

**Effects of Gender-Affirming Care on Depression and Suicidality in Transgender and  
Gender Non-Conforming Youth: A Systematic Review**

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### Abstract

Due to the increased burden of depression and suicidality carried by the transgender and gender non-conforming youth population, legislative patterns limiting gender-affirming care, and recent increase in primary research on gender-affirming care in youth, a systematic review was conducted to address these trends. This review, guided by the Perceived Chronic Social Adversity Theory, began by searching databases PubMed, CINAHL, and Ovid Medline for full text, peer reviewed articles on the topic published between 2017 and 2022. Utilizing the Newcastle-Ottawa Scale, only studies with a score of 7 and above, indicating high quality, were included. An evidence synthesis table was used to extract pertinent information from the included articles. Data analysis was conducted to find overarching themes between the intervention, gender-affirming care, and the measured outcomes, depression and suicidality, in transgender and gender non-conforming youth. Two themes were synthesized from the evidence: *gender-affirming care is associated with decreased depressive symptoms/suicidality and support of gender identity is associated with less psychological distress*. Based on these findings, healthcare providers should educate legislators as well as the community of this evidence, oppose bills that limit healthcare access, oppose bills that increase social adversity among this population, and support the use of the evidence-based guidelines already published by numerous professional medical organizations.

*Keywords:* transgender, gender non-conforming, youth, gender-affirming care, depression, suicidality

## **Effects of Gender-Affirming Care on Depression and Suicidality in Transgender and Gender Non-Conforming Youth: A Systematic Review**

Research has well established the disproportionate risk for suicide carried by the transgender and gender non-conforming (TGNC) community. Studies across the United States, Canada, and Europe have reported suicide attempts (SAs) of TGNC individuals as ranging from 22% to 43% (Bauer et al., 2015). TGNC youth are at an even higher risk, with SA rates being 7 times higher among minors under 18 years of age and 7.6 times greater than their cisgender peers (Kingsbury et al., 2022; Mak et al., 2020). Despite latest guidelines recommending treatment of TGNC youth with gender-affirming care, varying from social support, puberty blockers to hormone therapy, 22 states to date have introduced or passed legislation that bans the provision of such care to anyone under the age of 18, even with parent or guardian consent (American Psychological Association, 2015; Hembree et al., 2017; Hughes et al., 2021). The astoundingly high suicide rates in this population, the current legislative trends, and a recent increase in primary research in this area called for a thorough, systematic review of research literature examining the effects of gender-affirming care on depression and suicidality of TGNC youth.

### **Background and Significance**

The emotional discomfort experienced when an individual's sex assigned at birth is incongruent with this person's sense of self is referred to as gender dysphoria (American Psychiatric Association, 2013). The goal of most treatments is to improve quality of life by reducing gender dysphoria, which may worsen in anticipation and development of secondary sexual characteristics incongruent with gender identity (Geist et al., 2021). For youth, gender-affirming care consists of social and hormonal treatment, including use of chosen name, chosen pronouns, preferred dress, puberty blockers, and gender-affirming hormones (American

Psychiatric Association, 2015; Geist et al., 2021; Hembree et al., 2017). Determining proper treatment of TGNC youth is especially important due to their increased vulnerability to negative mental health outcomes (Geist et al., 2021).

When compared to their peers, TGNC children and adolescents are more likely to experience depression, anxiety, report self-harm, substance dependence, SI and SA (Reisner et al., 2016; Reisner et al., 2015). In fact, compared with their cisgender peers, transgender adolescents are 5 times more likely to experience SI and 7.6 times more likely to attempt suicide (Kingsbury et al., 2022). A startling survey in California found over one-third of transgender (trans) youth reporting SI in the past year (Perez-Brumer et al., 2017). With such a large mental health disparity among this population, many professional organizations including the American Medical Association (AMA), American Psychological Association, American Psychiatric Association (APA), and the Endocrine Society released position statements in support of gender-affirming care (AMA, 2021; APA, 2020; American Psychological Association, 2015; Hembree et al., 2017). Despite these statements, numerous states have introduced bills to limit gender-affirming care to varying degrees, from Alabama and Arkansas banning so called “puberty blockers” to multiple states requiring individuals to use bathrooms which align with their sex assigned at birth (Barnett et al., 2018; AR, HB 1570, 2021; AL, SB 184, 2021). Considering these conflicting standards, this review aims to determine the effects of gender-affirming care on depression and suicidality among TGNC youth.

