Short Report

Exploring the Gap between Self-Reported Transgender and Gender Dysphoria in Chinese Youth

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ABSTRACT

Background: Despite the growing focus on transgender individuals, there is still a paucity of coherent research on the association between self-reported gender identity and the diagnosis of gender dysphoria (GD). This study explores the gap between the self-reported gender identity and the diagnosed condition.

Methods: Data from high school and college in Hunan, China, were collected from September 2019 to December 2019. Students who self-reported as gender minority (including transgender and other gender minorities) were interviewed by psychiatrists to confirm their GD diagnosis. Rates of the self-identified gender minority and GD clinical diagnosis were the present study's primary outcomes. Depression, social avoidance and distress, social support, and suicidal ideation were measured with the Beck Depression Inventory (BDI), Social Avoidance and Distress Scale (SAD), Social Support Rating Scale (SSRS), and Beck Scale for Suicide Ideation (BSI), respectively.

Results: Despite the relatively high rate of self-reported gender minorities in the sample (6.5%), none of them matched the clinical diagnosis of GD, as confirmed by psychiatrists. Nevertheless, even with the absence of GD diagnosis, self-reported gender minority students were shown to have more severe depressive symptoms, social avoidance, social distress, and suicidal ideation compared to their cisgender peers.

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Conclusions: Youth with clinically diagnosed GD are still uncommon in China. Nevertheless, the mental health challenges that the self-identified gender minority youth has experienced require more public awareness.

KEYWORDS: transgender; gender Dysphoria; DSM-5

ABBREVIATIONS: CG, cisgender; GM, gender minority; AMAB, assigned male at birth; AFAB, assigned female at birth; TOHC, thought of hiding or changing biological sex characteristics

INTRODUCTION

Gender identity, which is defined as an individual’s own psychological perception of being male, female, in-between, both, or neither, is different from the assigned sex [1]. In a narrow sense, “transgender” describes an individual whose gender identity is opposite of their sex assigned at birth, whereas “cisgender” refers to one’s gender identity corresponding to their sex assigned at birth. In the broad sense, “transgender” refers to those who do not adhere to conventional cis-heterosexual gender norms, including but not limited to gender non-conforming, non-binary, genderqueer, and agender individuals[2]. To avoid confusion in Chinese culture, we use the narrow sense of “transgender” and adopted the term “Gender Minority” to refer to a person who has a non-cisgender gender identity (videlicet, the broad sense of “transgender”). In the proposed study, “Gender Minority” encompasses “transgender” and “other gender minority.”

An incongruence between body and gender identity has been diagnosed as gender identity disorder (GID) since DSM-III (The Diagnostic and Statistical Manual of Mental Disorders, Third Edition) [3]. With an emphasis on gender-related distress, DSM-5 defines gender dysphoria (GD) as the marked incongruence between one’s gender identity and the sex assigned at birth, which must accompanied by distress or impairment. Comparatively, the ICD-11 (International Classification of Diseases version 11) [4] has de-psychopathologized and moved gender incongruence (GI) into “conditions related to sexual health.”

The disparity between one’s gender perception and medical diagnosis leads to variations in the reported proportion of the transgender population. Zhang et al. [5] have found that the self-reported transgender identity rate (i.e., 0.3%–2.7%) is overwhelmingly more significant than the medical recorded rate (i.e., 0.03%). Research further suggests that the self-reported transgender identity rate is affected by the cultural environment, and the medical recorded rate profoundly depends on the medical and economic conditions [6,7]. As such, this study aims to investigate the discrepancy between self-reported transgender individuals and medically diagnosed GD individuals by surveying self-reported transgender students.
METHODS

Participants

This study was conducted as part of a comprehensive survey of students’ mental health in Changsha, China. The data was collected from September 20th to December 1st, 2019, at two high schools and one college. Of 2053 students who responded to the survey, five of them were excluded from the analysis, including one student who did not provide their birth sex and four who did not provide a valid age. The remaining 2048 students, aged between 14 and 23 years old, comprised 621 males (30.32%) and 1429 females (69.78%) based on their birth sex assignment.

Ethical Approval

All procedures involving human subjects were approved by the Ethics Committee of the Second Xiangya Hospital, Central South University [Reference S107, approval date: 2017-01-0]. All participants and participants’ legal guardians (for minors) were informed at the consent signing stage that their information would remain confidential and their right to freely drop out at any part of this study without any consequence.

