Conference Paper

Self-Acceptance in Individuals with Gender Dysphoria

Laila Indra Lestari*, and Melly Amalia Vardia

Faculty of Psychology, Universitas Negeri Malang, Malang, Indonesia

Abstract.

Individuals with a gender identity that differs from their bodily gender and perceives themselves to be a different gender are diagnosed with gender dysphoria. In Indonesia, this topic is often regarded as a taboo subject, and as such, there is a lack of information about the experiences of people with gender dysphoria. This study examined the self-acceptance process of young adults with gender dysphoria regarding their gender identity and gender experience. A qualitative phenomenological approach was used to understand a young adult's dysphoric gender. Three people, aged 25 to 29, were recruited through purposive sampling. The data were acquired through in-depth and semi-structured interviews and analyzed iteratively using theoretical coding based on the phenomenological technique. The study found three main themes: self-acceptance, adaptability, and positive thoughts about themselves. The participants in the study cited the feelings of acceptance as their main reasons for coping with perceived discomfort associated with perceived gender, having positive judgments, and having realistic expectations.

Keywords: self-acceptance, gender dysphoria, perceived gender, judgment, expectations

Corresponding Author: Laila Indra Lestari; email: laila.indra.fpsi@um.ac.id

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1. Introduction

Gender is a fundamental identity that determines whether a person identifies as male, female, or a mix of the two. Gender identity, according to Capetillo-Ventura et al. [1], determines how a person perceives their gender and adds to a sense of identity, distinctiveness, and belonging. Gender identity is thought to be an internal reference that develops through time, allowing individuals to govern their sense of self and behave socially following their perceptions of sex and gender.

Gender identification generally refers to the degree to which a person feels like another person of the same gender [2]. Typically, gender identity develops following physical gender characteristics; for example, a baby with XY sex chromosomes and male genitalia will be assigned to a male gender, exhibit typical male behavior, and have a

male gender identity [2]. Thus, one's perception of being male or female influences how people perceive themselves and serves as a foundation for their interactions.

Most children identify with their assigned gender and exhibit behavior characteristic of their gender at birth [3]. Some children may have a mismatch between their perceived and designated sex (physical bodily condition). They identify with the opposite sex, exhibit behaviors and interests that contradict the sex assigned at birth, and sometimes profoundly despise the physical gender features tied to their bodies [3]. Gender dysphoria is a disorder in which a person experiences difficulty due to a mismatch between the assigned sex and the perceived gender [3,4].

Fisher et al. [5] define adolescents with gender dysphoria as a mentally and socially sensitive demographic. The disjunction between the physical body and the feeling of gender identity can cause pain and unhappiness with oneself during adolescence [6]. Furthermore, the persistence of gender stereotypes exacerbates teenagers' worry about appearance, leading to body dissatisfaction [7]. Body dissatisfaction is a negative judgment of one's appearance and is the source of discomfort and unhappiness experienced by those with gender dysphoria [8].

When discussing the disparity between physique and identity in gender dysphoria, body image is a crucial topic to bring up [8]. Several body image studies have discovered that people with GD or any type of gender role or gender identity conflict are dissatisfied with their bodies and are more likely to develop disturbed body image and eating disorders [4,8]. This, in turn, determines how individuals accept themselves [9].

In Indonesia, someone uncomfortable with biological genitalia or gender conventions that do not correspond to their gender identification is referred to as a transvestite [10]. Transvestite is a vocation with deep cultural origins linked to one's gender and sexual orientation [11]. This term superficially resembles the written occurrence of "born in the wrong body," which is common in transgender discourse in Western countries [11,12]. The term "transgender" refers to a person whose sex assigned at birth (i.e., the sex assigned at birth, usually based on external genitalia) does not correspond with their gender identity (i.e., one's psychological sense of gender). Furthermore, Transgender is widely used as an umbrella term to cover those who do not comply with gender norms or whose biological sex contradicts their gender identification [13]. Beyond medical terminology, terms used by transgender people to describe themselves include trannyboys, fem queens, drag kings, drag queens, genderqueers, bois, transgender women for MTFs (male-to-female), and transgender men for FTMs (female-to-male) [14]. Some transgender people will experience "gender dysphoria," which is psychological distress caused by incongruence between one's sex at birth and gender identity [15].

