Transgender Youth and the Effects of Gender-Affirming Hormone Therapy on Suicidality: A Systematic Review

An EBP Capstone Project submitted to the St. David's School of Nursing at Texas State University in partial fulfillment of the requirements for the degree of Master of Science in Nursing

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Abstract

Introduction: This research delves into the impact of gender-affirming hormone therapy on depression, suicidality, and quality of life among transgender youth. With increasing recognition of the importance of affirming medical care for transgender youth, this study aims to examine the specific effects of hormone therapy on mental health and overall well-being among this demographic.

Methods: A comprehensive literature review was conducted, encompassing studies published between 2018 and 2023. Databases including PubMed, CINAHL, MEDLINE Complete, Academic Search Complete, and ScienceDirect were utilized to collect relevant articles, focusing on research that explored the effects of gender-affirming hormone therapy on suicidality. Studies employing longitudinal designs, cohort studies, and case studies were included to ensure a comprehensive understanding of the topic.

Results: The synthesis of findings from the selected studies consistently demonstrates a significant association between gender-affirming hormone therapy and improvements in depression symptoms, decreased suicidality rates, and enhanced overall quality of life among transgender youth. Various measures, such as standardized mental health assessments and self-reported outcomes, consistently indicate positive outcomes following the initiation of hormone therapy.

Discussion: The implications of these findings highlight the critical role of gender-affirming hormone therapy in positively influencing mental health outcomes and well-being among transgender youth. The observed reductions in depression symptoms and suicidality, coupled with improved quality of life, underscore the importance affirming healthcare for this population.

Further exploration into the effects and diverse experiences of transgender youth undergoing hormone therapy is recommended to enhance comprehensive care and support for this community.

Keywords: transgender youth, gender-affirming hormone therapy, depression, suicidality, quality of life, mental health

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Transgender and gender diverse (TGD) youth experience a higher rate of mental health challenges with 82% considering suicide at some point in their lives (Newcomb et al., 2020). Cisgender youth already struggle with psychosocial stressors during their adolescent years, yet transgender individuals suffer with elevated rates of discrimination, violence, and victimization (Newcomb et al., 2020). Transgender youth and adolescents are at a developmental period in their lives with mental health problems and related risk behaviors escalating sharply (Newcomb et al., 2020). Access to gender affirming care for transgender youth is being attacked while there is increasing evidence of self-harm and suicidality among transgender youth (Rimes et al., 2017). Twenty-one states within the U.S. have banned gender affirming care for youth 18 years and younger with an additional seven states considering the legal ban (Human Rights Campaign, n.d.). The significant gap influencing transgender youth's mental health and well-being is the lack of research among the younger age brackets and how access to gender affirming care affects suicidality. A systematic review is pertinent to demonstrate the need for gender affirming care access to protect the mental health and wellness of our transgender youth. The purpose of this project is to continue the research into discovering the connection between TGD youth suicidality and the use of gender affirming hormone therapy (GAHT). This knowledge can highlight gaps in clinical practice and government policies to improve the lives of transgender youth.

Background and Significance

The definition of a transgender person is one who identifies as a different gender than what they were assigned at birth (GLAAD, 2023). State Bill 14 went into effect September 1, 2023, and prohibits physicians from providing gender-affirming care to transgender youth (Equality Texas, 2023). This bill also prohibits insurance companies from covering any gender-affirming treatment for TGD youth, including life-saving care (Equality Texas, 2023). Twenty-one states have a ban against best practice medication and surgical care for TGD youth (Movement Advancement Project, 2023). Five of those states make it a felony crime for a physician to provide medical care for TGD youth (Movement Advancement Project, 2023). The stigma that is felt among these children creates depression, anxiety, suicidality, and violence victimization. These health injustices emphasize the importance of gender affirming care for transgender youth (Pampati et al., 2021). GAHT is a treatment that falls within gender affirming care. GAHT with either increased estrogen or testosterone hormones will allow the individual to develop secondary sex characteristics that will more closely parallel the gender they identify with (Boyle, 2022). This intervention supports the healthy mental outcomes of transgender youth by decreasing suicidality and creating a higher quality of life (Baker et al., 2021).

Review of the Literature

Mental health and suicidality are an important topic to address for the care of transgender youth. Green, DeChants, Price, and Davis (2021) performed a cross sectional quantitative study to determine the effects of GAHT on mental health and suicidality. The survey study consisted of 11,914 transgender and nonbinary youth ages 13-24, and the online data was collected via Facebook, Instagram, and Snapchat (Green et al., 2021). They further narrow down the sample age, and the study included a subsample of transgender youth ages 13-17 to understand the effects on suicidality when having access to GAHT (Green et al., 2021). Findings concluded that

transgender youth that received hormone therapy had a decrease of depression from 78% to 61%, decrease of suicidal thoughts from 62% to 51%, and decreased suicide attempts from 28% to 16% (Green et al., 2021). Limitations arise from a cross-sectional design, as it is ethically inappropriate to conduct a randomized control trial involving transgender individuals. Moreover, the use of a self-reported non-probability sample in our study may constrain the generalizability of findings. This highlights the importance of incorporating gender identity-specific measures in larger probability samples. Additionally, no information on the age of participants when hormone therapy began is provided.

Kuper, Stewart, Preston, Lau, and Lopez (2020) performed a longitudinal quantitative study to measure the outcomes of depression, anxiety, and body dissatisfaction among transgender youth who received GAHT over a period of at least a year. The study followed 148 transgender participants who received multidisciplinary care in a hormone program in Dallas, Texas (Kuper et al., 2020). The youth were between the ages of 9-18 and surveys were collected up to 18 months after hormone treatment had begun (Kuper et al., 2020). Follow up rates for suicidal ideation and suicide attempts dropped from 81% to 39% and 16% to 4% respectively with GAHT (Kuper et al., 2020). Limitations include missing data that was attributed to multiple providers who collected the data in a busy clinical setting.

