

## Research Paper



# Gender Identity Disorder and Improvement of Life Satisfaction and Psychological Well-being Indices After Sex Reassignment Surgery: A Multicenter Prospective Cohort Study

Atefeh Charkhgard<sup>1\*</sup> Alireza Kakavand<sup>2</sup>

1. Department of Personality Psychology, Faculty of Psychology, Karaj Branch, Islamic Azad University, Karaj, Iran.

2. Department of Psychology, Faculty of Social Sciences, Imam Khomeini International University, Qazvin, Iran.

Use your device to scan  
and read the article online



**Citation:** Charkhgard, A., & Kakavand, A. (2024). Gender Identity Disorder and Improvement of Life Satisfaction and Psychological Well-being Indices After Sex Reassignment Surgery: A Multicenter Prospective Cohort Study. *Journal of Practice in Clinical Psychology*, 12(1), 27-32. <https://doi.org/10.32598/jpcp.12.1.760.1>



<https://doi.org/10.32598/jpcp.12.1.760.1>



### Article info:

Received: 26 Feb 2023

Accepted: 19 Sep 2023

Available Online: 01 Jan 2024

## ABSTRACT

**Objective:** Sex reassignment surgery (SRS) is a surgery performed to reassign the physical gender identity of transgender people. Despite the physical consequences of this surgery, research has indicated its significant effects on patients' mental health; however, the findings are contradictory. This study determined the effects of sexual reassignment surgery on life satisfaction and psychological well-being in transgender people.

**Methods:** In a multicenter prospective cohort study, from January to March 2019, a total of 40 patients with sexual dysphoria of both sexes were selected using the purposive sampling method and after meeting the necessary criteria, they were entered into the research process. Patients were placed in one of two groups of gender reassignment surgery and the surgery waiting list. Life satisfaction and psychological well-being indices were evaluated in the surgery group, before and after surgery (one week to one month and more than six months). Data were analyzed using multivariate analysis of variance test in SPSS software, version 21, and the significance criterion was considered as 0.05.

**Results:** Data analysis showed that the life satisfaction index in patients undergoing gender reassignment surgery had a significant difference as compared to the waiting list ( $P<0.001$ ). Also, the six components of psychological well-being, including self-acceptance, positive relationship with others, personal growth, independence, purposeful life, and mastery of the environment in patients undergoing sexual reassignment surgery showed a significant improvement compared to the waiting list ( $P<0.001$ ).

**Conclusion:** Sexual reassignment surgery has significant psychological effects on patients' psychological characteristics. These findings may be associated with clinical applications in designing complementary psychological interventions in transgender individuals.

### Keywords:

Transgender health, Sex reassignment surgery, Gender dysphoria

---

\* Corresponding Author:

Atefeh Charkhgard

Address: Department of Personality Psychology, Faculty of Psychology, Karaj Branch, Islamic Azad University, Karaj, Iran.

Tel: +98 (912) 3628053

E-mail: [A.charkhgard@gmail.com](mailto:A.charkhgard@gmail.com)

## Highlights

- Life satisfaction of patients undergoing sex reassignment surgery is significantly different compared to the surgery waiting list.
- Psychological well-being in patients undergoing sex reassignment surgery showed a significant improvement compared to the surgery waiting list.
- The sex reassignment surgery has significant effects on patients' psychological well-being and life satisfaction.

## Plain Language Summary

Gender is an important identifier in human beings. The gender identity disorders are defined as disorders in which an individual exhibits marked and persistent identification with the opposite sex and persistent discomfort (dysphoria) with his or her own sex or sense of inappropriateness in the gender role of that sex. The sex reassignment surgery (SRS) is performed to reassign the gender identity of transgender people. This surgery can include surgery on the breasts, genitals, thyroid, vocal cords, and facial and body lines. In this study we investigated the effects of SRS on life satisfaction and psychological well-being of transgender people in Iran. The results showed that the life satisfaction and psychological well-being in patients undergoing SRS were significantly different compared to those in the surgery waiting list. The surgery improved life satisfaction and psychological well-being of transgender people. These findings can be used in designing complementary psychological interventions for transgender individuals. However, further studies are needed.