Procedure

Participants’ gender identities were screened by 3 questions: (1) “What is your sex assigned at birth? (male; female)”; (2) “How do you perceive your gender belongings? (cisgender; transgender; non-binary/agender/non-conforming/other; not sure; not understand; refuse to answer),” and (3) “Do you want to hide or change your biological sex characteristics (yes; no).” All questions had detailed explanations in written Chinese to help participants better understand the contents. Below is the details:

**Question 1: “What is your sex assigned at birth? (male; female)”**
*Instruction 1: Please select the sex that you were assigned at birth—the one that is stated on your original birth certificate.*

**Question 2: “How do you perceive your gender belongings? (cisgender; transgender; other gender minority (for example: non-binary/agender/non-conforming/other), not sure, not understand and refuse to answer),”**
*Instruction 2: Gender is different from Sex. Sex is what you are born with. Gender is about how you feel. Cisgender means that your gender matches your sex. Transgender refers to when your gender is at odds with your sex. Non-binary/agender/non-conforming/other is when you feel that gender is a
spectrum and the traditional binary genders do not suit you, or have no gender feelings, or do not want to follow any gender stereotypes, and other gender spectral situations. Please choose the best-fitting response.

Question 3: “Do you want to hide or change your biological sex characteristics? (yes; no)"

No Instruction.

After data was collected, those who chose their gender identity (the second question) as transgender, non-binary, agender, gender non-conforming, and others were interviewed by two trained psychiatrists via phone or face-to-face interviews to determine whether they met the GD diagnosis based on the diagnostic criteria of DSM-5. A further investigation into the reasons why participants did not meet the GD diagnosis was also carried out. The overview of the study procedure was illustrated in a flow diagram (Figure 1).

![Flow diagram](image-url)

**Figure 1.** Flow diagram.
Measurements

All students were asked to fill out three self-rating scales, including the Beck Depression Inventory (BDI), the Social Avoidance and Distress Scale (SAD), and the Social Support Rating Scale (SSRS). The Beck Scale for Suicide Ideation (BSI) was only sent to college students because high school students did not meet its age criteria (i.e., aged 17 years and older).

**Beck Depression Inventory (BDI)**

BDI was developed to measure the depressive symptoms of participants during the past week. It consisted of twenty-one questions, each with four degrees of values ranging from 0 to 3. The total score of the twenty-one questions was calculated, with a higher total score indicating more severe depressive symptoms. The Chinese version of the BDI was validated by previous research and proven reliable [8,9]. The BDI shows excellently reliable measures in the present survey, with a Cronbach's alpha of 0.903.

**Social Avoidance and Distress Scale (SAD)**

Social avoidance manifests in behavioral isolation, avoidance of social communications, and social distress, among which discomfort, fear, and anxiety are surveyed. The SAD included two sub-scales (social avoidance and social distress) consisting of twenty-eight true/false items, with a higher total raw score (from 0 to 28) indicating less social engagement, greater social anxiety, or both. The Chinese-validated version of SAD had demonstrated good reliability and validity in previous research [10]. The Cronbach's alpha was 0.967 in this study.

**Social Support Rating Scale (SSRS)**

The SSRS was a ten-item questionnaire consisting of three sub-scales (objective social support, subjective social support, and utilization of social support) that measured participants' acquired social support, with a higher score indicating better social support. The Chinese-validated version of the scale was proven reliable and validated by previous research [11]. The Cronbach's alpha was 0.748 in this study.

**Beck Scale for Suicide Ideation (BSI)**

The BSI contained 5 screening items assessing participants' suicide ideation. If participants' answers were not all negative, they were then asked to fill out two mandatory sets of questionnaires (one for the current state and another for the worst moment), each of which contained nineteen items. All nineteen items were rated on a three-point scale (0 to 2), and the total score ranged from 0 to 38 [12]. The BSI has excellent reliability and validity. The Cronbach's alpha was 0.935 in this study [13].


Statistical Analyses

The sample characteristics and gender data were reported in descriptive numbers (Mean ± SD) and valid percentages (%). With the total sample size ≥40 and all expected frequencies >5, the distribution of sex and variant gender identities (classified variables) in high schools and colleges were compared using Pearson's Chi-square tests. The differences in mental health status between different gender groups were tested using Mann-Whitney tests due to the non-normal distributions (tested by Kolmogorov-Smirnov test and p values < 0.05). To reduce the likelihood of false positives, the Benjamini-Hochberg adjustment was applied to correct for multiple comparisons. All analyses were conducted with the IBM SPSS version 24.0, and two-sided p values < 0.05 were considered statistically significant.