Campbell, Mann, Nguyen, and Van Der Meulen Rodgers (2023) performed a cohort study that involved a treated group that took GAHT compared with a constructed stacked control group. The US Transgender Survey consisted of 136,170 observations of 42 cohorts of 11,330 treated transgender youth and 11,365 control transgenders (Campbell et al., 2023). The study follows transgender youth ages 14-17 over a five-year period before and after hormone therapy. Results proved there was a 14.4% decrease in suicide risk after the start of GAHT in transgender

youth (Campbell et al., 2023). This study is additionally important in relation to the political trends of banning care to transgender youth because it demonstrates a decreased risk of suicide being the most effective when hormone treatment was started at the young age of 14-15 (Campbell et al., 2023). Limitations for this study is sample is nonrandomized, demographically younger, less racially diverse, and more affluent. Therefore, it does not necessarily mirror the true transgender population.

Purpose and Clinical Question

While continued research is underway to better understand the factors to one being transgender, existing empirical evidence has shown there is a significant biological contribution to one's sexual identity and sexual orientation (Roselli, 2018). Therefore, the stigma around transgender individuals being able to make a choice to their sexuality is certainly untrue. The current political actions to ban gender affirming care to transgender youth is attempting to erase and invalidate the transgender population (Abreu et al., 2022). The oppressive laws create fear and anxiety for the transgender youth directly affected and instills overwhelming fear for the parental figures who helplessly feel their child might prefer death to the unwanted puberty changes for the wrong gender (Abreu et al., 2022). This systematic review is imperative to understand the pernicious effect of these political actions towards the transgender youth population. This systematic review will help answer the clinical question, "In transgender individuals ages 13-18, how does the use of GAHT compare with those who have no access to GAHT influence suicidality risk".

Conceptual Framework

The proposition that hormone therapy may reduce suicidality among transgender youth draws from a multi-dimensional perspective that integrates medical, psychological, and sociocultural factors. Under Betty Neuman's system model, prevention is the primary intervention and focuses on keeping the stress response from creating detrimental effects on the body (Nursing Theory, 2023). This framework demonstrates that transgender youth face unique challenges related to gender dysphoria, stigma, and discrimination, which contributes to mental health challenges and higher rates of suicidality. Neuman believes the human being is multidimensional and comprises of physiological, psychological, socio-cultural, spiritual, and developmental (Nursing Theory, 2023). The intervention of hormone therapy is proposed to harness positive effects on mental health and well-being. It is hypothesized that hormone therapy reduces psychological distress and enhances overall mental health. The psychological system is relevant to understanding human development and human needs for an individual (Smith, 2017). When the psychological subpart is under stress, the system of TGD youth continue to be unstable (Nursing Theory, 2023). Neuman's framework demonstrates the interworking between social contexts, psychology, and biology while balancing the patient system wellness (Nursing Theory, 2023). This framework helped guide this research project because TGD youth should be treated as an entire person that includes the psychological health and well-being of the individual.

Methods

Project Design

This project is a systematic review of the literature to provide the interplay between hormone therapy access in transgender youth and suicidality. The review was guided by Neuman's framework which incorporates how the independent variables of medical,

psychological, and sociocultural factors influence the mental health outcomes of transgender youth in relation to access to GAHT.

Search Strategy

The present study is based on scientific literature that has been identified in previous studies addressing the current topic. The articles found in this search were obtained from the following databases: PubMed, CINAHL, MEDLINE Complete, Academic Search Complete, and ScienceDirect. The following keywords that were used to conduct the search for articles included: “transgender youth”, “suicidality”, “hormone therapy”, “gender-affirming care”, and “mental health”. Boolean operators “AND” and “OR” were utilized to increase the search results. The ancestry method was adopted to reveal other articles that did not appear in the search, yet were relative to the PICOT question, by scanning through the list of references in a research article. Criteria used to screen the articles included cohort groups, surveys, interviews, and observations. The dates of the publications ranged from 2018-2023, were published in English, were U.S. based, and academic journal peer reviewed. Exclusion criteria included articles that did not include transgender youth under the age of 18 years old. The quality appraisal tool utilized for cohort studies helped determine the value of the articles (Melnyk & Fineout-Overholt, 2019). Studies were excluded if they did not reach a cutoff score of 70% or higher. The studies were validated with a well-defined cohort of transgender identified youth. The length of studies chosen varied from months to years, which is an adequate amount of time to have changes in mental health status. Studies that spanned less than three months were excluded from the review. The risk reduction in all studies showed a decrease in suicidality among transgender youth who had GAHT and therefore showcase the value of therapy on mental

health. The applicability of these studies is pivotal to capitalize on the desperate need to make change to the oppressive laws that disvalue the choice to decide how to treat one's own body.

Selection Process

Articles were chosen based on many factors such as word terms, age of article, type of article and location of study. The quality appraisal tool for cohort studies was the only checklist utilized to appraise the articles and keep those who scored a 70% or higher. This cohort appraisal tool assesses the quality of a study and addresses the possibility of bias in design, conduct and analysis (Melnyk & Fineout-Overholt, 2019).

Synthesis Method

Each study was analyzed to determine applicability. The Evidence Synthesis Table listed in Appendix A is a valuable tool for summarizing and presenting key information from multiple sources. It allows for a summary of study design, participant details, type of intervention tested, outcome measures, key results, and limitations. This table was capitalized on to quickly compare and assess the evidence to best determine its value to the research. The theme noted in this research shows that use of GAHT among TGD youth decreases suicidality. The trend across the studies used in this review is relevant to the PICOT question and research to display that use of GAHT decreases suicidality among transgender youth.