## Introduction

**G**ender is considered the most fundamental identity index in human beings, which gives direction and meaning to a wide range of thoughts, feelings, desires, and behaviors in the breadth of life, and is the most important aspect of quality of life (Ristori et al., 2020; Holmberg et al., 2018; Purnia et al., 2015). Sexual identity is formed and consolidated during the developmental process and increases during puberty (Specht et al., 2019). Sexual identity plays a vital role in sexual expression and body image (Ristori et al., 2020). Going through the growth process without challenge forms a natural and socially compatible sexual identity. However, sometimes we see disorders in the process of cognitive development and evolution in such a way that a person may have the characteristics of a particular sex biologically but does not psychologically belong to the same sex (Purnia and Purnia, 2022). In this case, the person feels and behaves like a member of the opposite sex. A person's gender identity includes behaviors in society, family, or the individual's mental abstraction, which may be masculine or feminine, and a person's sexual expression may be incompatible with the sexual organs at birth. For example, a person may be born with a female sexual organ but have masculine behavior and adopt a male gender identity under the influence of psychological changes

(Cerezo et al., 2019). This dual condition will have dramatic psychological consequences and disrupt individual functioning (Schönauer et al., 2020). Sexual identity disorder is a strong and persistent desire of the patient to be in the role and status of the opposite sex. Insist on belonging to the opposite sex in this disorder is along with severe dissatisfaction with biological sex (Babu and Shah, 2020). Gender affirming is one of the goals of the health care system in any country. The importance of transgender people's health is also advancing rapidly (Krempasky et al., 2020). In this regard, the two common interventions are hormone therapy and reassignment surgery (Ristori et al., 2020). Sex reassignment surgery (SCR) is a surgery performed to reassign the physical sexual identity of transgender people. This surgery can include surgery on the breasts, genitals, thyroid, vocal cords, and facial and body lines (Tolstrup et al., 2020). Transgender women who undergo SRS receive female genitalia such as the vagina (using neovaginoplasty). On the other hand, metoidioplasty is one of the penile surgery methods for transgender men. SRS is technically challenging and is associated with physical consequences, including vascular complications (Russo et al., 2020). However, studies show that surgery can improve the quality of life and reduce sexual dysphoria (Tolstrup et al., 2020). However, the findings in this area are contradictory and some studies indicate a temporary improvement in psychological indicators after SRS, which is associated with a signifi-

cant decline in the future (Ring et al., 2020). The findings of a review study by Tolstrup et al. (2020) show that SRS has favorable effects on indices of life satisfaction, quality of life, and reduction of sexual dysphoria. Also, the results of the study by Heß et al. (2020) show that the development of neoclitoris is associated with increased psychological well-being, quality of life, and sexual satisfaction. In addition, the findings of the study by Sohn et al (2020) showed that the use of phalloplasty in patients is associated with their sexual satisfaction.

Considering what was stated and the necessity of using modern medical interventions to improve the psychological indices of patients with gender identity disorder and the importance of evaluating the psychological dimensions affected by SRS, the present study determined the effects of SRS on life satisfaction and psychological well-being in transgender people.

## Materials and Methods

The present study was a multicenter prospective cohort study. The data of this study were collected from January to March 2019. Among the people diagnosed with sexual dysphoria living in Tehran, 40 patients with sexual dysphoria of both sexes were selected using the purposive sampling method and entered into the research process after fulfilling the necessary criteria.

The inclusion criteria were as follows: An age range of 18-45 years; diagnosis of gender identity disorder based on DSM 5; receiving appointments for SRS; and obtaining informed written consent. The exclusion criteria were a history of any hormone therapy due to possible psychological effects and withdrawal from the assessment process due to possible side effects of surgery. After conducting a structured clinical interview by master's degree and Ph.D. clinicians, the patients were assigned to one of the two groups of SRS and the waiting list for surgery. Life satisfaction and psychological well-being indices were evaluated in the surgery group, before and after surgery (one week to one month and more than six months). Data were analyzed using the parametric multivariate analysis of variance (MANOVA) test in the SPSS software, version 21, and the significance criterion was considered 0.05. All stages of the study were carried out following the Helsinki Declaration.

