

TRANSGENDER HEALTH

Quality of Life, Self-Esteem, and Depression Among Thai Transgender Women Before and After Male-to-Female Gender Confirmation Surgery: A Prospective Cohort Observational Study



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ABSTRACT

Introduction: Previous studies have reported low quality of life scores and a high prevalence of depression among transgender women in Thailand; however, there is still little research on the effects of gender confirmation surgery among this population.

Aim: This study aims to prospectively evaluate the overall quality of life, self-esteem, and depression status among male-to-female transgender individuals in Thailand.

Methods: This prospective observational cohort study was conducted between January 2018 and December 2020 and included 41 participants who underwent gender confirmation surgery. All participants underwent a psychiatric evaluation and received 3 sets of questionnaires preoperatively and 6 months postoperatively to evaluate quality of life, self-esteem, and depression: the Thai abbreviated version of the World Health Organization quality of life questionnaire, the Rosenberg Self-Esteem Scale, and the Patient Health Questionnaire-9, respectively. We examined scores from each questionnaire and depression status before and after gender confirmation surgery, with $P < .05$ considered significant.

Main Outcome Measure: This study's primary outcomes measured quality of life, depression, and self-esteem before and after gender confirmation surgery.

Results: Thirty-seven participants completed all sets of questionnaires (response rate 90.2%). The mean age of the participants was 26.2 ± 4.7 years at the time of surgery. Five (13.5%) participants met the criteria for mild depression preoperatively, but none did postoperatively. There were no signs of major depressive disorder, suicidal ideation, or suicidal attempts in any of the participants. There was a significant improvement in quality of life ($P < .001$) and self-esteem ($P < .001$), as well as lower depression ($P < .001$) after gender confirmation surgery. The greatest quality of life improvement was related to participants' sexual relationships.

Conclusion: Male-to-female gender confirmation surgery significantly contributes to improving quality of life, self-esteem, and depression in Thai transgender women. Persons diagnosed with gender dysphoria who intend to undergo gender confirmation surgery should be supported by healthcare providers in accessing the medical facilities and treatment needed to improve their quality of life. **Chaovanalikit T, Wirairat K, Sriswadpong P. Quality of Life, Self-Esteem, and Depression Among Thai Transgender Women Before and After Male-to-Female Gender Confirmation Surgery: A Prospective Cohort Observational Study. Sex Med 2022;10:100533.**

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Key Words: Intersex Persons; Self-Concept; Depressive Disorder; Gender Confirmation Procedures; Gender Dysphoria

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INTRODUCTION

There has been an increase in the prevalence of transgender individuals, healthcare clinics, and hospitals both worldwide and within different communities. According to the World Health Organization (WHO) International Statistical Classification of Diseases and Related Health Problems 11th revision (ICD-11), transgender identity is classified as gender incongruence, defined as “a marked and persistent incongruence between an individual’s experienced gender and the assigned sex, which often leads to a desire to ‘transition’, in order to live and be accepted as a person of the experienced gender.”¹ Some transgender individuals experience gender dysphoria, which refers to the psychological distress arising from this incongruence.² They are also vulnerable in their physical, mental, and social health, all of which have an impact on their quality of life.

The WHO defines quality of life as an individual’s view of their position in life, pertaining to their goals, expectations, standards, and concerns in the context of the culture and value systems by which they abide.³ Several studies have been published about the quality of life and health burden experienced by transgender women, revealing widespread disparities in quality of life, health outcomes, and mental health status.^{4–8} Transgender people also suffer from depression, anxiety, and low self-esteem for a number of reasons.^{5,8,9} In comparison with the overall population, transgender individuals appear to have a lower quality of life.^{8,10,11}

Transgenderism is frequently accompanied by a feeling of dissatisfaction or inappropriateness of one’s birth-assigned sex and a desire to undergo hormonal treatment or surgery to make one’s body congruent with one’s gender identity.¹ The World Professional Association for Transgender Health (WPATH) has promoted the standard of care for these individuals, offering clinical guidance to improve their overall health, psychological well-being, and self-fulfillment. Primary care, gynecologic and urologic care, reproductive options, voice and communication therapy, mental health services, and hormonal and surgical treatments are some of the services available.¹²

Many studies have shown that using cross-sex hormonal medication, undergoing gender confirmation surgery, or attending a gender unit with multidisciplinary health professionals not only improves emotional and mental health, and overall quality of life, but also reduces the depression and social distress experienced by transgender individuals.^{13–23} Although many people are openly transgender in Thailand, national laws and policies, along with societal and cultural attitudes, still promote systemic discrimination and marginalization.²⁴ Research on transgender quality of life is still lacking. This gap in knowledge seems inconsistent with the increasing number of gender confirmation procedures performed and the continuous development of relevant surgical techniques. This is the first study in Thailand to assess the impact of gender confirmation surgery on the quality of life of male-to-female transgender individuals.