## **Review of the Literature**

The extent of literature regarding the effects of gender-affirming care for TGNC youth on depression and suicidality has greatly increased in the last two years, likely due to several US states introducing legislation limiting this type of care in direct opposition to already established

treatment guidelines. A growing amount of recent literature, including 3 studies conducted within the past 3 years, specifically considers the effects of gender-affirming care in youth on depressive symptoms and suicidality. A longitudinal study following 47 TGNC individuals at a large Midwest children's hospital, ranging from 13 to 20 years old, found that suicidality scores significantly decreased, while general well-being scores significantly increased, after receiving gender affirming hormones (Allen et al., 2019). Another study collected data from an online survey of 11,914 TGNC youth (ages 13-24) across the US and found that gender-affirming hormone therapy was associated with lower rates of recent depression and SI in the past year, but without a statistically significant association with SA (Green et al., 2021). Yet another prospective cohort study of 104 TGNC youth (ages 13-20), found gender-affirming care to be associated with 60% lower rates of moderate to severe depression and 73% lower rates of suicidality at a 12-month follow up (Tardoff et al., 2022)

Professional medical organizations, including the American Academy of Pediatrics (AAP), the American Academy of Child and Adolescent Psychiatry (AACAP), the Endocrine Society, the AMA, the American Psychological Association, and the APA, have published evidence-based guidelines on gender-affirming care (AACAP, 2019; AMA, 2021; APA, 2020; American Psychological Association, 2015; Hembree et al., 2017; Rafferty, 2018). Several of these guidelines define age-appropriate and developmentally appropriate care, meaning puberty blockers (considered reversible) are only considered for youth in the second of the 5 Tanner puberty stages (Hembree et al., 2017; Rafferty, 2018). Gender-affirming hormones (considered partially reversible) can be considered at age 16, while potential access to nonreversible gender-affirming top surgery (mastectomy) is typically considered for adults, though may be on a case-by-case basis for older adolescents (Hembree et al., 2017; Rafferty, 2018). The Endocrine

Society does not recommend genital surgery for minors (Hembree et al., 2017). Prior to puberty, reversible gender-affirming care is defined by these medical organizations as support in the process of gender development (AACAP, 2019; AMA, 2021; APA, 2020; American Psychological Association, 2015; Hembree et al., 2017; Rafferty, 2018).

Uninformed by these guidelines, legislative trends continue to push against gender-affirming care. Many states have introduced bills limiting puberty blockers and gender-affirming hormones, including Arkansas HB 1570 and Alabama SB 184 that threatens felony prosecution to doctors, parents, and anyone else that provides gender-affirming care. In addition to limiting pharmacological transition, multiple states have introduced bills limiting social transition. Florida Governor Ron DeSantis and Florida Surgeon General Joseph Ladapo issued guidance to the Florida Board of Medicine to prevent gender-affirming care, including even social transition (Endocrinology Advisor, 2022). As of 2018, so called bathroom bills requiring individuals to use bathrooms which align with their sex assigned at birth have been introduced into 19 state legislatures (Barnett et al., 2018). Despite a recently expanding source of primary research evidence and the discrepancies between legislative trends and established treatment guidelines, a systematic review of the latest research was not found.

### **Purpose and Clinical Question**

With a growing trend of legislative involvement in TGNC individuals' care, a discrepancy between legislation and professional organizations' position statements, societal discord surrounding the issue, and more primary research evidence surfacing, a systematic review was due. The goal of this review was to appraise the latest evidence, summarize the effects of the intervention, and ultimately assist in future healthcare and policy decisions. In TGNC youth, how does gender-affirming care affect depression and suicidality?