Results

Search Results

An initial total of 258 articles were pulled for this systematic review. Initial results were chosen by utilizing the search terms "transgender youth", "hormone therapy", and "mental

health". Additionally, articles needed to include age ranges 13-18 years. There were 10 articles then removed due to duplication, and an additional 120 articles removed for date of publication older than five years or not being a peer reviewed article. An additional 52 articles were removed when the title subject did not pertain to this study. There were 32 more articles removed if they were not strictly U.S. based and 12 more articles were removed if the study did not specify suicidality. An additional nine articles were removed if they did not include the age range of 13-18 within the result. An additional five articles were separated out as the quality appraisal score was not 70% or above. This left the remaining 28 articles that fit into the PICOT question of this review and had high validity and reliability. Twenty-one were removed when the study was small or not a significant duration. For this literature review, seven articles were chosen and the PRISMA diagram is displayed in appendix B as figure 1.

Characteristics of Studies

The research consisted of one cross-sectional study (Green et al., 2022), one case-control study (Campbell et al., 2023), and five prospective cohort studies (Kuper et al., 2020; Tordoff et al., 2022; Achille et al., 2020; Allen et al., 2019; Cantu et al., 2020) as displayed in Appendix A, table 1. Their purposes range from describing the mental health disparities and quality of life of transgender individuals with no access to GAHT (Kuper et al., 2020) to evaluating the changes in mental health and suicidality rates when transgender youth use hormone therapy (Achille et al., 2020; Allen et al., 2019; Cantu et al., 2020; Campbell et al., 2023; Green et al., 2022; Kuper et al., 2020; Tordoff et al., 2022). Their sample size ranged from 47 (Allen et al., 2019) to 136,170 (Campbell et al., 2023) with a total sample size across studies of 148,705. Depression and suicidality (Green et al., 2022; Kuper et al., 2020; Tordoff et al., 2022) were decreased when TGD youth were able to use GAHT. Surveys of PHQ-2 and GAD-7 scores were consistently

decreased (Green et al., 2022; Tordoff et al., 2022; Achille et al., 2020) while others did not show a significant difference (Cantu et al., 2020). All studies included in this review have higher levels of reliability and validity with an appraisal score of at least 70% and are displayed in Appendix A, table 1.

Synthesis Across Studies

With the data analysis method of an integrative review, one can examine the identifying patterns, themes, and relationships of each article (Whittemore & Knafl, 2005). The process of visualizing the data and finding similarities among results of the articles has given me clarity to determine a theme from this review (Whittemore & Knafl, 2005).

Theme: Use of GAHT reduces suicidality among TGD youth: Findings across the studies have consistently shown strong evidence in favor of the effectiveness of GAHT in improving suicidality among TGD youth (Achille et al., 2020; Allen et al., 2019; Campbell et al., 2023; Green et al., 2022; Kuper et al., 2020; Tordoff et al., 2022). Prospective cohort studies demonstrated a substantial reduction in suicidality ranging from 73% to 42% when using GAHT (Kuper et al., 2020; Tordoff et al., 2022).

Theme: Use of GAHT increases feelings of self-worth and increases quality of life (Achille et al., 2020; Allen et al., 2019). Data was gathered through surveys of PHQ-2, PHQ-7, and GAD-7 which revealed an average 40% decrease in depression and suicidality (Green et al., 2022; Achille et al., 2020; Allen et al., 2019).

The Neuman Systems Model focuses on the individual as a holistic system and how interventions can help maintain or restore stability in the face of stressors and environmental influences (Nursing Theory, 2023). The themes that emerge across most articles emphasize the

interrelationships between the physiological, psychological, sociocultural, and developmental factors and the impact of stressors on the overall well-being and mental health of TGD youth (Nursing Theory, 2023). Two articles (Green et al., 2022; Campbell et al., 2023) collected survey data from transgender adolescents aged 13-17. These surveys included questions about depression and suicidality and compared those who had used GAHT to those who had not. Both articles discovered lower rates of depression and suicidality among the TGD youth who were using GAHT (Green et al., 2022; Campbell et al., 2023). Four articles (Achille et al., 2020; Allen et al., 2019; Kuper et al., 2020; Tordoff et al., 2022) investigated changes in suicidality among transgender youth, both before initiating GAHT and after using it for a certain duration. All four studies demonstrated a reduction in suicidality after the implementation of GAHT. Only a single study (Cantu et al., 2020) found no significant changes in suicidality among transgender youth after the use of GAHT. I consider this study to be an outlier because it exhibits certain limitations such as a small sample size, a brief follow-up period, and a lack of clarification regarding the timeline for initiating GAHT.

Discussion

This systematic review of seven studies found evidence that GAHT use is analogous with improvements in suicidality, depression, and quality of life among transgender youth. The purpose of this project is to continue the research into discovering the connection between TGD youth suicidality and use of GAHT. This project aims to bring awareness to the impact on mental health among TGD youth who have access to and use GAHT. Government policies should aim to improve the lives of TGD youth, and we need to close the gap with evidence-based research and reality. This review has employed Neuman's framework to provide guidance in comprehending how stressors affect the psychological, physiological, developmental, and sociocultural aspects

of TGD youth. This study is concerned with the whole person and determining the interventions that could reduce the stressors for TGD youth (Nursing Theory, 2023). More research is necessary to explore the relationship between GAHT and suicidality. Despite any limitations, the review indicates improvements in suicidality with the use of GAHT in TGD youth.