## Research tools

**Demographic checklist:** A researcher-made checklist was used to collect demographic information (Pirnia et al., 2019).

**Structured Clinical Interview (SCID):** The structural clinical interview is a clinical interview with a kappa coefficient of 0.52 (Pirnia et al., 2020) and a reliability of 0.6 which is widely used in the clinical setting (Pirnia et al., 2019; Pirnia et al., 2020).

**Ryff's Psychological Well-Being Scale:** The psychological well-being scale was designed by Ryff (1995) to assess the psychological well-being index containing 18 items. This scale is scored on a six-point Likert scale and includes six components of psychological well-being: Self-acceptance, positive relationships with others, personal growth, independence, purposeful living, and mastery of the environment. A higher score indicates more desirable psychological well-being.

The structural validity of this tool has been reported favorable. The Cronbach alpha of this scale has been reported as 0.93 for the self-acceptance component, 0.91 for a positive relationship with others, 0.86 for autonomy, 0.9 for mastery of the environment, and 0.87 for personal growth in the Iranian population (Pirnia et al., 2020).

**Life Satisfaction Questionnaire:** The life satisfaction questionnaire was designed by Diener et al. in 1985. This questionnaire consists of 5 items that are scored in the form of a 7-point Likert scale. The range of acquired scores is between 7 and 35. The validity and reliability of this tool have been reported as acceptable for both foreign (Hinz et al., 2018) and Persian (Tagharrobi et al., 2012) versions.

## Results

The parametric MANOVA test and the Post hoc test (Bonferroni) were used to analyze the data. The results of the Kolmogorov-Smirnov test (K-S test) ( $P>0.05$ ) and Leven test ( $P>0.05$ ) confirmed the statistical assumptions of the normality of data distribution.

In terms of demographic distribution, 26 participants (65%) were male. In terms of education level, 22 participants (55%) had diploma and sub-diploma degrees, 15 participants (37%) had bachelor's degrees and 3 (0.8%) had postgraduate degrees. According to the marriage index, 36 people (90%) were single and 4 people (10%) were married. The results of the MANOVA comparing the studied indicators in the two studied groups are presented in Table 1.

According to the results reported in Table 1, it is clear that all the multivariate tests indicate the significance of the variance of the group factor (for example, the Pillai's

**Table 1.** Results of the MANOVA test in comparison of the studied indices in the two studied groups

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	0.990	654.650	7	33	0.001	0.859
	Wilks' Lambda	0.010	654.650	7	33	0.001	0.859
	Hotelling's Trace	96.904	654.650	7	33	0.001	0.859
	Roy's Largest Root	96.904	654.650	7	33	0.001	0.859
group	Pillai's Trace	0.704	27.840	7	33	0.001	0.785
	Wilks' Lambda	0.335	27.840	7	33	0.001	0.785
	Hotelling's Trace	1.989	27.840	7	33	0.001	0.785
	Roy's Largest Root	1.989	27.840	7	33	0.001	0.785

Trace value is equal to 0.704, which is  $F = 27.840 = 0.704$ ;  $P < 0.01$ ). According to the effect size of 0.785, it is clear that there is a difference between at least one of the research variables in the two groups. To compare detailed and partial results in the research variables, a pairwise comparison was used, the results of which are reported in [Table 2](#).

The findings of [Table 2](#) indicate that the life satisfaction index in patients undergoing SRS is significantly different from the waiting list ( $P < 0.001$ ). Also, the six psychological well-being components, including self-acceptance, positive relationship with others, personal growth, independence, purposeful living, and mastery of the environment in patients undergoing SRS showed a significant improvement compared to the waiting list (all  $P < 0.001$ ).

## Discussion

This study determined the effects of SRS on life satisfaction and psychological well-being in transgender people. The results showed that the life satisfaction index in patients undergoing SRS showed a significant difference compared to the waiting list. Also, the six psychological well-being components, including self-acceptance, positive relationship with others, personal growth, independence, purposeful living, and mastery of the environment in patients undergoing SRS showed a significant improvement compared to the waiting list. In line with the results of the present study, the findings of a review study by [Tolstrup et al. \(2020\)](#) showed that SRS has favorable effects on life satisfaction, quality of life, and reduction of sexual dysphoria in Danish patients.