Our hypothesis is “Does male-to-female gender confirmation surgery improve the quality of life, self-esteem, and depression in Thai transgender women?” Therefore, this study aimed to prospectively evaluate the general quality of life, self-esteem, and depression status in male-to-female transgender individuals using validated standardized questionnaires before and after gender confirmation surgery.

MATERIALS AND METHODS

This prospective observational cohort study was conducted at the Reconstructive and Plastic Surgery Unit of our hospital. All male-to-female transgender individuals who planned to undergo gender confirmation surgery between January 2018 and December 2020 were contacted to participate in this study. We defined gender confirmation surgery as surgery that reassigns the external genitalia from male to female, including vaginoplasty.

Surgery was performed by a plastic surgeon who specializes in male-to-female gender confirmation surgery. During the study period, 41 patients met the inclusion criteria of being diagnosed with gender dysphoria and planning to undergo male-to-female gender confirmation surgery. All participants provided written informed consent for their participation in this study. The study protocol was approved by our hospital’s institutional ethics committee. The exclusion criteria were as follows: being less than 18 years old; not meeting the criteria for gender identity disorder, per the Diagnostic and Statistical Manual of Mental Disorders (DSM-5); or having a history of genital surgery.

PARTICIPANTS

Preoperatively, all participants were diagnosed with gender dysphoria by 2 expert consultant psychiatrists according to the most recent criteria of DSM-5 and ICD-11.^{1,2} The presence of depression, suicidal ideation, and suicidal attempts was clinically evaluated using the Hamilton Depression Rating Scale (HAM-D), the most widely used clinician-administered depression assessment scale worldwide. The Thai abbreviated version of the World Health Organization quality of life (WHOQOL-BREF-THAI) questionnaire, Rosenberg Self-Esteem Scale (RSES), and Patient Health Questionnaire-9 (PHQ-9) were administered to all participants. Six months after surgery, participants completed the same questionnaires. There were 37 participants (90.2% response rate) who completed the pre- and postoperative questionnaires. We lost 4 participants who did not complete the postoperative questionnaires to follow-up at 6 months.

As this is the first study of its kind in Thailand, the sample size was calculated by using an equation of 2 dependent samples (matched pairs), with standard deviation (SD) referenced from a previous study.¹⁷ The sample size was calculated at 25 participants; hence, 37 participants were considered to sufficiently reflect the general population.

QUESTIONNAIRES

WHO Quality of Life Brief Questionnaire in Thai

The WHOQOL-BREF-THAI questionnaire is a brief version of the WHO quality of life assessment instrument (WHOQOL-100) translated into Thai. It has been validated by an expert panel that reviewed its content and suitability of language. The final version was tested against the WHOQOL-100, yielding a Cronbach's alpha coefficient of 0.8406 and a correlation of 0.6515 ($P < .01$).²⁵ The questionnaire included 1 item from each of the WHOQOL-100's 24 facets, resulting in a broad and complete assessment, and it contained 26 questions that were separated into 4 domains (physical, psychological, social relationships, and environmental) and 2 items (overall quality of life and general health). The domain score was calculated using the mean score of items within each domain. Raw values were converted to transformed scores (on a 0–100 scale) to enable comparison between domains. Higher domain scores indicate a higher level of life satisfaction.

Rosenberg Self-Esteem Scale

The RSES is an international standardized questionnaire widely used as a self-report instrument for assessing an individual's self-esteem. It was previously validated and translated into Thai; it had a Cronbach's alpha coefficient of 0.86, indicating acceptable internal consistency.^{26,27} The questionnaire has 10 items that measure both positive and negative feelings to determine overall self-worth. All items were graded on a four-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree), with a total score ranging from 10 to 40. High self-esteem was indicated by a score higher than 30.