## **Conceptual Framework**

The Perceived Chronic Social Adversity Theory postulates that recurrent, cumulative, emotionally driven, and stressful events, in the context of interpersonal relationships, can lead to major mental suffering (Zhang et al., 2017). It defines social adversity as events that have a negative effect on the values of trust, power, esteem, and intimacy (Zhang et al., 2017). The theory asserts that these events may be perceived as overwhelming and thereby linked to traumatic reactions (Zhang et al., 2017). The theory groups these social events into 3 main categories: social exclusion or alienation, being overly controlled, and social competition weakness (Zhang et al., 2017). This is especially relevant to TGNC youth, who have increased vulnerability due to several factors. First, it is developmentally appropriate for adolescents to place an even greater emphasis on social interactions and acceptance in peer relationships than other age groups (Boland et al., 2022). Second, sexual minority adolescents are more likely to experience social adversity (Amos et al., 2020). Lastly, the ongoing public debate surrounding TGNC individuals' rights and access to care further alienates them from their peers and decreases their autonomy (AL, SB 184, 2021; AR, HB1570, 2021; Barnett et al., 2018; Hughes et al., 2021). The formulation of the clinical question, methodology, and evidence synthesis was based upon this theory. Due to their developmental stage, their minority status, and recent public debate and legislative trends, the Perceived Chronic Social Adversity Theory explains the increased risk of TGNC youth for negative mental health outcomes and supports the exploration of the effects of gender-affirming care on depression and suicidality in this population.

## **Methods**

### **Project Design**

This systematic review of the literature, guided by the Perceived Chronic Social Adversity Theory, began by formulating a narrow clinical question in PICO format. The review included exhaustive, transparent, and repeatable searches across multiple databases.

### **Search Strategy**

The databases PubMed, CINAHL, and Ovid Medline were searched for primary, peer-reviewed research studies involving the mental health effects of gender-affirming care on TGNC youth published in English between January 2017 and September 2022. The following search terms were used: transgender, gender nonconforming, gender dysphoria, gender-affirming care, gender-affirming hormones, puberty block\*, suicid\*, and depression. Age limits included the terms youth, child, children, teenager\*, and adolescen\*. Additionally, ancestry searching was used to screen for pertinent studies referenced in other work.

### **Selection Process**

The selection process began with a title review, then abstract review, before a final full text review. The articles underwent a tiered elimination system, excluding duplicates, those not involving youth (defined as all participants under the age of 18 or a mean age under 24 years), those unrelated to gender-affirming care, and those unrelated to depression and/or suicidality. See Figure 1 for flow diagram of article selection process. Articles were organized in Zotero, a reference management software. The Newcastle-Ottawa scale (NOS) was used to assess the quality of the articles, based on the selection of study groups, the comparability of the groups, and the ascertainment of the outcome of interest (Wells et al., 2021). Only studies with a score of 7 and above, out of a maximum score of 9, indicating high quality, were included (Wells et al., 2021). See Appendix A for the NOS quality appraisal tool.

### **Synthesis Method**



The evidence synthesis table was used to extract pertinent information from the included articles, including the stated purpose, conceptual framework, design, sample/setting, method, study findings and worth to practice. Data analysis was conducted to find overarching themes between the intervention, gender-affirming care, and the measured outcomes, depression and suicidality, in TGNC youth. By viewing the pertinent information from all the articles within the table, general themes were identified.

## **Results**

### **Search Results**

The search yielded a total of 233 articles. Of these, 16 duplicates were removed. The remaining articles were screened first by title, then abstract, and lastly by full text, resulting in the removal of 4 articles not involving youth, 136 articles not involving gender-affirming care, and 67 articles not involving depression and/or suicidality. The remaining 10 articles were appraised using the Newcastle-Ottawa Quality Assessment Scale and three articles with a score below seven were removed. Details of the search strategy and selection process are in Figure 1.

### **Characteristics of Studies**

Of the studies retained for review, 6 of the seven were published between 2020-2022 (Green et al., 2022; Hisle-Gorman et al., 2021; Kuper et al., 2020; Sorbara et al., 2020; Tordoff et al., 2022; Turban et al., 2022); 1 of the 7 was published in 2018 (van der Miessen et al., 2018). Five were cross-sectional (Green et al., 2022; Kuper et al., 2020; Sorbara et al., 2020; Turban et al., 2022; van der Miesen et al., 2018) and 2 were cohort studies (Hisel-Gorman et al., 2021; Tordoff et al., 2022). Sample sizes ranged from 104 (Tordoff et al., 2022) to 21,598 (Turban et al., 2022) for a total sample size across studies of 38,268 TGNC individuals. Age groups ranged from 9 (Hisel-Gorman et al., 2021) to 35 years old (Turban et al., 2022). Race/ethnicity was not

reported in two studies reviewed (Hisel-Gorman et al., 2021; Kuper et al., 2020). In the other 5 studies, the samples were vastly non-Hispanic white (Green, 2022 et al., Sorbara et al., 2020; Tordoff et al., 2022; Turban et al., 2022; van der Miesen et al., 2018). The stated purpose of all retained studies involved the relationship between gender-affirming care in youth and mental health outcomes. Six of the seven measured mental health outcomes in youth, while Turban et al. (2022) measured the relationship between access to gender-affirming care in youth with mental health outcomes in adulthood. All characteristics described are further summarized in Table 1.