RESULTS

Among 2048 participants who answered the question about their sex assigned at birth, 620 participants (30.3%) were assigned male at birth (AMAB), and 1,428 (69.7%) were assigned female at birth (AFAB). The mean age of college and high school participants was 18.83 ± 1.06 and 15.22 ± 0.63, respectively. Descriptive statistics of measurements were summarized in Table 1.

<table>
<thead>
<tr>
<th>Variable</th>
<th>NO.</th>
<th>Mean ± SD</th>
<th>AMAB/AFAB</th>
<th>TOHC</th>
<th>age</th>
<th>BDI</th>
<th>SAD</th>
<th>SSRS</th>
<th>BSI-recent</th>
<th>BSI-worst</th>
</tr>
</thead>
<tbody>
<tr>
<td>High school</td>
<td>394/618</td>
<td>115</td>
<td>15.22 ± 0.63</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CG</strong></td>
<td>343/496</td>
<td>86</td>
<td>15.18 ± 0.60</td>
<td>9.32 ± 7.65</td>
<td>13.08 ± 6.65</td>
<td>32.95 ± 8.12</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>GM</strong></td>
<td>22/30</td>
<td>29</td>
<td>15.18 ± 0.56</td>
<td>17.26 ± 11.73</td>
<td>15.47 ± 6.62</td>
<td>30.57 ± 7.70</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>College</td>
<td>227/811</td>
<td>87</td>
<td>18.83 ± 1.06</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CG</strong></td>
<td>158/609</td>
<td>75</td>
<td>18.77 ± 1.75</td>
<td>5.84 ± 7.26</td>
<td>12.91 ± 6.25</td>
<td>32.86 ± 8.21</td>
<td>1.01 ± 2.38</td>
<td>2.44 ± 3.80</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>GM</strong></td>
<td>17/43</td>
<td>12</td>
<td>18.73 ± 1.06</td>
<td>10.48 ± 8.82</td>
<td>15.13 ± 5.92</td>
<td>32.10 ± 7.16</td>
<td>2.19 ± 3.78</td>
<td>4.21 ± 4.47</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Abbreviations: CG, cisgender; GM, gender minority; AMAB, assigned male at birth; AFAB, assigned female at birth; TOHC, thought of hiding or changing biological sex characteristics; BDI, Beck Depression Inventory; SAD, Social Avoidance and Distress Scale; SSRS, Social Support Rating Scale; BSI, Beck Scale for Suicide Ideation.
In total, 1723 (84.1%) out of 2048 students specified their gender identity. However, with the unbalanced sex assigned at birth ratio, the probability of gender minority identification did not significantly differ from participants’ sex assigned at birth ($\chi^2 = 0.742, p = 0.389, \phi = 0.163$). Among these 1723 responses, 52 (5.8%) high school students and 60 (7.3%) college students self-identified as gender minority. The rate of self-reported gender minority did not statistically differ between high school and college ($\chi^2 = 1.491, p = 0.222, \phi = 0.059$, see Table 2). Thus, the total rate of self-reported gender minority was 6.5% (112/1723) in all students.

After subdividing the gender minority into transgender and other gender minorities (i.e., non-binary/agender/non-conforming/other), the ratio of transgender and other gender minorities in different levels of education revealed a significant difference ($\chi^2 = 9.367, p = 0.002, \phi = 0.604$, see Table 2). In college, 61.7% of participants who identified as gender minorities (3.56%) saw themselves as transgender; in high school, 38.3% of participants who identified as gender minorities saw themselves as transgender (1.68%).