Recommendation from Findings

Ongoing and previous research on the improvement of suicidality among TGD youth through the utilization of GAHT has consistently undergone examination and validation. In previous systematic reviews (Baker et al., 2020; Chew et al., 2018), they have examined the impact of GAHT on mental health among TGD youth and have found the clinical intervention to be favorable (Turban, 2022). Even with proven research, laws banning TGD youth from accessing hormone therapy have continued to escalate. Senate bill 14 was effective on September 1, 2023, and prohibits providers from providing GAHT to TGD youth, prohibits insurance companies covering treatments, and prohibits public funding for gender-affirming care (Equality Texas, 2023). Even with major medical associations such as American Academy of Pediatrics, American Medical Association, the Endocrine Society, and the World Medical Association supporting gender-affirming care for TGD youth, these laws have continued to move forward (Spoto, 2023). As future providers, we are not currently able to provide gender-affirming care for these youth, therefore, we must continue to be involved and advocate for change. Since we are currently restricted, one intervention we must continue in our practice is to provide support for the mental health of our TGD youth patients. It's crucial that we actively listen and remain open to delivering optimal care for our TGD patients, addressing mental health issues as necessary and consistently providing supportive resources. The Trevor Project is a resource who supports the young LGBTQ community, ages 13-24, with a 24/7 crisis line with immediate support and help

(The Trevor Project, 2023). Another suggestion would be to actively champion the overturning of these unethical laws and to persist in conducting research that consistently reinforces the clinical evidence supporting improved mental health outcomes with GAHT. Remaining active in organizations who support the sanctity of the patient-physician relationship and considers the ban unethical, will allow a provider to have a unified voice with other physicians to remove obstacles that interfere with patient care (American Medical Association, 2021).

Limitations

One limitation to this systematic review is the lack of variation in study design. While a randomized controlled trial is the gold standard of research, it is unethical in this situation. Without RCT's, lawmakers consider the studies inadequate and experimental without enough evidence to support the benefits of gender-affirming care for youth (Gaffney, 2023). Although this subject of study may never be conducive to randomized trials, which many seek for higher levels of evidence, a means to address this limitation is to pursue additional interventional studies aimed at demonstrating the positive outcomes of GAHT use among TGD youth.

Another limitation within the research lies in the fact that a significant portion of the TGD youth participants often possess strong family support, which may not accurately reflect the broader TGD community. This support can skew mental health outcomes when trying to compare to those who do not have any family support. Since the participants were minors, then a parent or guardian had to sign a consent for the minor to be involved in the study. It can be assumed that if a parent or guardian is supportive of the TGD youth using GAHT, then the participants all had at least some measure of support from parents and caregivers, which creates an association of positive mental health outcomes. A suggested way to improve upon this limitation is by factoring in a survey to determine the level of support the TGD youth

participants feel during the study. This could be incorporated into the mental health outcome data to determine if the support of family impacts the suicidality of TGD youth during the use of GAHT.

Another limitation is sample size. Many of the longitudinal studies that followed TGD youth for a period had fewer participants. The topic of gender-affirming care is very sensitive to many, which may add limit to those who are willing to participate in such studies. While this is a delicate topic and patients may be reluctant to participate, clinical trial sectors need to be as inclusive as possible. There should be more talk and education to make the uncomfortable more comfortable. There is a mistrust of the health care system among the transgender and non-binary community members and relationship building will help bridge the trust gap.

Conclusions and Implications

The take home message from this review is TGD youth who receive GAHT exhibit reduced suicidality. There are no studies discovered that show hormone therapy harming the mental health or quality of life among TGD youth. During the current political state surrounding gender-affirming care for TGD youth, this study is important to show continued evidence-based interventions are beneficial to the well-being of our TGD youth. To enhance clinical practice and enable patient-nurse practitioner decisions to be free from political influence, it is imperative to persist in furnishing compelling evidence that necessitates the reversal of the unethical ban currently in effect.

Data and research are extremely critical to make a case for policy change. While we currently are unable to continue the research on GAHT for TGD youth in Texas, we must continue the research in other states that are still allowing for hormone intervention with TGD

minors. We must also continue with studies involving TGD individuals over the age of 18 to continue to provide data demonstrating the impact hormone therapy has on mental health and suicidality. Large, prospective longitudinal studies with sufficient follow-up and constructed controls will be important to gain statistical power. In the 88th Texas State legislative session, there are currently 141 bad bills that have been filed and are cycling through the process at an attempt to become law (Equality Texas, 2023). Bad bills threaten one's liberty and disregard our constitution. A total of 141 bad bills have cycled through the 2023 Texas legislative session with 48 directly involving TGD youth and healthcare access (Equality Texas, 2023). Continuing to work together to stop these bills from passing into law is crucial. Get involved, speak up, send letters to legislators, provide clinical practice evidence, and provide education to get these unethical bills removed.

References

Abreu, R. L., Sostre, J. P., Gonzalez, K. A., Lockett, G. M., & Matsuno, E. (2022). "*I am afraid for those kids who might find death preferable*": Parental figures' reactions and coping strategies to bans on gender affirming care for transgender and gender diverse youth. *Psychology of Sexual Orientation and Gender Diversity, 9*(4), 500–510. https://doi.org/10.1037/sgd0000495

Achille, C., Taggart, T., Eaton, N. R., Osipoff, J., Tafuri, K., Lane, A., & Wilson, T. A. (2020). Longitudinal impact of gender-affirming endocrine intervention on the mental health and well-being of transgender youths: Preliminary results. *International Journal of Pediatric Endocrinology*, *2020*(1), 1–5. https://doi-org/10.1186/s13633-020-00078-2

Allen, L. R., Watson, L. B., Egan, A. M., & Moser, C. N. (2019). Well-being and suicidality among transgender youth after gender-affirming hormones. *Clinical Practice in Pediatric Psychology*, *7*(3), 302–311. https://doi-org/10.1037/cpp0000288