### **Synthesis of Findings Across Studies**

Findings across studies center around two major themes; *gender-affirming care is associated with decreased depressive symptoms/suicidality* and *support of gender identity is associated with less psychological distress* (See Table 1). Across six of the seven studies, gender-affirming care was associated with improved mental health outcomes (Green et al., 2022; Kuper et al., 2020; Sorbara et al., 2020; Tordoff et al., 2022; Turban et al., 2022; & van der Miesen et al., 2018). Only one study, Hisle-Gorman (2021), found no change in mental health in TGNC youth after initiating gender-affirming pharmaceutical intervention. Fifty-seven percent of studies measured outcomes within one year of treatment (Green et al., 2022; Hisle-Gorman et al., 2021; Kuper et al., 2020; Tordoff et al., 2022), while 43% measured lifetime reports (Sorbara et al., 2020; Turban et al., 2022).

Additionally, of the four studies that discussed social support in the context of gender identity, all found a correlation between perceived support and better mental health outcomes (Green et al., 2022; Tordoff et al., 2022; Turban et al., 2022; van der Miesen et al., 2018). Green et al. (2022) identified that most sampled youth receiving gender-affirming care had parental support of their treatment, which may contribute to the decreased rates of depression and

suicidality, while van der Miesen et al. (2018) found a correlation between poor peer relations and worse mental health outcomes. Tordoff et al. (2022) and Turban et al. (2022) both found of those receiving gender-affirming care, individuals who had a supportive social transition were associated with decreased depressive symptoms.

The results found across the studies are consistent with the Perceived Chronic Social Adversity Theory which serves as the framework for this review (Zhang et al., 2017). It is common knowledge that minors require parental/guardian consent for treatment, therefore it is natural to conclude that most TGNC youth receiving gender-affirming care perceive parental support of their gender identity. Additionally, receiving puberty blockers and gender-affirming hormones can ease their social transition as their physical appearance grows more congruent with their identity. Acceptance of the individual's gender identity may thereby decrease their experiences of social adversity that lead to psychological difficulties (Zhang et al., 2017).

### **Discussion**

Due to the increased burden of depression and suicidality carried by the TGNC community, legislative patterns limiting gender-affirming care, and recent increase in primary research on gender-affirming care in youth, a systematic review was conducted to address these trends. Of 233 articles found using the keywords stated previously, seven met inclusion criteria and made up the final sample. Eighty-six percent of the studies reviewed found an association between gender-affirming care and improved mental health outcomes. Two themes were synthesized from the evidence: *gender-affirming care is associated with decreased depressive symptoms/suicidality* and *support of gender identity is associated with less psychological distress*. These themes are congruent with the perceived Chronic Social Adversity Theory in that

gender-affirming care decreases exposure to chronic social stressors that lead to psychological difficulties (Zhang et al., 2017).

### **Recommendations from Findings**

The results from this review are not necessarily surprising, as they are consistent with the framework guiding the study, however they are in direct opposition to current legislation attempting to limit gender-affirming care claiming that it is largely harmful to the mental health of TGNC youth. The Perceived Chronic Social Adversity Theory asserts that providing gender-affirming care addresses gender dysphoria by increasing congruence between an individual's physical body and identity, by way of gender-affirming hormones, or decreasing distress surrounding the development of secondary sex characteristics, by way of puberty blockers. Additionally, the theory states that gender-affirming care may also be effective by improving the individual's sense of acceptance and thereby reducing perceived adversity. The findings from the studies reviewed support this theory.

