3.894	1.272
X * W	-0.01	0.13	0.977	-0.292	0.260

Note: \*\*\* p < 0.001

transgender people using hormone treatment and those who did not use it. Participants who used hormone treatment had lower levels of perceived stress than those who did not. For more detailed information, see Table 2.

Then, it was decided to verify if there were statistically significant differences between transgender women and transgender men in the frequency of using hormone treatment. For this purpose, Pearson’s chi-square analysis was used. There were no statistically significant differences between expected and observed frequencies. Based on the presented results, in the further part of the statistical analysis, it was decided to treat the examined participants’ samples as homogeneous. For more detailed information, see Table 3.

**Relationship between stress, hormone treatment, and life satisfaction**

The relationship between tested variables was verified with the Pearson’s r correlation. The analysis showed the significant, negative, and strong relationship between perceived stress and life satisfaction of the studied transgender people. Also, the results of hormone treatment were significantly, negatively, and weakly related to transgender people’s life satisfaction. The relationship between hormone treatment and perceived stress was not significant (see Tab. 4).

To verify the proposed moderated model, an analysis using the PROCESS macro version 3.4 was used [38]. The bootstrapping method was used with

the declared number of 5000 samples [39]. Model 1 analysis showed that hormone treatment did not act as a moderator in the relationship between perceived stress and life satisfaction. For more detailed information, see Table 4.

## Discussion

The study aimed to determine the relationship between perceived stress, life satisfaction, and hormone treatment among Polish transgender people. The analyses point out that perceived stress was negatively related to the life satisfaction of the participants. Also, to our surprise, there was a significant negative relationship between hormone treatment and life satisfaction. Moderation analysis showed that hormone treatment did not act as a buffer in the relationship between perceived stress and life satisfaction.

The sample consisted of more transgender men than transgender women, even though the predominance of sex ratio is different in most countries. Japan, Sweden, and Poland [40], as well as former communist countries, report the presence of more transgender men, as opposed to most Western countries [41]. The number of people who underwent any form of treatment was considerably lower than those who did not. A possible explanation can be found in the cost of medical procedures and pharmaceuticals in Poland. The average cost of hormone therapy is 635 PLN (~170 USD) per month, which goes down to 453 PLN (~120 USD) after the beginning of legal procedures [42]. Transition-related surgeries, both in the country and abroad, require the person to possess a significant amount of financial resources. However, over 33% of transgender individuals in Poland have no source of income and 25.2% earn less than a minimum wage [42]. Those who decided to undergo hormone replacement therapy may be living in financial distress due to the cost of it. The frequency of hormone treatment used in the present sample was the same for both groups of respondents.

The research shows that there is a negative, strong and significant relationship between perceived stress and life satisfaction of transgender individuals, and there was no significant difference between transgender women and transgender men. Numerous stressors can affect a person's well-being and harm it in the long run. Transgender people, who hold a minority status, are prone to additional stressors that pile up on top of their everyday problems [22]. Discrimination in the workplace [4], microaggression [23], and the fear of rejection [43] are just a few of the daily challenges that they may have to face. The experience of stigma may

not only lead to various mental problems, to which the transgender community is prone [13], but can impact their physical health as well. Chronic and persistent stress, especially among groups that experience various disadvantaged statuses at once (such as having low income or being a transgender woman of color) can be associated as one of the factors that have the potential of worsening one's health conditions [44].

The presence of hormone treatment did positively impact levels of perceived stress. However, it turned out to be negatively related to the quality of life in the group of Polish transgender people. Researchers suggest that hormone treatment is accompanied by better mental well-being; however, some meta-analyses argue that the presented data may be of low quality [28, 31, 32, 44, 45]. One Polish study reports that more than half of respondents were very content with the effects of the therapy, and just about 10% were very disappointed with it [11]. The study was focused on how transsexual individuals perceive themselves and how they believe society feels about them. There was a statistically significant difference between people who have just started their treatment and those who have successfully undergone it regarding their stand on the statement "Sometimes I feel like a misfit". At the beginning of the hormone treatment, transgender people experience many changes that happen to their appearance, voice, and body. All of that can make them feel vulnerable to verbal or physical attacks due to their changing appearance [11]. The fear of becoming a victim to hate crimes may be especially strong, considering the rising presence of prejudice against the LGBTQ+ community in Polish conservative media [6, 7]. The stage of hormone treatment was not a controlled variable in the present study. Some respondents may have just begun taking their medication, and thus the first stages of the progression, combined with the current political situation in Poland, could have negatively impacted their well-being.

In the current research, hormone treatment did not act as a buffer in the relationship between perceived stress and life satisfaction. There are most likely other variables that could potentially moderate the relationship in question. Bouman and associates found that low self-esteem and interpersonal problems are the strongest predictors of poor psychological well-being in the group of transgender people who seek to begin treatment, with self-esteem acting as a mediator in the relationship in question [46]. Future research can be carried out to verify if those findings may be applied to the Polish population and be useful in clinical practice.

The presented study provides new data from the sample of Polish transgender people. However, it is

not free from limitations. The first is the lack of control of the covariant variables. This is due to the clerical error during the creation of the online survey. Other not tested sociodemographic and psychological variables might likely differentiate the results of the presented moderated model. What is more, the tested moderated model was conceptualized as causal. To verify such relationships, a longitudinal study should be carried out. The presented results will vary depending on the culture as well as the level of medicine development in a given country.

The presented study was the first to verify the proposed moderation model. Unfortunately, due to the small number of responses, the assumed model could not be fully verified. This manuscript draws attention to the important role of coping strategies in Polish transgender people. This subject is still not fully explored. Psychologists and specialists working with transgender people should try to find significant predictors of transgender people's life satisfaction. This is important because finding significant resources will improve transgender people's quality of life — which, according to the presented literature, might be lower than cisgender people.

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### Conflict of interest

Authors declare that they have no competing interests.

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