American Medical Association. (2021, April 26). *AMA to states: Stop interfering in health care of transgender children*. https://www.ama-assn.org/press-center/press-releases/ama-states-stop-interfering-health-care-transgender-children

Baker, K. E., Wilson, L. M., Sharma, R., Dukhanin, V., McArthur, K., & Robinson, K. A. (2021). Hormone therapy, mental health, and quality of life among transgender people: A systematic review. *Journal of the Endocrine Society*, *5*(4), 1–16. https://doi-org/10.1210/jendso/bvab011

Boyle, P. (2022, April 12). *What is gender-affirming care? Your questions answered*. AAMC. https://www.aamc.org/news/what-gender-affirming-care-your-questions-answered

Campbell, T., Mann, S., Nguyen, D., & Van Der Meulen Rodgers, Y. (2023). Hormone therapy, suicidal risk, and transgender youth in the United States. *AEA Papers & Proceedings*, *113*, 551–555. https://doi-org/10.1257/pandp.20231057

Cantu, A. L., Moyer, D. N., Connelly, K. J., & Holley, A. L. (2020). Changes in anxiety and depression from intake to first follow-up among transgender youth in a pediatric endocrinology clinic. *Transgender Health*, *5*(3), 196–200. https://doi-org/10.1089/trgh.2019.0077

Chew, D., Anderson, J., Williams, K., May, T., & Pang, K. (2018). Hormonal treatment in young people with gender dysphoria: A systematic review. *Pediatrics*, *141*(4).

Endocrine Society. (2021, January 19). *Transgender health*. https://www.endocrine.org/advocacy/position-statements/transgender-health

Equality Texas. (2023, March 13). *Legislative bill tracker 2023.* https://www.equalitytexas.org/legislature/legislative-bill-tracker-2023/

Gaffney, T. (2023, September 15). *Randomized controlled trials are the "gold standard" of research - but a difficult fit for trans care*. STAT. https://www.statnews.com/2023/09/15/randomized-controlled-trials-gender-affirming-care/

GLAAD. (2023, May 1). *Glossary of terms: Transgender*. https://glaad.org/reference/trans-terms/?response_type=embed&gclid

Green, A. E., Dechants, J. P., Price, M. N., & Davis, C. K. (2022). Association of gender-affirming hormone therapy with depression, thoughts of suicide, and attempted suicide

among transgender and nonbinary youth. *Journal of Adolescent Health*, *70*(4), 643–649. https://doi.org/10.1016/j.jadohealth.2021.10.036

Human Rights Campaign. (n.d.). *Attacks on gender affirming care by state map*. https://www.hrc.org/resources/attacks-on-gender-affirming-care-by-state-map

Kuper, L. E., Stewart, S., Preston, S., Lau, M., & Lopez, X. (2020). Body dissatisfaction and mental health outcomes of youth on gender-affirming hormone therapy. *Pediatrics*, *145*(4), e20193006. https://doi.org/10.1542/peds.2019-3006

Melnyk, B. M., & Fineout-Overholt, E. (2019). *Evidence-based practice in nursing & healthcare: A guide to best practice*. Wolters Kluwers.

Morgenroth, T., & Ryan, M. K. (2021). The effects of gender trouble: An integrative theoretical framework of the perpetuation and disruption of the gender/sex binary. *Perspectives on Psychological Science*, 16(6), 1113–1142. https://doi.org/10.1177/1745691620902442

Movement Advancement Project. (2023, November 1). *Bans on best practice medical care for transgender youth*. https://www.lgbtmap.org/equality-maps/healthcare_youth_medical_care_bans

Newcomb, M. E., Hill, R., Buehler, K., Ryan, D. T., Whitton, S. W., & Mustanski, B. (2020). High burden of mental health problems, substance use, violence, and related psychosocial factors in transgender, non-binary, and gender diverse youth and young adults. *Archives of Sexual Behavior*, *49*(2), 645–659. https://doi-org/10.1007/s10508-019-01533-9

Nursing Theory. (2023, June 14). *Neuman's systems model*. https://nursing-theory.org/theories-and-models/neuman-systems-model.php

Pampati, S., Andrzejewski, J., Steiner, R. J., Rasberry, C. N., Adkins, S. H., Lesesne, C. A., Boyce, L., Grose, R. G., & Johns, M. M. (2021). "We deserve care and we deserve competent care": Qualitative perspectives on health care from transgender youth in the southeast United States. *Journal of Pediatric Nursing*, *56*, 54–59. https://doi.org/10.1016/j.pedn.2020.09.021

Rimes, K. A., Goodship, N., Ussher, G., Baker, D., & West, E. (2017). Non-binary and binary transgender youth: Comparison of mental health, self-harm, suicidality, substance use and victimization experiences. *The International Journal of Transgenderism*, *20*(2-3), 230–240. https://doi-org/10.1080/15532739.2017.1370627

Roselli C. E. (2018). Neurobiology of gender identity and sexual orientation. *Journal of Neuroendocrinology*, *30*(7), e12562. https://doi.org/10.1111/jne.12562

Smith, L. (2017). The relationship among theory, research, and practice. In R. Utley, K. Henry, & L. Smith (Eds.), *Frameworks for advanced nursing practice and research: Philosophies, theories, models, and taxonomies*. (pp. 31-40). Springer Publishing Company, Incorporated.