**Table 2.** Pairwise comparison of mean scores of research variables in two care and surgery groups

Dependent Variable	Under Care (M)	Under Surgery (M)	Mean Difference (I-J)	Std. Error	Sig.
Life satisfaction	13.10	26.35	-13.25	4.638	0.001
Self-acceptance	6.70	14.60	-7.90	3.024	0.001
Positive relationship with others	10.60	14.35	-3.75	2.768	0.002
Personal growth	6.70	15.40	-8.70	3.523	0.001
Independence	6.15	14.25	-8.10	4.132	0.001
Purposive living	6.20	15.10	-8.90	3.967	0.001
Mastery of the environment	6.70	14.55	-7.85	4.325	0.001

Murad et al. (2010) have reported improvement in quality of life, life satisfaction, and psychosocial health after SRS.

In this regard, the findings of the study by Heß et al. (2020) showed that the use of the penile inversion technique to create neoclitoris is associated with increased psychological well-being, quality of life, and sexual satisfaction. Hess et al. (2014) also reported high satisfaction after surgery in German subjects. The findings of the study by Specht et al. (2019) indicated a high prevalence of depression and other psychiatric disorders in these patients, which is of clinical interest. The findings of the study by Sohn et al. (2020) showed that the use of phalloplasty in patients is associated with their sexual satisfaction.

Disorder in sexual identity confuses a person's gender roles, and consequently, the personality of these people is also affected, which leads to impaired personal development. Any deviation from the normal path of sexual identity formation establishes a kind of incompatibility. The living conditions of these people in childhood, adolescence, and youth indicate many problems that these patients face to gain their identity. These problems have a great impact on the thoughts, feelings, perceptions, attitudes, expectations, and behaviors that are used in the face of problems and adaptation to the environment in their daily lives and thus affect the mastery of the environment in these people. After surgery, these people go through a kind of identity crisis and pursue their personal growth and make up for their shortcomings. Also, surgery leads to a balance between a person's gender and identity, and this not only improves self-satisfaction and self-confidence but also increases a person's independence.

Also, the results showed that the appearance characteristics of these people are effective in their communication after surgery.

## Conclusion

This study determined the effects of SRS in transgender people. The results showed that this surgery was associated with favorable psychological effects in improving life satisfaction and psychological well-being. These findings can be associated with clinical applications. However, this area needs further study.

The most important limitation of this study was the lack of follow-up on treatment changes. It is suggested that, in addition to paper and pen tools, biological evaluations such as plasma cortisol evaluation (Pirnia et al.,

2015) and salivary cortisol (Pirnia et al., 2022) be used to evaluate the effects of SRS.

## Ethical Considerations

### Compliance with ethical guidelines

All ethical principles are considered in this article. The participants were informed of the purpose of the research and its implementation stages. They were also assured about the confidentiality of their information and were free to leave the study whenever they wished, and if desired, the research results would be available to them. A written consent has been obtained from the subjects. All stages of the study were carried out after obtaining written consent and in accordance with the latest version of the Helsinki Declaration.

### Funding

This research did not receive any grant from funding agencies in the public, commercial, or non-profit sectors.

### Authors' contributions

Conceptualization, formal analysis, methodology, writing—original draft, data curation, validation, visualization, investigation, project administration, resources, supervision, writing—review & editing: Atefeh Charkhgard; Conceptualization, formal analysis, methodology, writing—original draft, data curation, validation, visualization: Alireza Kakavand.

### Conflict of interest

The authors declare no conflict of interest.