Patient Health Questionnaire-9

PHQ-9 is a nine-item self-report questionnaire for diagnosing depressive and other mental disorders, as derived from the DSM-5 criteria for major depressive disorder. It is based on the frequency of the symptoms encountered by the participant over the preceding 2 weeks. The scale is from 0 to 3 ("not at all" to "nearly every day"). Minimal, mild, moderate, moderately severe, and severe depression are indicated by total scores of 0–4, 5–9, 10–14, 15–19, and 20 or more, respectively.²⁸ The Thai version of the PHQ-9 was previously validated and translated, with satisfactory internal consistency (Cronbach's alpha coefficient of 0.79) and moderate convergent validity with the HAM-D ($r = .56$; $P < .001$).²⁹

STATISTICAL ANALYSIS

Version 21 of IBM SPSS (IBM Corp., Armonk, NY, USA) was used to conduct the statistical analysis. The demographic data were reported as mean \pm SD and percentages. The paired t -test was used to compare continuous variables (e.g., quality of life and self-esteem scores). The degree of depression per the PHQ-9 was compared using the Chi-square test. For all tests, the significance level was set at $P < .05$.

RESULTS

Demographic Data

Participants' demographic data are shown in Table 1. The majority of the participants were in their early third decade of life at the time of gender confirmation surgery (mean age: 26.2 ± 4.7 years). Most participants were unmarried and held a university degree (97.6% and 73.2%, respectively). The most common surgical reassignment procedures previously undertaken by participants were breast augmentation and rhinoplasty, and these procedures were not performed at our institution. Before surgery, the average time spent not only identifying as a transgender woman but also using hormonal medication was approximately 9 years. It took an average of 5 years for participants to make a decision about undergoing gender confirmation surgery.

WHO Quality of Life Brief Questionnaire in Thai

Tables 2 presents each domain data from the WHOQOL-BREF-THAI questionnaire. In the physical domain, the results showed a significant improvement from moderate to good quality of life ($P = .001$), with 3 out of the 7 items demonstrating statistical significance (pain [$P = .011$], activities [$P = .005$], and work [$P = .014$]). Significant improvement in the psychological quality of life was reported postoperatively. This included improvement in positive feelings ($P < .001$), thinking ($P = .005$), body image ($P = .001$), self-esteem ($P < .001$), and negative feelings ($P = .012$). Furthermore, a substantial improvement in social relationships from moderate to good quality of life ($P < .001$) for all variables was noted, including relationships ($P = .013$), sex ($P < .001$), and support ($P = .035$). The postoperative score of the environmental category revealed a considerable improvement but did not affect quality of life. Leisure, information, and services were statistically significant among the items.

Rosenberg Self-Esteem Scale

Although participants' preoperative score showed a high level of self-esteem (based on a cut-off score of 30 points), the postoperative score revealed improvement in self-esteem ($P < .001$). Self-respect and self-satisfaction showed the greatest improvement (Table 3).

Patient Health Questionnaire-9

The results from the PHQ-9 questionnaire are shown in Table 3. The specific problems noted in the preoperative stage were the following: difficulty falling or staying asleep, sleeping too much, and difficulty concentrating. Compared with the preoperative period, there was substantial reduction in the PHQ-9 score in the postoperative period. Specifically, no participants experienced the following after surgery: poor appetite, bad feelings about themselves, thoughts of death, and self-harm. There were no differences between pre- and postoperative depression scores (Table 4) after categorization into no depression, mild

Table 1. Demographic data

	Number	Percentage	Mean \pm standard deviation
Age (y)			26.2 \pm 4.7
18–20	3	7.3	
21–25	21	51.2	
26–30	8	19.5	
31–35	9	22.0	
Status			
Single	40	97.6	
In relationship	1	2.4	
Education			
High school	11	26.8	
Bachelor's degree	28	68.3	
Master's degree	2	4.9	
Previous reassignment surgery			
Breast augmentation	40	97.6	
Rhinoplasty	29	70.7	
Blepharoplasty	11	26.8	
Chin augmentation	9	22.0	
Forehead contouring	3	7.3	
Lip surgery	2	4.9	
Body mass index			20.8 \pm 4.3
<18.5	7	17.1	
18.5–22.9	27	65.9	
23.0–24.9	5	12.2	
25.0–29.9	2	4.9	
Occupation			
Office employee	17	41.5	
College student	8	19.5	
Actor	1	2.4	
Freelancer	15	36.6	
Income (Baht)			
<10,000	1	2.4	
10,000–20,000	11	26.8	
20,001–30,000	16	39	
30,001–50,000	11	26.8	
>50,000	2	4.9	
Cross-sex hormonal replacement therapy (y)			9.0 \pm 3.4
Duration of gender expression as a woman (y)			9.1 \pm 4.5
Duration of desire to undergo male-to-female gender confirmation surgery (y)			5.1 \pm 2.3

depression, or moderate depression. Five participants met the criteria for mild depression (score of 5–9) in the preoperative stage, but their scores improved after surgery to less than 5, indicating that they were no longer depressed.

Psychiatric Evaluation

According to HAM-D, no participants met the diagnostic criteria for major depressive disorder, suicidal ideation, or suicidal attempts either before or after gender confirmation surgery.