Different findings, such as those from Hisle-Gorman et al. (2021) that found no association between gender-affirming care and improved outcomes, might be attributed to study design. Hisle-Gorman et al. (2021) measured the association between TGNC youth who received gender-affirming care, mental healthcare utilization, and psychotropic medication use via chart review. TGNC youth's mental health care visits were identified using the International Classification of Diseases (ICD) codes that categorize various conditions, including affective, psychotic, substance use, and miscellaneous disorders (Hisle-Gorman et al., 2021). Psychotropic medications were identified by name from the individuals' medical records (Hisle-Gorman et al., 2021). There was no use of standardized tools, such as the Patient Health Questionnaire-9 (PHQ-9) or note reviews for direct measurement of depressive symptoms or suicidality over time.

Additionally, the median period following gender-affirming interventions was short (only 1.5 years) (Hisle-Gorman et al., 2021). The absence of a significant decrease in utilization of mental healthcare and psychotropic medication therefore might be due to the purposeful maintenance of the therapeutic alliance throughout a significant life transition.

Findings across 86% of the studies reviewed were consistent with an association between gender-affirming care and improved mental health outcomes for this population. These findings, coupled with the assertions of the Perceived Chronic Social Adversity Theory, should influence the actions of legislators and healthcare providers. Legislation that limits access to gender-affirming care is limiting potentially lifesaving care. Furthermore, policies that increase social stigma such as the bathroom bills (Barnett, 2018), might also lead to negative mental health outcomes by way of increasing social adversity and decreasing perceived support of gender identity.

Healthcare providers must review this growing body of evidence and increase their confidence in speaking to TGNC youth about their treatment options. The evidence from this review is consistent with the guidelines published by six professional medical bodies (AACAP, 2019; AMA, 2021; APA, 2020; American Psychological Association, 2015; Hembree et al., 2017; Rafferty, 2018). However, this review only considers the mental health outcomes of depression and suicidality. Although suicidality is generally considered an emergency, healthcare providers should note that the studies reviewed did not look for potential long-term physical health side effects of gender-affirming care.

### **Limitations**

Studying the relationship between gender-affirming care and depression/suicidality in youth presents three main limitations. When considering a systematic review of this topic,

balancing the two principals of autonomy and justice becomes especially vital despite limiting the level of evidence studied. Creating a randomized controlled trial, with gender-affirming care as the variable, would be difficult and unethical based on the core ethical principles of autonomy and justice (Melnyk & Fineout-Overholt, 2019). A patient seeking care that identifies as TGNC should have healthcare autonomy and the healthcare provider should uphold the value of justice. Justice within this context states that care should be distributed without prejudice and fairly among people (Melnyk & Fineout-Overholt, 2019). Whether the healthcare provider believes the intervention to be beneficial or harmful, providing one set of patients with this intervention and refusing the other would be unethical. This is amplified when considering the measured outcomes: depression and suicidality. Although this limits the level of evidence available for review, it is a necessary limitation to impose.

The second limitation of this review is that the association with gender-affirming care and improved mental health outcomes could be related to having parental support of gender identity. Research shows that even more modest indicators of parental support for chosen identity, such as chosen name use, is associated with reduced mental health risks in TGNC youth (Russell et al., 2017). The requirement of parental consent for minors receiving gender-affirming care implies a level of acceptance of the individual's gender identity, which can reduce psychological distress based on the Perceived Chronic Social Adversity Theory (Zhang et al., 2017). To improve upon this limitation, studies measuring the effects of gender-affirming care should separately control for perceived parental support of gender identity.

The last major limitation of this review centers around the poor racial/ethnic diversity among the sampled population. The overwhelming majority of participants were non-Hispanic white in 5 of the studies (Green, 2022 et al., Sorbara et al., 2020; Tordoff et al., 2022; Turban et

al., 2022; van der Miesen et al., 2018). The remaining 2 studies did not report race/ethnicity, (Hisel-Gorman et al., 2021; Kuper et al., 2020). The correlation between decreased depression and suicidality among white TGNC youth receiving gender-affirming care therefore may not be easily applied to non-white individuals. Additional research focusing on racial/ethnic minorities within the TGNC youth population should be done to strengthen the data.

### **Conclusions and Implications**

The connection between gender-affirming care and decreased rates of depression and suicidality among TGNC youth has implications spanning legislative concerns, healthcare provider guidelines, and should prompt a further look into long-term physical effects of the treatments. During a time when gender-affirming care has become an open policy debate, the focus on evidence-based outcomes is vital. The legislative trend of not only limiting gender-affirming care but also propagating the social adversities that contribute to the psychological distress experienced by TGNC youth, will have negative mental health consequences. Healthcare providers should increase their confidence in following the most up-to-date evidence that supports the already published guidelines from both the APA and the Endocrine Society (APA, 2015; Hembree et al., 2017). Though this review focuses on the priority outcomes of depression and suicidality, further research is needed to adequately weigh the long-term physical effects of gender-affirming care.