### Table 2. Distribution of gender groups in high school and college.

<table>
<thead>
<tr>
<th>Gender/School category</th>
<th>High school (n = 891)</th>
<th>College (n = 827)</th>
<th>Test</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cisgender, No. (%)</strong></td>
<td>839 (94.16%)</td>
<td>767 (92.74%)</td>
<td>Pearson Chi-Square = 1.491</td>
<td>0.222</td>
</tr>
<tr>
<td><strong>Gender minority, No. (%)</strong></td>
<td>52 (5.84%)</td>
<td>60 (7.26%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Transgender, No. (%)</strong></td>
<td>17 (32.7%)</td>
<td>37 (61.7%)</td>
<td>Pearson Chi-Square = 9.367</td>
<td>0.002</td>
</tr>
<tr>
<td><strong>Other gender minorities, No. (%)</strong></td>
<td>35 (67.3%)</td>
<td>23 (38.3%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As to the third question, “Do you want to hide or change your biological sex characteristics,” up to 36.6% of participants who self-identified as gender minorities answered “yes,” which was less than 10% of cisgender students did ($\chi^2 = 71.67, p = 0.000, \phi = 0.4167$). In 112 self-reported participants who self-identified as gender minorities, 29 high school students and 12 college students reported that they had thought of hiding or changing their biological sex characteristics. The Pearson Chi-Square Test showed significantly more thoughts of hiding or changing biological sex characteristics in gender minority participants from high school than from college ($\chi^2 = 15.359, p = 0.000, \phi = 0.797$). Nonetheless, although there were also cisgender participants who wanted to hide or change their biological sex characteristics, the rates did not show a significant difference between high school (10.2%) and college participants (9.8%) ($\chi^2 = 0.076, p = 0.783, \phi = 0.014$).
Despite the relatively high (5.84% to 7.26%) rate of self-reported gender minorities, results showed that none of them was confirmed by psychiatrists to meet the diagnostic standards for GD. The reasons for not meeting the diagnosis of GD were various (see Figure 2 for details). Overall, “careless answer” (claiming that their answer regarding Question 2 was made careless and can not be used as reference) and “do not understand” accounted for over half of the reasons for the exclusion of GD in high school gender minorities. As for college gender minority participants, they preferred to deny what they filled out rather than giving the “do not understand” feedback. Another worth noting point was that the report rate of “influenced by others” in high school gender minority students (9%) was higher than that of college gender minority participants (3%).

Figure 2. Reasons for undiagnosed GD among self-reported gender minority students. Abbreviations: GD, Gender Dysphoria.

As shown in Figure 3, compared with cisgender students, the gender minority participants in both high school and college had significantly higher total scores of BDI ($U = 10041, q = 0.000$ in high school; $U = 15708, q = 0.000$ in college), SAD ($U = 13435, q = 0.016$ in high school; $U = 19228, q = 0.025$ in college), subjective social support scores ($U = 13593, q = 0.007$ in high school; $U = 19449, q = 0.025$ in college), and utilization of social support scores ($U = 13593, q = 0.007$ in high school; $U = 19440, q = 0.025$ in college). The college gender minority participants reported having more severe suicidal ideations ($U = 19312, q = 0.006$) and more “worst moments” ($U = 17826, q = 0.002$) than cisgender college participants. However, there was no statistically significant difference in the objective social support scores of gender minority and cisgender students ($U = 15459, q = 0.238$ in high school; $U = 23595, q = 0.920$ in college).
Despite the sex ratio being unbalanced both in high school (AMAB/AFAB=394/618) and college (AMAB/AFAB=227/811), the total scores of BDI did not show statistically significant differences between the AMAB and AFAB ($U = 114955, p = 0.86$ in high school and $U = 86263, p = 0.14$ in college).

**Figure 3. Comparisons of mental health outcomes between cisgender and gender minority students.** Abbreviations: CG, cisgender; GM, gender minority; BDI, Beck Depression Inventory; SAD, Social Avoidance and Distress Scale; SSRS, Social Support Rating Scale; BSI, Beck Scale for Suicide Ideation.*: $q < 0.05$, **: $q < 0.01$, ***: $q < 0.001$, ****: $q < 0.0001$.

**DISCUSSION**

According to our findings, 5.8% of high school students and 7.3% of college students reported non-cisgender gender identities. Besides, 1.68% of high school students and 3.56% of college students self-identified as transgender. These statistics of self-reported transgender identity rate were reasonably close to the average rates (i.e., 0.3 to 2.7%) on a global scale [5,14].