DISCUSSION

To the best of our knowledge, this is the first prospective study in Thailand to investigate the quality of life of transgender women before and after gender confirmation surgery. Our study found that participants' mean quality of life, self-esteem, and depression scores were significantly improved after gender confirmation surgery based on the WHOQOL-BREF-THAI questionnaire, RSES, and PHQ-9. The WHOQOL-BREF-THAI questionnaire

Table 2. WHOQOL-BREF-THAI questionnaire scores categorized by domain

Items	Preoperative		Postoperative 6 months		P (t-test)
	Mean	SD	Mean	SD	
Physical domain	26.9	4.5	28.0	4.5	.001*
Psychological domain	23.1	4.1	24.8	3.8	<.001*
Social relationships	10.5	2.1	12.7	1.8	<.001*
Environmental domain	28.1	5.3	29.4	4.9	.001*
Overall quality of life and general health					
Quality of life rating	3.6	0.7	3.7	0.6	.157
Health satisfaction	3.8	0.6	3.9	0.6	.257
Transformed score	74	7.6	78.9	7.1	<0.001*

*P < .05 (paired t-test).

WHOQOL-BREF-THAI = World Health Organization quality of life brief questionnaire in Thai; SD = standard deviation.

Table 3. WHOQOL-BREF-THAI questionnaire scores, Rosenberg Self-Esteem Scale scores and Patient Health Questionnaire-9 scores

Items	Preoperative		Postoperative 6 months		P (t-test)
	Mean	SD	Mean	SD	
WHOQOL-BREF-THAI questionnaire	74	7.6	78.9	7.1	<.001*
Rosenberg Self-Esteem Scale	33.1	3.3	35.2	3.1	<.001*
Patient Health Questionnaire-9	3.3	2.3	1.8	1.5	<.001*

*P < .05 (paired t-test).

WHOQOL-BREF-THAI = World Health Organization quality of life brief questionnaire in Thai; SD = standard deviation.

yielded good quality of life ratings across all domains except for the environmental domain. The psychological domain and social relationships showed the highest improvement, with significant changes noted in all domains. Participants' quality of sex life had the lowest score before gender confirmation surgery; this domain showed the greatest improvement after surgery. No item was found to have a lower score postoperatively.

In the Asia-Pacific region, there are an estimated 9–9.5 million transgender people.³⁰ There are currently no studies on the prevalence of transgender persons in Thailand, although some studies have suggested a prevalence of 0.3–0.6%—roughly 10,000–660,000 people—of male-to-female transgender individuals in this country, but these figures may be significantly underestimated.^{31–33} Transgender persons are becoming more visible in Thailand, with several

healthcare facilities catering to their specific needs. Previous data from Thailand on increased gender dysphoria symptoms and poor quality of life are consistent with those from other studies and patients' self-reports in other countries, although the Thai studies have not focused on gender confirmation surgery.^{4–11}

Although the participants in this study reported a high average quality of life and high levels of self-esteem before surgery, the results of the statistical analysis showed a considerable improvement in both their quality of life and self-esteem postsurgery. According to PHQ-9, 13.5% of the participants reported mild depression before surgery, while no participants reported symptoms of depression after surgery. Psychiatric evaluation determined that no participants had major depressive disorder or had suicidal tendencies before or after surgery.

Table 4. Degree of depression

Degree of depression	Preoperative		Postoperative (6 months)		P Chi-square test
	n	%	n	%	
No depression	32	86.5	37	100	.056
Mild depression	5	13.5	0	0	
Moderate–severe depression	0	0	0	0	
Total	37	100	37	100	

*P < .05 (Chi-square test).

n = number.

Academic interest is focused on quality of life in various fields of healthcare and among diverse groups of people, particularly transgender individuals.^{5,11,15,34} These individuals have physical, mental, and social health vulnerabilities that may impair their quality of life in a variety of ways.⁷ Several recent studies have revealed the significant burden and high prevalence of negative health outcomes associated with transgender status, both with and without gender dysphoria, including poor quality of life, high prevalence of depression and anxiety, mental health distress, low self-esteem, sexually transmitted disease, and substance abuse.^{5,7,8} In comparison with the general population, transgender people reported a lower quality of life, with more than half of them reporting that their sex life was poor and unsatisfactory.^{6,10,11,29,35–37} In Hong Kong's first transgender mental health study in 2018, 66% of transgender people stated that they had a poor to fair quality of life, 67% of them reported suicidal ideation, while 20.8% reported attempted suicide. Among those who experienced suicidal ideation or attempted suicide, the majority were young adults aged 15–24 years.⁹ Furthermore, a history of negative healthcare experience, lack of legal gender recognition, refusal of employment and social support, discrimination, and family and community rejection have contributed to a poor emotional response among transgender people, which has been linked to a lower quality of life.^{29,34,38}