Spoto, M. (2023, March 24). *What transition-related health care is available to transgender kids in Texas? Here's what you should know.* The Texas Tribune. https://www.texastribune.org/2023/03/24/texas-transgender-kids-transition-related-health-care/

The Trevor Project. (2023, July 12). *24/7 suicide hotline for LGBTQ youth - get help now*. https://www.thetrevorproject.org/get-help/

Tordoff, D., Wanta, J. W., Collin, A., Stepney, C. T., Inwards-Breland, D., & Ahrens, K. (2021). 38.1 Mental health outcomes in transgender and gender nonbinary youth receiving gender-affirming care. *Journal of the American Academy of Child & Adolescent Psychiatry*, *60*(10), S224–S225. https://doi-org/10.1016/j.jaac.2021.09.298

Turban, J. (2022, October 11). *The evidence for trans youth gender-affirming medical care*. Psychology Today. https://www.psychologytoday.com/us/blog/political-minds/202201/the-evidence-trans-youth-gender-affirming-medical-care

Whittemore, R., & Knafl, K. (2005). The integrative review: Updated methodology. *Journal of Advanced Nursing, 52*(5), 546-553. https://doi.org/10.1111/j.1365-2648.2005.03621.x

Appendix A

Table 1

Evidence Synthesis Table

Author	Purpose	Frame-work	Design	Sample/ Setting	Methods	Findings	Quality Appraisal/ Limitations	Conclusions/ Application
Green, 2022	To look at the associations between access to GAHT and depression, suicide ideation, and suicide attempt among transgender and nonbinary youth.	N/A	Cross-sectional study.	11,914 youth identified as transgender or nonbinary during a survey that recruited youth via Facebook, Instagram, and Snapchat social media. A total of 9,019 youth had GAHT data out of the 11,914 transgender or nonbinary youth and 2,895 did not attest to receiving GAHT. Sample included a mix of gender identity, socioeconomic status, census region, and	Survey questionnaire and PHQ-2 was used to gather data. The data was managed with SPSS software. Chisquared tests used to compare those who used GAHT and those who wanted to. T-test used for mean age differences and logistic regression to determine the odds of depression and SI among	Among youth 13-17 years old, 40% had a lower rate of depression and suicidality with GAHT. Among the entire participants, 75% of youth that did not receive GAHT reported depression as compared to 60% of those receiving GAHT noted depression. 57% who did not receive GAHT reported considering suicide, while	**Quality Appraisal Rating:** 83% using the descriptive studies appraisal tool. **Limitations:** lower level of evidence due to the cross-sectional design, yet this topic cannot use RCT due to being unethical. Gender identities are more generalized and therefore larger probability samples with more specific inclusion would be beneficial.	**Conclusion:** This study has shown me that GAHT impacts depression and suicidality a significant amount among transgender and nonbinary youth. Studies such as these provide data regarding the importance of GAHT and how it decreases the incidence of depression and suicidality. **Application:** My PICOT question is attempting to look into how GAHT affects the risk of suicidality among

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				ethnicity. Location was 36% South, 27% West, 22% Midwest, and 15% Northeast.	those with GAHT and those without.	43% who were on GAHT reported considering suicide. 23% who were not on GAHT attempted suicide, while 14% who were on GAHT attempted suicide.	Additionally, this study did not include information regarding the age the GAHT was started.	transgender population. This study has shown the importance of gender affirming care and hormone therapy among our youth to reduce suicidality.
Campbell, 2023	To bring new evidence on the benefits of using HRT and the effects towards transgender youth.	N/A	Case control study consisting of a treated group who received GAHT, and a constructed control group that was created out of a stacked cohort of respondents that reported using GAHT	Total of 136,170 observations that included 42 cohorts with 11,330 treated group and 11,365 control group. Surveys from all 50 states, US territories, US military, and District of Columbia.	Retrospective panel questionnaire design was used. Information was placed into a stacked event study model and regressions weighted by synthetic unit weights.	Among transgender youth ages 14-17, there was a 5.7% reduction in suicide risk for those on HRT. This reduction is equivalent to a 14.4% decrease given the baseline mean. Among adults 18+, there is no significant difference among HRT	**Quality Appraisal Rating:** 88% using the case study appraisal tool. **Limitations:** The sample is nonrandomized and are demographically younger, less racially diverse, and more affluent. These demographics may not mirror the true	**Conclusion:** This study was able to demonstrate the impact that transgender youth feel when care is restricted from them. Being able to help at an earlier age shows how the transitions of transgender population and how it makes a difference in their mental health.

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			one year later than the treated group.			treated transgender and those without HRT. This finding is significant to show that adolescent years of 14-17 is where the largest effect is shown for suicidality decrease in transgender individuals who obtain HRT.	transgender population.	**Application:** With the ever-changing policies, laws, and restrictions among certain groups or populations, studies such as these can demonstrate the detrimental impact among certain individuals who are targeted. As healthcare providers, it is imperative that we continue to remember the individuals who are so negatively impacted when restrictions occur, and we need to stand up and voice our concerns to allow changes to be made and be able to treat our patients to gain the best possible outcome for them.

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Kuper, 2020	To look at the differences of depression, body dissatisfaction, and anxiety by age, gender, and pubertal stage. To look at symptoms of transgender during the first year of GAHT. To look at the differences in change over time by treatment characteristic.	N/A	Prospective cohort study.	From the start of 209 participants, 148 transgender youth between the ages 9-18, with a mean age of 14.9 had completed the follow up. Participants were a part of a multidisciplinary program in Dallas, TX. Before initiating care, participants and families completed a phone survey and provided a referral letter from a licensed therapist or counselor showing gender dysphoria.	Participants self-reported depressive symptoms and suicidality at the initial visit before the start of GAHT. Hormones were then initiated by the Endocrine Society Clinical Practice Guidelines and assessed by a multidisciplinary team. Participants then took a reassessment survey of their depressive symptoms approx. 1 year post the initiation of GAHT. Assessment tools used were BIS, SCARED, QIDS.	Suicide ideation dropped from 81% to 39% one year after initial treatment. Suicide attempts dropped from 16% to 4%, and nonsuicidal self-injury dropped from 52% to 18%.	**Quality Appraisal Rating:** 90% using the cohort study appraisal tool. **Limitations:** Missing data could have occurred due to data being collected within a busy clinical setting.	**Conclusion:** One of the largest longitudinal studies to demonstrate the benefits of GAHT among transgender youth. **Application:** Improvements in body dissatisfaction and suicidality have been proven in transgender youth with the use of GAHT. This study provides further evidence that hormone therapy is beneficial to transgender youth.