In sum, Transgender is a term used to describe people classified as having a gender that is inconsistent or not the same as gender culture in general (queer gender, third gender, etc.). Not all transgender people are distressed or want medical help [16]. If there are complications, Gender Dysphoria (GD) is diagnosed using the Diagnostic and Statistical Manual of Mental Disorders-V (DSM-V) [4]. GD can appear before puberty or during/after puberty [4]. GD is a condition in which a person is distressed because of a mismatch between the assigned and experienced gender.

Indonesia adheres to religious beliefs, so an LGBT (Lesbian, Gay, Bisexual, and Transgender) individual is unlikely to be welcomed. Although the LGBT population in Indonesia is becoming more aware of their rights, public conservatism, and traditional gender conventions continue to be barriers to LGBT people, for example, when they enter the work market [17]. Furthermore, sexual orientation and gender identity are not officially mentioned as forbidden grounds of discrimination in Indonesian law. The lack of concrete bans on discrimination based on sexual orientation and gender identity thus poses a problem to LGBT people'speople's security [17]. However, LGBT people who are open about their sexual orientation are often harassed and subjected to discrimination [17]. Those secretive about their sexual orientation or gender identity are not immune from discriminatory practices [17].

According to the report, many LGBT employees conceal their sexual orientation at work for fear of losing their jobs or missing out on career possibilities [17]. LGBT people are often excluded and have difficulty receiving social assistance since they work in the informal sector and are under terrible working conditions [17]. On the other hand, Indonesia is a human-rights-protecting country, and LGBT (Lesbian, Gay, Bisexual, and Transgender) people report discrimination and human rights abuses due to their deviant sexual orientation. Until recently, different researchers and human rights activists have given birth to different views and attitudes toward LGBT people. Many people are opposed to the example because they are perceived them to engage in deviant sexual behavior that violates standards and religion. Transgender people frequently find it difficult to express themselves in such settings.

Unfortunately, research on transgender adults has been sparse, particularly in Indonesia [8]. Most research has focused on overall body satisfaction concerning medical interventions [4,18], as well as being diagnosed with an eating disorder [18–20]. In Indonesia, there hasn't been much research on transsexual people. Unlike earlier research, this study focuses on self-acceptance in early adulthood for individuals with gender dysphoria.

2. Method

This study uses a phenomenological qualitative approach. Phenomenology seeks to reveal, study, explore, and understand a phenomenon along with its unique and unique context experienced by individuals [21].

The main participants in this study were three people who were obtained using purposive sampling. Purposive sampling is a technique based on the subject's characteristics following the research objectives to be carried out [21]. The criteria for participants in this study were teenagers to early adulthood who experienced a discrepancy between gender (physical) identity and perceived gender. Researchers used in-depth interviews with research participants. Guided interview questions include issues related to (1) experiences related to gender non-conformity, (2) how participants experience this experience, and (3) how to accept this experience.

From the interview results obtained, the researcher then changed the interview results into a verbatim form in the interview. Next, the researcher did open coding by giving a label or code from the verbatim data. After open coding, the researcher conducted axial coding, categorizing the resulting tags or codes. The following process, selective coding, is carried out: looking for relationships between the categories obtained or synthesizing.

3. Results

In this study, participant self-acceptance is addressed in two sub-chapters. The first gives an overview of the individuals and their experiences with gender dysphoria. The second section presents an overview of the self-acceptance process from many angles. The third stage is the process of individual thought associated with self-acceptance.

3.1. Participants

This study included young individuals with a clinical diagnosis of gender dysphoria. Three individuals, DR, ST, and CK, were interviewed in semi-structured interviews. Participants ranged in age from 25 to 29 (M = 27).

3.2. Self-Acceptance Process

Table 1: Summary of Research Findings Data.