Most of the participants in this study had undergone previous gender-related surgery, were self-medicating with hormones, and had lived as transgender women since their early 20s. It is possible that the participants' relatively high socioeconomic status and education level likely permitted them a higher degree of comfort and safety, and also the accessibility to any form of gender confirmation surgery and treatment, including breast augmentation, rhinoplasty, and hormonal treatment, than the general Thai population. This would explain why our study population reported better quality of life, higher self-esteem, and less severe depression than other study populations in the preoperative period.

Many studies have revealed that the quality of life of transgender patients improved after surgery in many different aspects, including greater emotional stability, higher self-esteem, greater sexual well-being, improved body image, and substantially milder depression and anxiety after genital reassignment surgery.^{16–20,28,39,40} Moreover, the symptoms of gender dysphoria were significantly minimized.⁴¹ A study involving Brazilian male-to-female transgender individuals found improvements in the psychological domain and social relationships using the WHOQOL-BREF questionnaire.¹⁶ Similarly, our study showed improvements across all domains, particularly in sexual relationships. Specifically, participants' sex life had both the lowest preoperative scores and the highest postoperative scores. Furthermore, when compared with a previous study conducted in Thailand, our study also showed higher mean quality of life scores following surgery according to the WHOQOL-BREF-THAI questionnaire.⁵

Improvement across multiple dimensions has been found to stabilize or fall within 15 years of surgery, even if early postoperative improvements in physical and mental health were noted and psychological and social support was provided.^{10,25,34} The average quality of life among transgender people deteriorated as they became older, owing to increased physical issues and the associated impact on their quality of life.^{42,43} Apart from surgical treatment, cross-sex hormonal treatment has been found to be an effective modality for enhancing the self-reported quality of life, resulting in less social distress, anxiety, and depression, as well as reducing the symptoms of gender dysphoria.^{13,21,23,44} This may explain why our study participants lived for a longer duration (5.1 ± 2.3 years) as openly transgender women before gender confirmation surgery, with or without professional help.

Although the Thailand Medical Council has established a policy titled “Criteria for the Treatment of Sex Change, Census 2009,” the Thai government still does not offer free medical interventions like hormonal treatment, gender confirmation surgery, and psychological counselling according to the WPATH's standard of care.⁴⁵ It is still illegal to have same-sex marriage and to change one's sexual identity in Thailand.⁴⁶ At present, gender confirmation surgery is considered a cosmetic procedure, negatively affecting transgender individuals' ability to access gender confirmation surgery and associated treatment from Thailand's government hospitals.⁴⁷ Health insurance covers the cost of the treatment in other countries, as many studies have found that gender confirmation surgery improves the overall quality of life in several areas, including self-esteem, anxiety, depression, and socialization.^{16–20} Through public health insurance, some Western countries have established gender identity units, providing support for physical and mental health care, hormonal treatment, work, and study support; these units help individuals live a better quality of life.²² Gender confirmation surgery of any form should be considered as a reconstructive procedure and be covered by public health insurance, as surgery would help reduce the intensity and symptoms of gender dysphoria. Moreover, other treatment modalities such as hormonal treatment and psychological therapy should also be free of charge.⁴⁸

Some limitations to this study should be noted. First, the presented results may not accurately reflect the broader transgender population due to the small sample size. Furthermore, because the participants were only followed up for 6 months following surgery, we were unable to predict long-term changes in quality of life. Gender confirmation surgery is a major genital procedure that may have postoperative complications. This study could not determine the effect of surgical complications on quality of life because none of the participants in our study experienced complications during the study period. Subgroup analysis was not performed, and it may be useful in future studies to identify factors that influence quality of life. Finally, the outcomes of this study were not compared with those of the Thai general population; this is critical in demonstrating how treatment modalities can assist transgender people to improve their quality of life.

Conversely, investigating the impact of female-to-male gender confirmation surgery among transgender men would also be interesting and could provide further insights on postsurgical changes in the quality of life among transgender persons. These limitations can be overcome with future studies. The evaluation of the effect of other modalities aside from gender confirmation surgery may reveal the importance of the WPATH's standard of care for Thai transgender persons.