## References

- Babu, R., & Shah, U. (2021). Gender identity disorder (GID) in adolescents and adults with differences of sex development (DSD): A systematic review and meta-analysis. *Journal of Pediatric Urology*, 17(1), 39–47. [PMID]
- Cerezo, A., Cummings, M., Holmes, M., & Williams, C. (2020). Identity as resistance: Identity formation at the intersection of race, gender identity, and sexual orientation. *Psychology of Women Quarterly*, 44(1), 67–83. [DOI:10.1177/0361684319875977] [PMID]
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment*, 49(1), 71–75. [DOI:10.1207/s15327752jpa4901\_13] [PMID]

- Hess, J., Rossi Neto, R., Panic, L., Rübben, H., & Senf, W. (2014). Satisfaction with male-to-female gender reassignment surgery. *Deutsches Arzteblatt International*, 111(47), 795–801. [DOI:10.3238/arztebl.2014.0795] [PMID]
- Heß, J., Sohn, M., Küntscher, M., & Bohr, J. (2020). [Gender reassignment surgery from male to female (German)]. *Der Urologe. Ausg. A*, 59(11), 1348–1355. [DOI:10.1007/s00120-020-01337-z] [PMID]
- Hinz, A., Conrad, I., Schroeter, M. L., Glaesmer, H., Brähler, E., & Zenger, M., et al. (2018). Psychometric properties of the satisfaction with life scale (SWLS), derived from a large German community sample. *Quality of Life Research*, 27(6), 1661–1670. [DOI:10.1007/s11136-018-1844-1] [PMID]
- Holmberg, M., Arver, S., & Dhejne, C. (2019). Supporting sexuality and improving sexual function in transgender persons. *Nature reviews. Urology*, 16(2), 121–139. [DOI:10.1038/s41585-018-0108-8] [PMID]
- Krempasky, C., Harris, M., Abern, L., & Grimstad, F. (2020). Contraception across the transmasculine spectrum. *American Journal of Obstetrics and Gynecology*, 222(2), 134–143. [DOI:10.1016/j.ajog.2019.07.043] [PMID]
- Murad, M. H., Elamin, M. B., Garcia, M. Z., Mullan, R. J., Murad, A., & Erwin, P. J., et al. (2010). Hormonal therapy and sex reassignment: A systematic review and meta-analysis of quality of life and psychosocial outcomes. *Clinical Endocrinology*, 72(2), 214–231. [DOI:10.1111/j.1365-2265.2009.03625.x] [PMID]
- Pirnia, B., Mansour, S., Rahmani, S., & Soleimani, A. A. (2015). Sexual behavior and age differences in methamphetamine dependent and non-dependent men who have sex with men (MSM). *Practice in Clinical Psychology*, 3(4), 273–282. [Link]
- Pirnia, B., & Pirnia, K. (2022). Sex reassignment surgery in Iran, re-birth or human rights violations against transgender people?. *Iranian Journal of Public Health*, 51(11), 2632–2633. [DOI:10.18502/ijph.v51i11.11183] [PMID] [PMCID]
- Pirnia, B., Givi, F., Roshan, R., Pirnia, K., & Soleimani, A. A. (2015). The cortisol level and its relationship with depression, stress and anxiety indices in chronic methamphetamine-dependent patients and normal individuals undergoing inguinal hernia surgery. *Medical Journal of the Islamic Republic of Iran*, 30, 395. [PMID] [PMCID]
- Pirnia, B., Khosravani, V., Maleki, F., Kalbasi, R., Pirnia, K., & Malekanmehr, P., et al. (2020). The role of childhood maltreatment in cortisol in the hypothalamic-pituitary-adrenal (HPA) axis in methamphetamine-dependent individuals with and without depression comorbidity and suicide attempts. *Journal of Affective Disorders*, 263, 274–281. [DOI:10.1016/j.jad.2019.11.168] [PMID]
- Pirnia, B., Maleki, F., Kazemi, M., & Malekanmehr, P. (2020). [Effectiveness of well-being therapy on psychological well-being index, optimist and life expectancy in Iranian methamphetamine-dependent men in abstinence phase, a randomized clinical trial (Persian)]. *Razi Journal of Medical Sciences*, 27(5), 131–140. [Link]