Subject	Age	Education	Sex	Gender Preference	Perceived conflict related to incompatibility with perceived gender identity
DR	25 y.o	S-2	Male	Female	They were uncomfortable, which led to several behaviors that reflected dissatisfaction with their body, such as eating disorders, self-criticism, and self-harm. The discomfort they feel gets worse when they are rejected by someone (a man) they like, which often becomes the primary stress for the feeling of disappointment peaks due to rejection of feelings, he takes out his disappointment by hurting himself because he feels that the main source of his heartache is the condition of his body
ST	28 y.o	S-1	Male	Female	He was not comfortable with the body he had since elementary school because his friends often teased him. In front of friends, he tries to present himself as he is; whatever he feels, he accepts without suppressing or deceiving himself that the gender he perceives is female. Trying to hide behavior that reflects a perceived gender identity Feeling uncomfortable at home, where he has to show behavior like a man in general to set a good example for his younger siblings
CK	29 y.o	S-1	Male	Female	He is dissatisfied with his religion because he does not accept his inherent differences. Feeling cornered by their religion, they then look for other religions that are in line with their values and have values that reflect an acceptance of themselves. When studying other religions, he feels he can control himself and learns to accept, which means not always obeying his wishes.

3.2.1. DR Participant

The participant'sparticipant's self-acceptance arose when she attended college and got health and psychology information. Then, it caused DR to recognize that what was occurring to him resulted from diversity. Knowing their pain's consequences, she

sought professional assistance, specifically from a psychiatrist. Treatment sessions with a psychiatrist led to fresh insights about himself, making him more aware of his strengths and flaws.

"In the past, I used to hunt for instructions for taking hormonal medicines. But I'm terrified of the risks, so I won't change or utilize hormones. If we take too long and the dose is incorrect, we will get cancer." (DR; age 25)

DR is more accepting of his physical condition as a male after considering her health, and she does not wish to undergo medical procedures such as hormone injections and surgery to become transgender. DR did not receive hormone injections out of concern for the potential health dangers associated with their use, as hormones have side effects and dosage considerations and must be monitored by a physician.

In addition, contemplation of aspects of social norms diminishes his desire to alter her physical condition.

"*If I become transgender, my family may or may not embrace me. It may be acceptable from a social standpoint, but the work environment may not tolerate it*." (DR; age 25)

3.2.2. ST Participant

Self-acceptance of ST participants resulted from their consideration of normative aspects. ST felt that social, familial, and environmental norms and regulations caused him to reconsider his desire to transition. He is also aware that if he transitions, there is no guarantee that his current social environment will embrace him. This normative environmental condition also compels DR to consider and exercise caution when expressing her gender identity. He frequently adopts new identities to be accepted in various situations, including new families and environments.

"I must appear masculine in the family environment. I believe that this is how the paternal figure should look. I'm adjusting to the fact that in my family, it's essential to suppress feminine characteristics." (ST; age 28)

In addition, norms and values control harmful behavior, enabling ST to realize their capabilities and promoting positive attitudes such as self-respect and realizing their potential. As a result of his values and a new comprehension of his condition, ST has reasonable expectations for the future. In addition, existing social norms impact how ST participants present themselves to be accepted by their social environment.

"Individuals like me do not always have a negative connotation; we also have many successes, such as in our careers and education." And many of us have positive qualities; perhaps those with negative rates lack education." (ST; age 28)

3.2.3. CK Participant

The religious aspect, specifically his religious experience, was also the most influential factor in his self-acceptance. The participants initially adopted Islam but later studied Catholicism until they felt at ease and embraced Christianity.

"The purpose of the church is to teach us to live a holy life, but in this manner, it doesn't change much; rather, it teaches us to control it. Accepting but controlling does not imply that we must heed every human will; rather, it indicates that we have a will, but not all of our desires must be honored." (CK, age 29)

"Yes, you're correct. Therefore, if there is a problem, I dare to confront God because my God does not enjoy judging me as ugly. The God I now know, introduced to me at this time, is loving, not one who harshly judges me." (CK, age 29)

Christianity teaches him to embrace and control himself, which means he must accept what is attached to him and recognize that his will is not always required to be followed. He also believed that the God he worshipped was significantly more loving.

4. Discussion

4.1. Process of Self-Acceptance Examined

According to the study's findings, the participants' self-acceptance resulted from their consideration of multiple factors. Firstly, the normative aspect of social, familial, and environmental rules and norms caused participants to reconsider their desire to transition. Previous studies have shown that individuals with gender dysphoria experience conflict between the internal sense of self and dominant social norms [22]. The expectation of rejection is frequently connected with unique sensations of fear and concern for their safety [23]. Through this normative aspect, participants are made aware that if they become transgender, there is no guarantee that their social environment will embrace them. This normative environmental condition also prompts individuals to consider and exercise caution when expressing their gender identity.