CONCLUSIONS

Male-to-female gender confirmation surgery contributes significantly to improve the quality of life, self-esteem, and depression among Thai transgender women, particularly in their sexual relationships. Individuals diagnosed with gender dysphoria who intend to undergo gender confirmation surgery should be supported by healthcare providers in accessing the medical facilities and treatments needed to improve their quality of life.

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STATEMENT OF AUTHORSHIP

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REFERENCES

1. World Health Organization. International statistical classification of diseases and related health problems. Eleventh edition. <https://icd.who.int/>. Accessed October 28, 2021.
2. American Psychiatric Association. *Diagnostic and statistical manual of mental disorders*. fifth edition Washington, DC: American Psychiatric Association Publishing; 2018.
3. Skevington SM, Lotfy M, O'Connell KA, et al. The World Health Organization's WHOQOL-BREF quality of life assessment: Psychometric properties and results of the international field trial. A report from the WHOQOL group. *Qual Life Res* 2004;13:299–310. doi: [10.1023/b:qure.0000018486.91360.00](https://doi.org/10.1023/b:qure.0000018486.91360.00).
4. Budge SL, Adelson JL, Howard KA. Anxiety and depression in transgender individuals: The roles of transition status, loss, social support, and coping. *J Consult Clin Psychol* 2013;81:545–557. doi: [10.1037/a0031774](https://doi.org/10.1037/a0031774).
5. Kongprapun N, Suthitapit S, Haenjohn J. A study on quality of life in male to female transgender. ISSN: 2187-4743. The Asian Conference on Psychology and the Behavioral Science 2014: Official Conference Proceedings 2014. doi: [10.22492/2187-4743.20140246](https://doi.org/10.22492/2187-4743.20140246).
6. Bartolucci C, Gómez-Gil E, Salamero M, et al. Sexual quality of life in gender-dysphoric adults before genital sex reassignment surgery. *J Sex Med* 2015;12:180–188. doi: [10.1111/jsm.12758](https://doi.org/10.1111/jsm.12758).
7. Reisner SL, Poteat T, Keatley J, et al. Global health burden and needs of transgender populations: A review. *Lancet* 2016;388:412–436. doi: [10.1016/s0140-6736\(16\)00684-x](https://doi.org/10.1016/s0140-6736(16)00684-x).
8. Tantirattanukulchai P, Hounnaklang N, Kanchanakhon N. A cross-sectional research on factors associated with depression among transgender women in Bangkok, Thailand. *IJITEE* 2019;8:851–856. doi: [10.35940/ijitee.i1175.0789s219](https://doi.org/10.35940/ijitee.i1175.0789s219).
9. Suen YT, Chan RCH, Wong EMY. Mental health of transgender people in Hong Kong: A community-driven, large-scale quantitative study documenting demographics and correlates of quality of life and suicidality. *J Homosex* 2018;65:1093–10113. doi: [10.1080/00918369.2017.1368772](https://doi.org/10.1080/00918369.2017.1368772).
10. Bergner M, Bobbitt RA, Carter WB, et al. The sickness impact profile: Development and final revision of a health status measure. *Med Care* 1981;19:787–805. doi: [10.1097/00005650-198108000-00001](https://doi.org/10.1097/00005650-198108000-00001).
11. Newfield E, Hart S, Dibble S, et al. Female-to-male transgender quality of life. *Qual Life Res* 2006;15:1447–1457. doi: [10.1007/s11136-006-0002-3](https://doi.org/10.1007/s11136-006-0002-3).
12. Coleman E, Bockting W, Botzer M, et al. Standards of care for the health of transsexual, transgender, and gender-nonconforming people, Version 7. *Int J Transgend* 2012;13:165–232. doi: [10.1080/15532739.2011.700873](https://doi.org/10.1080/15532739.2011.700873).
13. Gómez-Gil E, Zubiaurre-Elorza L, Esteva I, et al. Hormone-treated transsexuals report less social distress, anxiety and depression. *Psychoneuroendocrinology* 2012;37:662–670. doi: [10.1016/j.psyneuen.2011.08.010](https://doi.org/10.1016/j.psyneuen.2011.08.010).
14. White Hughto JM, Reisner SL. A systematic review of the effects of hormone therapy on psychological functioning and quality of life in transgender individuals. *Transgend Health* 2016;1:21–31. doi: [10.1089/trgh.2015.0008](https://doi.org/10.1089/trgh.2015.0008).
15. Baker KE, Wilson LM, Sharma R, et al. Hormone therapy, mental health, and quality of life among transgender people: A systematic review. *J Endocr Soc* 2021;5:bvab011. doi: [10.1210/jendso/bvab011](https://doi.org/10.1210/jendso/bvab011).
16. Cardoso da Silva D, Schwarz K, Fontanari AM, et al. WHO-QOL-100 before and after sex reassignment surgery in Brazilian male-to-female transsexual individuals. *J Sex Med* 2016;13:988–993. doi: [10.1016/j.jsxm.2016.03.370](https://doi.org/10.1016/j.jsxm.2016.03.370).
17. Papadopoulos NA, Zavlin D, Lellé JD, et al. Male-to-female sex reassignment surgery using the combined technique leads to increased quality of life in a prospective study. *Plast Reconstr Surg* 2017;140:286–294. doi: [10.1097/prs.0000000000003529](https://doi.org/10.1097/prs.0000000000003529).
18. Papadopoulos NA, Lellé JD, Zavlin D, et al. Quality of life and patient satisfaction following male-to-female sex reas-