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**Table 1***Evidence Synthesis Table*

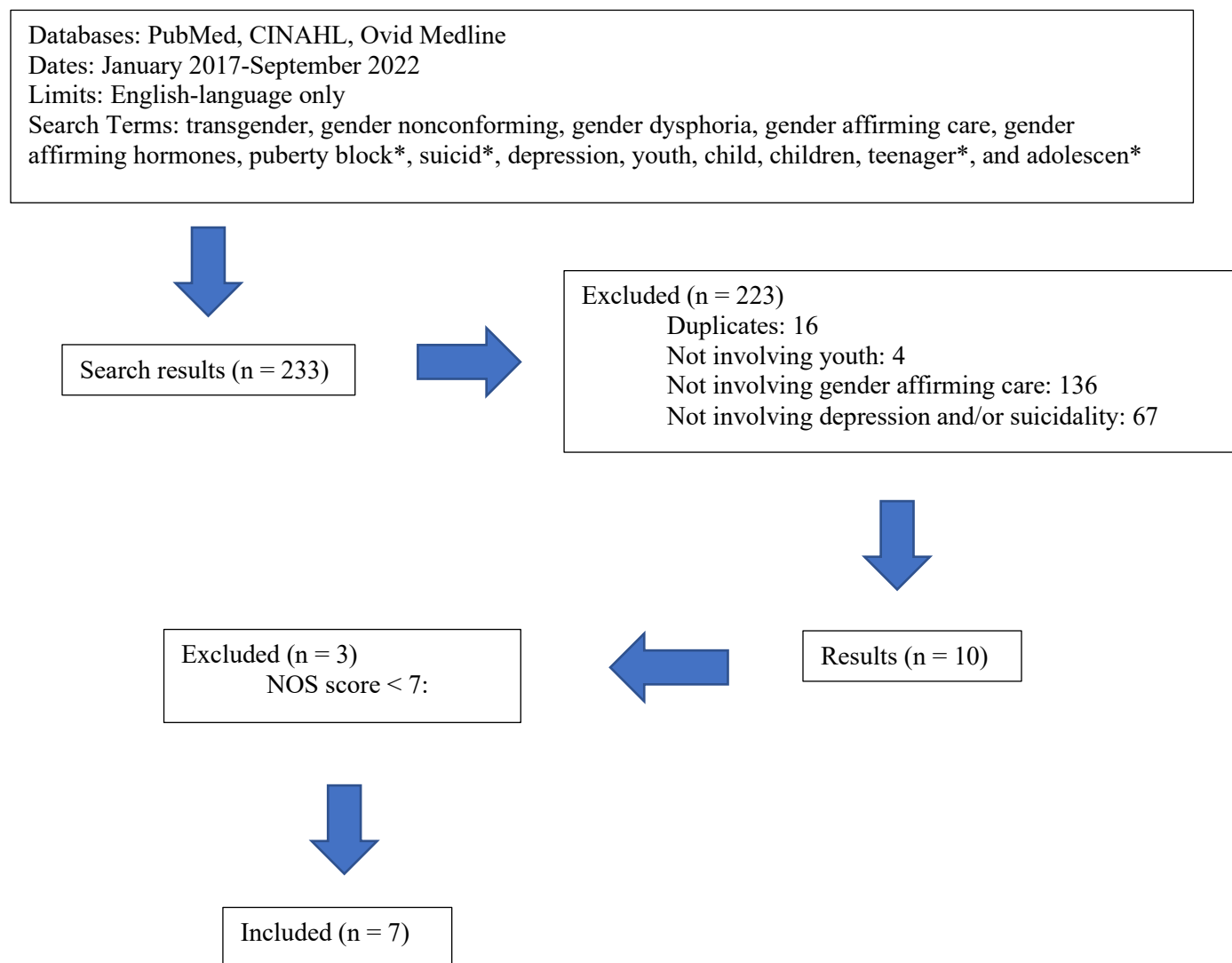
Author	Purpose	Frame- work	Design	Sample/ Setting	Methods	Findings	Quality Appraisal/ Limitations	Conclusions/ Application
Green, 2022	Determine association between receiving GAH and self-reported suicidality, depression among TGNC youth	N/A	Cross-sectional; respondents targeted via social media; online questionnaire	11,914 TGNC (13-24 yo); from unique IP address	Use of 142-item online questionnaire & PHQ-9 to assess for SI, parental support of identity, exposure to conversion efforts	GAH associated w/ lower odds of recent depression, SI in past year, SA in past year for ages 13-17 ( $p < .001$ for all associations)	7/9; truly representative of psychosocial groups; relied on self-report	GAH in ages 13-17 associated w/ less recent depression, and lower suicidality (SI/SA) in past year
Hisle-Gorman, 2021	MH care & Rx utilization among TGNC youth; patterns following GAMC	N/A	Retrospective cohort study using military healthcare data	3,754 TGNC adolescents; 6,603 cisgender siblings	compared MH dx, visits, Rx pre- & post-initiation of GAMC	TGNC youth more likely to have MH dx, MH services, Rx; GAH/PB MH utilization did not change, Rx increased	7/9; relied on self-report; limited to military families; did not disclose full methodology	No association w/ GAMC & decreased MH services utilization; increased association w/ Rx & GAMC
Kuper, 2020	differences in body dissatisfaction, depression, anxiety; changes in youth s/s over first year receiving GAH	N/A	Cross-sectional; Self-report surveys completed at initial presentation & 1 year follow up	148 participants ages 9-18; mean age 14.9; at multidisciplinary clinic in Dallas, Tx	Body Image Scale; Quick Inventory of Depressive Symptoms; Screen for Child Anxiety Related Emotional Disorders	Large improvements in body dissatisfaction; small to moderate improvements in depressive s/s; small improvements in anxiety s/s	8/9; geographically limited sample	Improvements in depressive s/s at 1 year follow up in trans youth treated w/ GAH