Gender identity has an impact on every subjective area of life. Individuals who suffer from gender dysphoria frequently recall hiding their gender dysphoric sentiments from

others when they were younger [24]. They endure varying degrees of discrimination and trauma since their gender expressions do not conform to societal norms [25]. Furthermore, individuals with gender dysphoria who struggle with transphobia and public discrimination suffer several unpleasant events in their daily lives. As a result, they may opt to conceal their genuine gender feelings [26]. However, keeping identities disguised is hard for individuals with gender dysphoria who are compelled to live double lives [27,28]. Various issues prevent individuals with gender dysphoria from declaring their sexual orientation or gender identities. These include concerns about job advancement, temporary employment status, masculine or religious views or behaviors among coworkers, and a lack of visible senior leadership [28]. In order to be accepted in different situations, such as a new family or environment, it is not uncommon for participants to adopt new positions. In other words, participants are provided with a set of norms dictating when they can assume a figure based on their gender Identity (men) and when they must express themselves based on their gender identity (women).

Secondly, the health aspect, with participants embracing male gender identity and not wishing to undergo hormone injections or surgery to become transgender. The participants' decision not to receive hormone injections was based on health-related factors, such as dosage considerations and the fact that hormone use has side effects and must be administered by a physician. Not every transgender or gender-incongruent individual seeks surgical interventions to change sex characteristics [29]. The desire for an operation is for every transgender individual differently [29].

Thirdly, the theological dimension The Christian teachings he received taught him to embrace and control himself, which means that participants must accept what is attached to them but must also recognize that their own will is not always required to be followed. Our findings are consistent with the results of Yetunde [30], who discovered that belonging to a religion and leading a spiritual life can shape the primary notion of life and improve mental health in transgender people. Other research has found that religious motivation and spirituality can be significant relieving factors for patients suffering from various psychological and physical problems and that praying is the most common form of faith healing [31]. Furthermore, Svob et al. [32] discovered that persons who adhere to spiritual ideas have better mental health. Participants also believe that the God they now believe in is much more loving, leading them to accept the diversity. This comprehension encourages participants to appreciate the present.

DR attempts to exhibit and express itself in everyday settings and conditions. He has a set of guidelines for when he will become a figure based on his gender identification (man) and when he must express his true gender (female). He did this in the following

circumstances: (1) The family. Within the family, he must appear macho while suppressing his feminine traits. He must project the image of a dominant elder brother who can guide his younger sister. Although he is not entirely manly, he should demonstrate his authority. (2) A new setting. DR's behaviour in the environment or with new friends does not represent the gender he feels (feminine). DR first adjusts until, after getting to know him well, he reveals his actual self or displays his gender identity. He wants his friends and the people around him to accept him for who he is.

Because DR considers herself a man, she accepts and has no desire to have medically altered body parts. However, she uses a treatment cream, lip balm, and body scrub every three days, just like any other lady. Previously, he preferred to build buttocks over muscles.

The Christian teachings he acquired taught him to accept and govern himself, which means he must receive what is tied to him while also understanding that his will does not always have to be obeyed. He also believes that the God he now worships is much more loving.

4.2. Ability to Adapt

Participants strive to find solutions to cope with their feelings of gender dysphoria. Participants have a solid awareness of themselves and their surroundings and are eager to learn from previous experiences to know what to do. Nasty remarks or bullying from others, for example, are no longer tolerated. When they are in a new area, they try to adapt and recognize their surroundings first in order to be accepted.

4.3. Have Optimistic Expectations and Positive Judgments

Participants' self-evaluation improves as they gain a better understanding of their situation. They believe that people with gender dysphoria do not always have a bad connotation and that they, like all other people, can be successful in their careers and schooling. Participants become more accepting of their circumstances and more tolerant of the developing pressures.

5. Conclusion

This study found three external processes aided participants' self-acceptance: educational experience, professional support, and religious experience; then set off four

thought processes: normative considerations, health considerations, and religious considerations. The normative element demonstrates that the participants are aware of and understand that the social context in which they are located might not necessarily accept them if they become transgender. The health element demonstrates that individuals accept their bodies' conditions without wanting to intervene medically related to potential adverse effects. The personal value factor indicates that the participants' values encourage them to become individuals who can be successful and achieve under contemporary conditions. Furthermore, religion teaches that man must accept himself but also be able to regulate himself. It implies that he must accept whatever is tied to him and recognize that not every want must be fulfilled.