- signment surgery. *J Sex Med* 2017;14:721–730. doi: [10.1016/j.jsxm.2017.01.022](https://doi.org/10.1016/j.jsxm.2017.01.022).
19. Weinforth G, Fakin R, Giovanoli P, et al. Quality of life following male-to-female sex reassignment surgery. *Dtsch arztebl Int* 2019;116:253–260. doi: [10.3238/arztebl.2019.0253](https://doi.org/10.3238/arztebl.2019.0253).
 20. Eftekhari Ardebili M, Janani L, et al. Quality of life in people with transsexuality after surgery: A systematic review and meta-analysis. *Health Qual Life Outcomes* 2020;18:264. doi: [10.1186/s12955-020-01510-0](https://doi.org/10.1186/s12955-020-01510-0).
 21. Gorin-Lazard A, Baumstarck K, Boyer L, et al. Hormonal therapy is associated with better self-esteem, mood, and quality of life in transsexuals. *J Nerv Ment Dis* 2013;201:996–1000. doi: [10.1097/nmd.0000000000000046](https://doi.org/10.1097/nmd.0000000000000046).
 22. Gómez-Gil E, Zubiaurre-Elorza L, de Antonio IE, Guillemon A, et al. Determinants of quality of life in Spanish transsexuals attending a gender unit before genital sex reassignment surgery. *Qual Life Res* 2014;23:669–676. doi: [10.1007/s11366-013-0497-3](https://doi.org/10.1007/s11366-013-0497-3).
 23. Gorin-Lazard A, Baumstarck K, Boyer L, et al. Is hormonal therapy associated with better quality of life in transsexuals? A cross-sectional study. *J Sex Med* 2012;9:531–541. doi: [10.1111/j.1743-6109.2011.02564.x](https://doi.org/10.1111/j.1743-6109.2011.02564.x).
 24. Suriyasarn B. Discrimination and marginalization of LGBT workers in Thailand. *Sexual orientation and transgender issues in organizations*. Switzerland: Springer; 2016. p. 197–215.
 25. Mahatnirunkul S, Tuntipivatanaskul W, Pumpisanchai W, et al. Comparison of the WHOQOL100 and the WHOQOL-bref (26 items). *J Ment Health Thai* 1998;5:4–15.
 26. Wongpakaran T, Wongpakaran N. A comparison of reliability and construct validity between the original and revised versions of the Rosenberg Self-Esteem Scale. *Psychiatry Investig* 2012;9:54–58. doi: [10.4306/pi.2012.9.1.54](https://doi.org/10.4306/pi.2012.9.1.54).
 27. Wongpakaran T, Wongpakaran N. Confirmatory factor analysis of Rosenberg Self-Esteem Scale: A study of Thai student sample. *J Psychiatr Assoc Thai* 2011;56:59–70.
 28. Kroenke K, Spitzer RL, Williams JBW. The PHQ-9: Validity of a brief depression severity measure. *J Gen Intern Med* 2001;16:606–613. doi: [10.1046/j.1525-1497.2001.016009606.x](https://doi.org/10.1046/j.1525-1497.2001.016009606.x).
 29. Lotrakul M, Sumrithe S, Saipanish R. Reliability and validity of the Thai version of the PHQ-9. *B.M.C. Psychiatry* 2008;8:46. doi: [10.1186/1471-244x-8-46](https://doi.org/10.1186/1471-244x-8-46).
 30. Winter S. Lost in transition: Transgender people, rights and HIV vulnerability in the Asia-Pacific region. Bangkok, Thailand: UNDP; 2012. https://www.undp.org/sites/g/files/zskgke326/files/publications/UNDP_HIV_Transgender_report_Lost_in_Transition_May_2012.pdf.
 31. Armbrrecht J. Transsexuals and Thai law. Thai Law Forum; <http://thailawforum.com/Transsexuals-and-Thai-Law.html>. October 28, 2021.
 32. Tan QH. Orientalist obsessions: Fabricating hyper-reality and performing hyper-femininity in Thailand's kathoey tourism. *Ann Leis Res* 2014;17:145–160. doi: [10.1080/11745398.2014.906312](https://doi.org/10.1080/11745398.2014.906312).
 33. Ocha W. Rethinking gender: Negotiating future queer rights in Thailand. *Gend Technol Dev* 2013;17:79–104. doi: [10.1177/0971852412472125](https://doi.org/10.1177/0971852412472125).