Author	Purpose	Frame- work	Design	Sample/ Setting	Methods	Findings	Quality Appraisal/ Limitations	Conclusions/ Application
Sorbara, 2020	age of GAMC & MH	N/A	Cross- sectional chart review of pts presenting for GAMC; Standardize d template questions about history, treatment goals, present MH status; HEADSS	300 youth at Canadian trans youth clinic (14- 17yo)	Research Electronic Data Capture tools; demographic data abstracted; SPSS 25.0 used for statistical analyses	Older age & later pubertal stage at time of GAMC associated w/ increased Rx & increased depression & anxiety rates	8/9; utilized secure records; limited demographic to geographic region	GAMC in later pubertal stages compared w/ earlier stages associated w/ higher rates of depression
Tordoff, 2022	MH changes over first year of receiving GAH; PB & GAH association w/ changes in depression, anxiety, suicidality	N/A	Prospective observation al cohort study	104 youth (ages 13- 20) assessed at Urban multidiscipl inary gender clinic in Seattle	PHQ-9, GAD-7 at baseline, 3, 6, 12 months	60% lower odds of depression & 73% lower odds of suicidality in youth that initiated PB & GAH compared w/ those that did not; no association btw PB & GAH w/ anxiety	8/9; secure record, structured interview, adequacy of follow-ups; geographically limited sample	PB & GAH associated w/ lower rates of depression & SI in youth
Turban, 2022	access to GAH during adolescence & MH outcomes in adulthood	N/A	cross- sectional nonprobabili ty study	21,598 trans adults who desired GAH in the U.S. (18-35 yo)	divided into 4 categories: wanted but never accessed GAH, accessed GAH in early adolescence (14-16 yo), accessed GAH in late adolescence (16-18	GAH in early adolescence associated w/ lower odds of past month severe psychological distress & past year SI when	7/9; truly representative of psychosocial groups; relied on self-report	GAH in adolescence associated w/ better MH outcomes (SI, psychological distress) than GAH in adulthood & no GAH; no association w/ MH outcomes btw