- Pirnia, B., Pirnia, K., Bazayari, K., Aslani, F., & Malekanmehr, P. (2019). Physical or psychological therapy? Cognitive behavioral therapy or acupuncture for subsyndromal depression among methamphetamine users. *Iranian Journal of Public Health*, 48(3), 561–563. [DOI:10.18502/ijph.v48i3.905] [PMID]
- Pirnia, B., Pirnia, K., Haghigat, S., Malekanmehr, P., & Zahiroddin, A. (2020). The effectiveness of acupuncture on cortisol levels in a prostate-carcinoma patient under androgen deprivation therapy with dysthymic syndrome: A single-case experimental design. *Middle East Journal of Cancer*, 11(2), 237–242. [DOI:10.30476/mejc.2019.81258.0]
- Pirnia, B., Pirnia, K., Sarabi, R. E., Malekanmehr, P., Soltani, L., Zahiroddin, A., & Sadeghi, P. (2019). A double-blind randomized controlled trial in effectiveness of parent-child interaction therapy on psychological Indicator and cortisol level in children of caregivers with Cancer. *International Journal of Cancer Management*, 12(7), e85572. [DOI:10.5812/ijcm.85572]
- Pirnia, B., Soleimani, A., Farhoudian, A., Zahiroddin, A., Majidi, K., & Pirnia, F. (2022). Research considerations: Cannabis consumption and the role of quantification of its secondary metabolite in the study of biopsychosocial effects. *Asian Journal of Psychiatry*, 74, 103195. [DOI:10.1016/j.ajp.2022.103195] [PMID]
- Ring, A., & Malone, W. J. (2020). Confounding effects on mental health observations after sex reassignment surgery. *The American Journal of Psychiatry*, 177(8), 768–769. [DOI:10.1176/appi.ajp.2020.19111169] [PMID]
- Ristori, J., Cocchetti, C., Castellini, G., Pierdominici, M., Cipriani, A., & Testi, D., et al. (2020). Hormonal treatment effect on sexual distress in transgender persons: 2-Year follow-up data. *The Journal of Sexual Medicine*, 17(1), 142–151. [DOI:10.1016/j.jsxm.2019.10.008] [PMID]
- Russo, N., Deitch, J., Schor, J., Saha, S., Lachhar, G., & Singh, K. (2020). Peripheral vascular complication of transgender reassignment surgery. *Annals of Vascular Surgery*, 69, 448.e15–448.e18. [DOI:10.1016/j.avsg.2020.05.015] [PMID]
- Ryff, C. D., & Keyes, C. L. (1995). The structure of psychological well-being revisited. *Journal of Personality and Social Psychology*, 69(4), 719–727. [DOI:10.1037/0022-3514.69.4.719] [PMID]
- Schönauer, L. M., Dellino, M., Loverro, M., Carriero, C., Capursi, T., & Leoni, C., et al. (2021). Hormone therapy in female-to-male transgender patients: Searching for a lifelong balance. *Hormones*, 20(1), 151–159. [DOI:10.1007/s42000-020-00238-2] [PMID]
- Shabani, A., Masoumian, S., Zamirinejad, S., Hejri, M., Pirmorad, T., & Yaghmaeezadeh, H. (2021). Psychometric properties of structured clinical interview for DSM-5 disorders-clinician version (SCID-5-CV). *Brain and Behavior*, 11(5), e01894. [DOI:10.1002/brb3.1894] [PMID] [PMCID]
- Sohn, M., Rieger, U., & Morgenstern, S. (2020). [Gender reassignment from female to male : Phalloplasty (German)]. *Der Urologe. Ausg. A*, 59(11), 1340–1347. [DOI:10.1007/s00120-020-01328-0] [PMID]
- Specht, A. A., Gesing, J., Pfäffle, R., Koerner, A., & Kiess, W. (2020). [Symptoms, comorbidities and therapy of children and adolescents with gender dysphoria (German)]. *Klinische Pädiatrie*, 232(1), 5–12. [DOI:10.1055/a-1066-4625] [PMID]
- Tagharrobi, Z., Sharifi, K., Sooki, Z., & Tagharrobi, L. (2012). [Psychometric evaluation of the Iranian version of quality of life enjoyment and satisfaction questionnaire short form (Q-LES-QSF) (Persian)]. *Payesh*, 11(2), 235–244. [Link]
- Tolstrup, A., Holmgård, R., Thomsen, M. V., Hilden, M., Zetter, D., & Rosenberg, J. (2020). [Sex reassignment surgery in Denmark (Danish)]. *Ugeskrift for Læger*, 182(6), V05190270. [PMID]