Despite the self-reported rate of gender minority participants in the current study being comparable to the current domestic and international prevalence, none of the 2048 students met the diagnostic standards for GD. This result was reasonable, given that only 0.017 to 0.033% of individuals had a transgender-relevant diagnosis in the general population [5]. Behind the result of not meeting the diagnosis of GD, our findings suggested that the college gender minorities were inclined to deny their choices directly. In contrast, the high school gender minorities were more likely to reveal more about their confusion and ignorance of gender identity. One possible
explanation for the denials, which were more often seen in college students, is the stronger hiding tendency of older gender minorities compared to younger cohorts [15]. This concealment might result from minority stress and systematic discrimination during their growth process. According to substantial pieces of evidence, societal discrimination, social rejection, and distrust from clinicians against gender minorities could be inferred as major contributors to their decisions to conceal their gender identities [16-19]. Thus, along with the improvement of the social climate toward LGBTQ+, the younger gender minorities are able to grow up in a less hostile environment, which, in turn, might reduce the deliberate concealment of gender identity [20]. However, even with a possible safer mindset of self-exposure, the younger gender minorities expressed considerable gender-related uncertainty and unconsciousness. This not only indicates the normal developmental process of gender identification but also reveals the possible lack of gender education in high school [21].

According to the results of the current study, there was no significant difference between the rates of self-reported gender minority students in high school and college statistically. Nevertheless, the composition of gender minority students in those two groups varied, manifesting in gender labeling. The majority of gender minority students in college self-identified as “transgender,” whereas the majority in high schools self-identified as “nonbinary/agender/non-conforming/other.” One interpretation of such a difference in gender labeling could be that the younger population in Gen Z (i.e., Generation Z) is less constrained by the currently existing gender normative [22].

The results of this survey also indicated that gender minority participants were less satisfied with their gender appearance than cisgender participants. Gender minority students in high school, in particular, have the lowest tolerance for their sex characteristics. From a developmental standpoint, such dissatisfaction was largely moderated among gender minorities in college.

Consistent with findings from previous studies [14,18,23], the self-reported gender minorities suffered from worse mental health outcomes compared to the cisgender population even without the GD diagnosis. More specifically, depressive symptoms, social avoidance, social distress, and suicidal ideation were more severe in the gender minority group than in their cisgender peers. Correspondently, a national survey conducted in the United States provided independent and intuitive data that 41% of transgender and gender non-conforming (TGNC) individuals reported having a suicide attempt history, compared to 1.6% of the general population [19]. Further study on risk factors showed that discriminatory social environments, inadequate peer and social support, as well as the
absence of LGBTQ (lesbian, gay, bisexual, transgender, queer, or questioning) community support are all potential risk factors for suicidality in gender minorities [24]. This highlights the crucial role social support plays in suicide prevention for gender minority youth [25]. However, although the objective social support scores did not differ between the gender minority group and the cisgender group in the present study, gender minority participants gave lower ratings for perceived and acquired social support. The misalignment of support serves as a cautionary reminder that supportive policies should be informed by thorough research conducted within the gender minority community, rather than simply adapting existing strategies designed for other marginalized groups. Also, raising the visibility of gender minorities to public, which might attract people's support automatically, should be regarded as a continuous mission.

LIMITATIONS

There are several limitations that need to be addressed. First, the sample size is relatively small due to the difficulty in obtaining consistent permission from all parties involved (i.e., school authorities, their caregivers, and students themselves). Furthermore, a convenient sampling method rather than a random sampling method was used, which could result in sex bias in data collection. Second, because the psychiatric diagnosis of gender dysphoria could not be completed under anonymous conditions, some students might be afraid or resistant to coordinating the survey/interview, which would inevitably undervalue the discovery rate of transgender and then the diagnosis rate of GD. Third, the cross-sectional design did not allow for observing the changes in gender identification and attitude over time.

CONCLUSIONS

The present study revealed a critical disparity between self-identified transgender youth and transgender youth with GD diagnosis. However, it should be noted that, even in the absence of GD diagnosis, self-reported gender minorities reported worse mental health status and felt less supported compared to their cisgender peers. Additional research on investigating gender minority youth's mental health and the connection between self-identification and GD diagnosis with a larger sample size and more randomized study design is expected.

DATA AVAILABILITY

Study data is available from the authors upon reasonable request.
AUTHOR CONTRIBUTIONS

Ying He, Runsen Chen, and Yuanyuan Wang conceptualized the study and drafted the initial manuscript. Yinzhe Wang, Liu Yuan, Lejia Fan, Lijun Ouyang, and Zhibiao Xiang collected the data, carried out the data analyses, and revised the manuscript. Xiaogang Chen designed the study, supervised data collection, and reviewed and revised the manuscript.

All authors approved the final manuscript as submitted and agreed to be accountable for all aspects of the work.

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CONFLICTS OF INTEREST

All authors declared that there is no conflict of interest exists in this study.

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