Author	Purpose	Frame- work	Design	Sample/ Setting	Methods	Findings	Quality Appraisal/ Limitations	Conclusions/ Application
					yo), & accessed GAH in adulthood (18+ yo); Kessler-6 Psychological Distress Scale; SI in year prior to survey, SI w/ plan in year prior to survey, SA in year prior to survey, & SA requiring hospitalization in year prior to survey	compared w/ no GAH; GAH during adolescence lower psychological distress & SI than GAH in adulthood; GAH during early adolescence showed no difference when compared to late adolescence		GAH in early adolescence vs late adolescence
Van der Miesen, 2018	Effect of PB on trans youth	Minority stress model; sexual minorities experience chronic stressors related to identity stigmatization	Cross-sectional study	272 trans adolescents referred to specialized clinic who had not received any GAMC (mean age 14.5); 178 trans adolescents receiving PB (mean age 16.8); 651 cisgender adolescents (mean age 15.4);	Youth Self Report; Child Behavior Checklist	Trans adolescents w/o treatment scored higher on internalizing & suicidality than trans w/ PB & cisgender groups; no difference of SI found btw trans w/ PB & cisgender group	8/9; secure record, self-report; geographically limited sample	Trans adolescents w/o PB have higher rates of SI than their cisgender peers; Similar rates of SI among trans adolescents on PB & cisgender peers





**Figure 1***Search Strategy and Selection Process*

## Appendix A

### NEWCASTLE - OTTAWA QUALITY ASSESSMENT SCALE CASE CONTROL STUDIES

Note: A study can be awarded a maximum of one star for each numbered item within the Selection and Exposure categories. A maximum of two stars can be given for Comparability.

#### Selection

- 1) Is the case definition adequate?
  - a) yes, with independent validation ➤
  - b) yes, eg record linkage or based on self reports
  - c) no description
- 2) Representativeness of the cases
  - a) consecutive or obviously representative series of cases ➤
  - b) potential for selection biases or not stated
- 3) Selection of Controls
  - a) community controls ➤
  - b) hospital controls
  - c) no description
- 4) Definition of Controls
  - a) no history of disease (endpoint) ➤
  - b) no description of source

#### Comparability

- 1) Comparability of cases and controls on the basis of the design or analysis
  - a) study controls for \_\_\_\_\_ (Select the most important factor.) ➤
  - b) study controls for any additional factor ➤ (This criteria could be modified to indicate specific control for a second important factor.)

#### Exposure

- 1) Ascertainment of exposure
  - a) secure record (eg surgical records) ➤
  - b) structured interview where blind to case/control status ➤
  - c) interview not blinded to case/control status
  - d) written self report or medical record only
  - e) no description

2) Same method of ascertainment for cases and controls

a) yes ➤

b) no

3) Non-Response rate

a) same rate for both groups ➤

b) non respondents described

c) rate different and no designation

## NEWCASTLE - OTTAWA QUALITY ASSESSMENT SCALE COHORT STUDIES

Note: A study can be awarded a maximum of one star for each numbered item within the Selection and Outcome categories. A maximum of two stars can be given for Comparability

### Selection

1) Representativeness of the exposed cohort

a) truly representative of the average \_\_\_\_\_ (describe) in the community ➤

b) somewhat representative of the average \_\_\_\_\_ in the community ➤

c) selected group of users eg nurses, volunteers

d) no description of the derivation of the cohort

2) Selection of the non exposed cohort

a) drawn from the same community as the exposed cohort ➤

b) drawn from a different source

c) no description of the derivation of the non exposed cohort

3) Ascertainment of exposure

a) secure record (eg surgical records) ➤

b) structured interview ➤

c) written self report

d) no description

4) Demonstration that outcome of interest was not present at start of study

a) yes ➤

b) no

### Comparability

1) Comparability of cohorts on the basis of the design or analysis

a) study controls for \_\_\_\_\_ (select the most important factor) ➤

b) study controls for any additional factor ➤ (This criteria could be modified to indicate specific

control for a second important factor.)

## Outcome

1) Assessment of outcome

a) independent blind assessment ➤

b) record linkage ➤

c) self report

d) no description

2) Was follow-up long enough for outcomes to occur

a) yes (select an adequate follow up period for outcome of interest) ➤

b) no

3) Adequacy of follow up of cohorts

a) complete follow up - all subjects accounted for ➤

b) subjects lost to follow up unlikely to introduce bias - small number lost - > \_\_\_\_ % (select an

adequate %) follow up, or description provided of those lost) ➤

c) follow up rate < \_\_\_\_ % (select an adequate %) and no description of those lost

d) no statement