Accepting underlying gender identity, attempting to cope with perceived discomfort associated with perceived gender, having positive judgments, and having realistic expectations are all three components that lead to self-understanding and acceptance. Participants recognize that they are experiencing gender variety or third gender. Next, he attempts to cope with his discomfort by engaging in other activities that distract him from his negative emotions. Finally, he believes in himself and that others like him may thrive in education and work. He has reasonable expectations that he wants to be with people who will accept him in his current state.

The findings of this study can be used as proposals for further research by various parties. Helping individuals with gender dysphoria, mainly with different psychological, religious, and health techniques, so they do not depart from Indonesian standards and religious rules. The findings of this study can be helpful in the government in defining policies about the existence of people with gender dysphoria to get guidance in various ways so as not to disturb the community, given that they have the same human rights as normal individuals. The study of self-acceptance in individuals with gender dysphoria is fascinating, especially from a psychological standpoint. Future research is predicted to be able to deepen the investigation with additional individuals, given that the current study has several flaws, such as a shortage of participants.

References

[1] Capetillo-Ventura NC, Jalil-Pérez SI, Motilla-Negrete K. Gender dysphoria: an overview. Med Univ. 2015;17(66):53–8.

[2] Steensma TD, Kreukels BP, de Vries AL, Cohen-Kettenis PT. Gender identity development in adolescence. Horm Behav. 2013 Jul;64(2):288–97.

[3] Cohen-Kettenis PT, Klink D. Adolescents with gender dysphoria. Best Pract Res Clin Endocrinol Metab. 2015 Jun;29(3):485–95.

[4] van de Grift TC, Cohen-Kettenis PT, Elaut E, De Cuypere G, Richter-Appelt H, Haraldsen IR, et al. A network analysis of body satisfaction of people with gender dysphoria. Body Image. 2016 Jun;17:184–90.

[5] Fisher AD, Ristori J, Castellini G, Sensi C, Cassioli E, Prunas A, et al. Psychological characteristics of Italian gender dysphoric adolescents: a case-control study. J Endocrinol Invest. 2017 Sep;40(9):953–65.

[6] McClure SM, Laibson DI, Loewenstein G, Cohen JD. Separate neural systems value immediate and delayed monetary rewards. Science. 2004 Oct;306(5695):503–7.

[7] Murray K, Rieger E, Byrne D. A longitudinal investigation of the mediating role of self-esteem and body importance in the relationship between stress and body dissatisfaction in adolescent females and males. Body Image. 2013 Sep;10(4):544–51.

[8] Jones DN. Psychopathy and machiavellianism predict differences in racially motivated attitudes and their affiliations: dark Triad and racism. J Appl Soc Psychol. 2013;43:E367–78.

[9] McGuire JK, Doty JL, Catalpa JM, Ola C. Body image in transgender young people: findings from a qualitative, community based study. Body Image. 2016 Sep;18:96–107.

[10] Sugano E, Nemoto T, Operario D. The impact of exposure to transphobia on HIV risk behavior in a sample of transgendered women of color in San Francisco. AIDS Behav. 2006 Mar;10(2):217–25.

[11] Hegarty B. When I was transgender. Med Anthropol Theory. 2020;4(2): https://doi.org/10.17157/mat.4.2.399.

[12] Melendez RM, Bonem LA, Sember R. On bodies and research: transgender issues in health and HIV research articles. Sex Res Soc Policy. 2006;3(4):21–38.

[13] Davidson M. Seeking refuge under the umbrella: Inclusion, exclusion, and organizing within the category Transgender. Sex Res Soc Policy. 2007;4(4):60–80.

[14] Rodríguez-Madera S, Toro-Alfonso J. Gender as an Obstacle in HIV/AIDS Prevention: Considerations for the Development of HIV/AIDS Prevention Efforts for Male-to-Female Transgenders. Int J Transgenderism. 2005;8(2–3):113–22.