 34. Breidenstein A, Hess J, Hadaschik B, et al. Psychosocial resources and quality of life in transgender women following gender-affirming surgery. *J Sex Med* 2019;16:1672–1680. doi: [10.1016/j.jsxm.2019.08.007](https://doi.org/10.1016/j.jsxm.2019.08.007).
 35. Davey A, Bouman WP, Arcelus J, et al. Social support and psychological well-being in gender dysphoria: A comparison of patients with matched controls. *J Sex Med* 2014;11:2976–2985. doi: [10.1111/jsm.12681](https://doi.org/10.1111/jsm.12681).
 36. Kuhn A, Bodmer C, Stadlmayr W, et al. Quality of life 15 years after sex reassignment surgery for transsexualism. *Fertil Steril* 2009;92:1685–1689.e3. doi: [10.1016/j.fertnstert.2008.08.126](https://doi.org/10.1016/j.fertnstert.2008.08.126).
 37. Nuttbrock L, Hwahng S, Bockting W, et al. Psychiatric impact of gender-related abuse across the life course of male-to-female transgender persons. *J Sex Res* 2010;47:12–23. doi: [10.1080/00224490903062258](https://doi.org/10.1080/00224490903062258).
 38. Zeluf G, Dhejne C, Orre C, et al. Health, disability and quality of life among trans people in Sweden—a web-based survey. *BMC Public Health* 2016;16:903. doi: [10.1186/s12889-016-3560-5](https://doi.org/10.1186/s12889-016-3560-5).
 39. Naeimi S, Akhlaghdoust M, Chaichian S, et al. Quality of life changes in Iranian patients undergoing female-to-male transsexual surgery: A prospective study. *Arch Iran Med* 2019;22:71–75.
 40. Simbar M, Nazarpour S, Mirzababaei M, et al. Quality of life and body image of individuals with gender dysphoria. *J Sex Marital Ther* 2018;44:523–532. doi: [10.1080/0092623x.2017.1419392](https://doi.org/10.1080/0092623x.2017.1419392).
 41. Movahed M, Hoseynzade Kasmani M. The relation of gender identity disorder and quality of life. *Soc Welf* 2011;12:111–142.
 42. Montazeri A, Ghatbasbi A, Vahdani Nia MS. Translation, reliability and validity of the Persian standard SF-36 version [Article in Persian] *Payesh J* 2006;5:49–56.
 43. Tantirattanakulchai P, Hounnaklang N. Perceived social support and its relationship with depression among Bangkok's trans women. *J Health Res* 2021 [Ahead-of-print]. doi: [10.1108/jhr-05-2020-0165](https://doi.org/10.1108/jhr-05-2020-0165).
 44. Rakic Z, Starcevic V, Maric J, et al. The outcome of sex reassignment surgery in Belgrade: 32 Patients of both sexes. *Arch Sex Behav* 1996;25:515–525. doi: [10.1007/bf02437545](https://doi.org/10.1007/bf02437545).
 45. Regulation of the medical council concerning ethics in the medical profession rules for treatment in sex Change Operations; 2009. <http://thailawforum.com/sex-change-operations-law.html>. Accessed October 28, 2021.
 46. UNDP. Ministry of social development and human security. Legal Gender Recognition in Thailand: A Legal and policy Review; 2018. https://www.th.undp.org/content/thailand/en/home/library/democratic_governance/legal-gender-recognition-in-thailand-a-legal-and-policy-review.html. Accessed October 28, 2021.

47. Chokrungruanont P, Selvaggi G, Jindarak S, et al. The development of sex reassignment surgery in Thailand: A social perspective. *ScientificWorldJournal* 2014;2014:182981. doi: [10.1155/2014/182981](https://doi.org/10.1155/2014/182981).
48. Laungani A, Brassard P. Gender confirmation surgery: Cosmetic or reconstructive procedure? *Plast Reconstr Surg Glob Open* 2017;5:e1401. doi: [10.1097/gox.0000000000001401](https://doi.org/10.1097/gox.0000000000001401).