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Tordoff, 2022	How GAH and puberty blockers affect depression, anxiety, and suicidality among transgender and nonbinary adolescents.	N/A	Prospective cohort study.	An initial 169 were screened for the study. Many were excluded or ineligible which left a total of 104 transgender and nonbinary youth between the ages 13-20 who completed assessments on depression, anxiety, and suicidality. 84 youth completed a 3- month survey, 84 youth completed a 6-month survey, and 65 youth completed a 12-month survey. 63 transmasculin e youth, 27 transfeminine youth, 10 nonbinary or gender fluid, and 4 who did not	Approval obtained from Seattle Children's Hospital IRB. Consents were obtained from participants or caregivers. Guidelines followed STROBE reporting. Study was conducted with patients who seek care at Seattle Children's Gender Clinic. Initial intake via social worker, then in-person intake with medical provider. All TNB who completed both phone	Participants had 60% lower odd of moderate to severe depression when using GAHs or PBs, and 73% lower odds of self harm or suicidal ideation with GAH or PB. Youth who did not have PBs or GAHs had 2-3-fold higher reports of depressive and suicidality symptoms.	**Quality Appraisal Rating:** 80% using the cohort study appraisal tool. **Limitations:** There was likely a selection bias of TNB youths having supportive caregivers and more access to gender affirming care. Sample was mostly White TNB youth who reported being transmasculine. Needing reconsents for the 12-month study likely created attrition. Receipt of psychotropic medications were not included. Depression, anxiety, and SI was symptom-	**Conclusion:** = This study had a considerably high percentage of lowering the odds of suicidality in TNB youth who received GAHs. It shows the importance of GAC and the need to access it through providers so they may have less odds of mental health decline. **Application:** To further protect the mental stability of our TNB youth, these studies continue to prove the necessity of care to reduce suicidality and hopefully reduce the number of suicides. With the support of healthcare

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				know. 4 Asian, 3 Black, 9 Latinx, 6 Native American, 67 White, 9 who reported more than 1 race, and 6 who didn't answer. Study was completed by patients who went to Seattle Children's Gender Clinic.	and inperson intake were recruited for study. Surveys encompassed depression, anxiety, and suicidality, and were completed at 3, 6, and 12 months. Participants reconsented at 12-months due to funding via a different mechanism. Generalized estimating equations used for change from baseline. To estimate adjusted odds ratio, logit link function was used. Several sensitivity analyses		based on the participants self-reporting, rather than a mental health practitioner evaluating.	providers, the hope is to increase access to GAHs.

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					performed using the E-value calculation. Sensitivity analyses on subsets associated with PB and GAH outcomes. Used PHQ-8 instead of PHQ-9 due to question 9 was analyzed as a separate outcome.			
Achille, 2020	To study the impact that endocrine intervention has among transgender youth on the depression and quality of life scales.	N/A	Prospective cohort study.	An initial of 116 transgender participants entered the study. 95 of those were naïve to endocrine intervention. Out of that, there were 50 participants who completed the questionnaires	Approval obtained from Stony Brook University IRB, and participants taken from the Pediatric Endocrine Department. Questionnaires included CESD-R, PHQ-	Results are from wave 3. Mean baseline score of CESD-R decreased from 21.4 to 13.9. Mean score of PHQ-9 decreased from a t-score of 3.753 with a pvalue of <0.001. The	**Quality Appraisal Rating:** 80% using the cohort study appraisal tool. **Limitations:** The number of participants is too small. The participants all had at least some measure of support from parents and	**Conclusion:** These results have shown me that endocrine intervention among transgender youth impacts the rates of depression and suicidality and also improves quality of life for the participants. This continues to show the positive

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				over a 12- month period of time and therefore those 50 are what is reported in this study. Recruitment for the study was approved by Stony Brook University IRB for children, and the participants that were approached were from the Pediatric Endocrine Department. Those chosen were between ages 9-25 years, with the mean age being 16.2, plus or minus 2.2 years. The transgender youth participants consisted of 33 FTM, and 17 MTF.	9, and QLES-Q-SF. Questionnaires completed at 6- month intervals, up to 12-months in this current study. Each questionnaire was scored. To see the outcome of various endocrine treatments, regression analysis was used. For continuous outcomes, linear multiple regression and residualized change scores compared the outcomes relative to the baseline. The baseline	scores for quality of life were not as significant with an increased tscore of 1.758 and p-value of .085. Suicide ideation decreased from 10% at wave 1 to 6% at wave 3. It is important to note that in all studies, there was a larger improvement among MTF versus FTM. Theory is due to testosterone therapy takes longer than 6-12 months to become apparent, and testosterone suppression in MTF has an effect on	caregivers, which creates an association of positive mental health outcomes. The support of these transgender participants does not give a picture of all transgender youth. Additionally, the regular visits and support of the medical team can overall improve the mental health and quality of life among the participants.	effects that hormone interventions have among our transgender youth. **Application:** When youth do not feel as though they resonate with the sex they were assigned at birth, endocrine interventions continue to be used to improve the lives of those individuals. Medical interventions need to be continued and available to decrease suicidality and depression to help our transgender youth