[15] Turban J. What is Gender Dysphoria? https://www.psychiatry.org/patients-families/gender-dysphoria/what-is-gender-dysphoria#:~:text=Some%20people%20who%20

[16] Beek TF, Kreukels BP, Cohen-Kettenis PT, Steensma TD. Partial Treatment Requests and Underlying Motives of Applicants for Gender Affirming Interventions. J Sex Med. 2015 Nov;12(11):2201–5.

[17] International Labour Organization. PRIDE at work: A study on discrimination at work on the basis of sexual erientation and gender identity in Indonesia. https://drive.google.com/file/d/1i6QBHACPrp7eiyAF70Qyx0BxFQg0uzNu/view

[18] Bandini E, Fisher AD, Castellini G, Lo Sauro C, Lelli L, Meriggiola MC, et al. Gender identity disorder and eating disorders: similarities and differences in terms of body uneasiness. J Sex Med. 2013 Apr;10(4):1012–23.

[19] Ålgars M, Santtila P, Sandnabba NK. Conflicted Gender Identity, Body Dissatisfaction, and Disordered Eating in Adult Men and Women. Sex Roles. 2010;63(1–2):118–25.

[20] Witcomb GL, Bouman WP, Brewin N, Richards C, Fernandez-Aranda F, Arcelus J. Body image dissatisfaction and eating-related psychopathology in trans individuals: a matched control study. Eur Eat Disord Rev. 2015 Jul;23(4):287–93.

[21] Herdiansyah H. Metodologi Penelitian Kualitatif Untuk Ilmu Psikologi. Jakarta: Salemba Humanika; 2015.

[22] Ellis SA, Wojnar DM, Pettinato M. Conception, pregnancy, and birth experiences of male and gender variant gestational parents: it's how we could have a family. J Midwifery Womens Health. 2015;60(1):62–9.

[23] Rood BA, Reisner SL, Surace FI, Puckett JA, Maroney MR, Pantalone DW. Expecting Rejection: Understanding the Minority Stress Experiences of Transgender and Gender-Nonconforming Individuals. Transgend Health. 2016 Aug;1(1):151–64.

[24] Drescher J, Pula J, Yarbrough EJ. Gender Dysphoria. Expert Q&A: Gender Dysphoria. 2023. https://www.psychiatry.org/patients-families/gender-dysphoria/expert-q-and-a

[25] Başar K, Öz G, Karakaya J. Perceived Discrimination, Social Support, and Quality of Life in Gender Dysphoria. J Sex Med. 2016 Jul;13(7):1133–41.

[26] Ozata YB, Yuksel S, Avayu M, Noyan H, Yildizhan E. Effects of Gender Reassignment on Quality of Life and Mental Health in People with Gender Dysphoria. Turkish Journal of Psychiatry. 2017. https://doi.org/10.5080/u18259.

[27] Hoel H, Einarsdottir A, Lewis D. The ups and down of LGBs' workplace experience: Discrimination, bullying and harassment of lesbian, gay and bisexual employees in Britain. Manchester Business School; 2014.

[28] Wright T, Colgan F, Creegany C, McKearney A. Lesbian, gay and bisexual workers: Equality, diversity and inclusion in the workplace. Equal Oppor Int. 2006;25(6):465–70.

[29] Claahsen-van der Grinten H, Verhaak C, Steensma T, Middelberg T, Roeffen J, Klink D. Gender incongruence and gender dysphoria in childhood and adolescence-current insights in diagnostics, management, and follow-up. Eur J Pediatr. 2021

May;180(5):1349–57.

[30] Yetunde PA. Buddhist-Christian Interreligious Dialogue for Spiritual Care for Transgender Hospital Patients. In P. A. Yetunde, Buddhist-Christian Dialogue, U.S. Law, and Womanist Theology for Transgender Spiritual Care . Springer International Publishing; 2020. pp. 1– https://doi.org/10.1007/978-3-030-42560-9_1.

[31] Merath K, Palmer Kelly E, Hyer JM, Mehta R, Agne JL, Deans K, et al. Patient Perceptions About the Role of Religion and Spirituality During Cancer Care. J Relig Health. 2020 Aug;59(4):1933–45.

[32] Svob C, Wong LY, Gameroff MJ, Wickramaratne PJ, Weissman MM, Kayser J. Understanding self-reported importance of religion/spirituality in a North American sample of individuals at risk for familial depression: A principal component analysis. PLoS One. 2019 Oct;14(10):e0224141.