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					variable control allowed determination of change against the intervention of hormone therapy. There were 3 waves of questionnaire, the baseline at one, 6-months of hormones at wave 2, and 12- months of hormones at wave 3. At wave 3, there were 47 participants using hormone intervention as compared to the original 50.	appearance quicker.		
Allen, 2019	To evaluate the effect	N/A	Longitudinal prospective cohort study.	A total of 47 eligible	Participants completed a	Suicidality scores	**Quality Appraisal Rating:** 80% using	**Conclusion:** This study included

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	GAHT has among transgender youth and their psychological well-being.			participants between the ages 13-20 were selected. The length of treatment study was 113- 1016 days, although most of the sample was 600 days or under. 13 youth started in 2015, 19 youth started in 2016, 14 youth started in 2017, then 1 in 2018. The starting point, pretest, was before the start of GAHT. A subgroup was of 8 who previously had GnRHa, and 39 who only had GAHT. Participants were those who presented to Children's Mercy Hospital Gender	questionnaire and screener at the initial diagnostic evaluation or during a followup visit before GAHT is started. Those who were already on GnRH had a new baseline assessment before GAHT. Measurements include an ASQ instrument and was scored based on their response. Sensitivity and specificity of the ASQ is 97.6% and 65.6% respectively. Prior to March	decreased significantly between pretest and final test with GAH. Before participants began GAH, at least one item of suicidality was endorsed. After GAH, almost no symptoms of suicidality were endorsed. GWBS increased from before GAH to after GAH. The GnRHa + GAH cohort accredited no suicidality after treatment.	the cohort study appraisal tool. **Limitations:** Levels of support was not taken into consideration, and it is assumed there was a high level of support because parents had to provide permission for their children to receive GAHT. Can't be generalizable to TNB who have no support. The severity of gender dysphoria was not taken into account to evaluate the impact of treatment. It would be beneficial to asses outcomes over a varying amount of time	quality of life benefits to GAHT with the well-being assessment, therefore I liked how one can see the pattern of suicidality decreasing and quality of life increasing with treatment. **Application:** There is a potential for providers to resonate with this study when they think of the whole picture and quality of life for the transgender population. Hopefully GAC will become more accessible in the future.

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				Pathway Services. 39 were White, 2 Biracial, 3 Latinx, 1 Black, 1 American Indian, 1 Asian.	2017, only three items of the ASQ were assessed rather than four therefore the missing data is considered random because unknown bias was unlikely. Expectation maximization was used to input the values. The GWBS was used with a numbered response scale that measures both general well-being and general health. Scored items are transformed linearly. For ASQ, the		after GAHT has started to determine at what point mental health improves. This study did not include specific factors such as depression and anxiety. This study also lacks a control group which would be unethical, yet including data from appropriate comparison groups would strengthen the results. The participants were mostly White and therefore it is not diverse. This study did not distinct participants for nonbinary gender identities.	

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					Cronbach's alpha was .81 and both pretest and final test. For GWBS, Cronbach's scale was .81 at pretest and .82 at final. Cronbach's value of greater than 0.8 shows reliability and consistency. The final test was taken at least 3 months after starting GAHT. Two mixed repeatedmeas ures ANCOVAs were used for the scores of pretests and final test.			
Cantu, 2020	To examine the changes in suicidality and mental health	N/A	Prospective cohort study.	80 transgender youth between the ages 11-18 who seek care at an	PHQ-9 and GAD-7 were both completed by participant	The difference in PHQ-9 and GAD-7 scores between initial	**Quality Appraisal Rating:** 70% using the cohort study appraisal tool.	**Conclusion:** This is the first study to show me there

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	among transgender youth from initial appointment to first follow up post hormone therapy initiation.			academic medical center in northwestern U.S. Participants were included if they both attended an initial visit and follow up visit. Average time between visits were 4.7 months. At follow up visit, 42 participants had initiated hormone treatments. The study was approved through the Human Subjects Institutional Review Board.	at each visit. Retrospective chart review extracted the data results, affirmed gender, medical interventions, and distance to the clinic and therefore informed consent was not necessary since no other identifying data was collected. Paired sample t-tests were used to examine the changes from initial to follow up appointments. Independent sample t-tests examined the differences between groups. ANOVA utilized to examine potential moderators.	visit and follow up visit after hormone therapy treatment did not reveal any significant difference. Suicidality between initial visit and follow up visit for those who did initial GAHT and those who did not had no significant difference between them.	**Limitations:** The data was from one single clinic, the sample size was small, and only an initial and follow up visit was used. The time frame was too short, and we don't know when the GAHT had been initiated between the two visits.	were no differences in suicidality among transgender youth after hormone therapy was initiated. Yet I realize there are many limitation factors that may skew results compared to other studies. What this study does show is the possibility of suicidality improving once visible effects to hormone therapy take place, which is a longer period of time. **Application:** This study demonstrates to me the need for honest conversations to my transgender patients and how

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								mental health takes time to improve with hormone therapy. Expectations should be discussed in the clinic setting for open communication and support.

ASQ = ask suicide-screening questions
CESD-R = center for epidemiologic studies depression scale
FTM = female to male
GAH = gender-affirming hormones
GAHT = gender-affirming hormone therapy
GAMD = gender-affirming medical care
GnRH = gonadotropin-releasing hormone
GWBS = general well-being scale
IRB = Institutional Review Board
LOE = level of evidence
MTF = male to female
PB = puberty blockers
PHQ-9 = patient health questionnaire modified for teens
QLES-Q-SF = quality of life enjoyment and satisfaction questionnaire
RCT = randomized control trials
SI = suicide ideation
STROBE = Strengthening the Reporting of Observational Studies in Epidemiology
TNB = transgender or nonbinary youth

Appendix B

Figure 1

Identification and selection process shown in a PRISMA diagram.