# ORIGINAL RESEARCH—LGBT

# **Evidence for an Altered Sex Ratio in Clinic-Referred Adolescents** with Gender Dysphoria

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#### ABSTRACT-

*Introduction.* The number of adolescents referred to specialized gender identity clinics for gender dysphoria appears to be increasing and there also appears to be a corresponding shift in the sex ratio, from one favoring natal males to one favoring natal females.

**Aim.** We conducted two quantitative studies to ascertain whether there has been a recent inversion of the sex ratio of adolescents referred for gender dysphoria.

*Methods.* The sex ratio of adolescents from two specialized gender identity clinics was examined as a function of two cohort periods (2006–2013 vs. prior years). Study 1 was conducted on patients from a clinic in Toronto, and Study 2 was conducted on patients from a clinic in Amsterdam.

**Results.** Across both clinics, the total sample size was 748. In both clinics, there was a significant change in the sex ratio of referred adolescents between the two cohort periods: between 2006 and 2013, the sex ratio favored natal females, but in the prior years, the sex ratio favored natal males. In Study 1 from Toronto, there was no corresponding change in the sex ratio of 6,592 adolescents referred for other clinical problems.

Conclusions. Sociological and sociocultural explanations are offered to account for this recent inversion in the sex ratio of adolescents with gender dysphoria. Aitken M, Steensma TD, Blanchard R, VanderLaan DP, Wood H, Fuentes A, Spegg C, Wasserman L, Ames M, Fitzsimmons CL, Leef JH, Lishak V, Reim E, Takagi A, Vinik J, Wreford J, Cohen-Kettenis PT, de Vries ALC, Kreukels BPC, and Zucker KJ. Evidence for an altered sex ratio in clinic-referred adolescents with gender dysphoria. J Sex Med 2015;12:756–763.

Key Words. Gender Dysphoria; Gender Identity Disorder; Sex Ratio; Adolescents

#### Introduction

The prevalence of gender dysphoria (GD) [1] is uncertain because of the absence of formal epidemiological studies. As reviewed by Zucker and Lawrence [2], prevalence has often been gauged, at least in adults, by the number of indi-

viduals seeking out hormonal treatment and sexreassignment surgery at specialty clinics in different regions or countries.

Information on the sex ratio of individuals with GD is one element of these para-epidemiological studies. In adult samples, in almost all cases, the number of natal males either exceeds the number

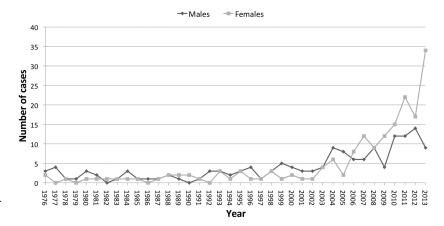


Figure 1 Number of adolescent patients assessed by sex and year

of natal females or the sex ratio is near parity [2, Table 3] (see also Kreukels et al. [3]). The exceptions are studies from Poland and Japan, where the sex ratio is inverted [4,5]. In clinic-referred child samples, it has long been noted that the number of males also exceeds the number of females. Wood et al. [6], for example, reported a sex ratio of 4.49:1 of boys to girls (N = 577) ages 3–12 years from their clinic in Toronto, Canada, which was significantly higher than the sex ratio of 2.02:1 of boys to girls (N = 468) in a specialty clinic in Amsterdam, the Netherlands, but which also favored boys. Regarding the sex ratio of adolescents referred for GD, Wood et al. reported a sex ratio of 1.04:1 of males to females (N = 253) from the Toronto clinic for the years 1976-2011, which was virtually identical to the sex ratio of 1.01:1 of males to females (N = 393) in the Amsterdam clinic (as cited in Wood et al.).

For many years in the Toronto clinic, the number of adolescent referrals was quite low. Between 1976 and 2003, for example, no more than five adolescents of one biological sex were assessed in a calendar year and, during this period, the number of males exceeded the number of females (Figure 1). Beginning in 2004, however, the number of adolescent referrals began to rise quite dramatically [6], which appears to be consistent with the observations of clinicians and researchers from other gender identity clinics. Starting in 2006, we noted that the number of referred female adolescents with GD was now exceeding the number of referred male adolescents with GD in the Toronto clinic. Thus, there

appears to be an emerging inversion in the sex ratio of adolescents with GD which, to our knowledge, has not been documented formally in the empirical literature.

In Study 1, we analyzed the sex ratio of the Toronto clinic adolescents and, for comparative purposes, used an administrative database that contained information on the sex ratio of adolescent males and females seen clinically for other psychiatric concerns in our department. The use of a clinical comparison group allowed us to test the hypothesis that the temporal shift in the sex ratio was specific to adolescents with GD but not clinic-referred adolescents in general. In Study 2, we analyzed the sex ratio of the Amsterdam clinic adolescents to test for a temporal shift over the same time period.

## Study 1

#### Methods

#### **Participants**

The probands consisted of 328 adolescents (13–19 years of age) referred to a Gender Identity Service, housed within the Child, Youth, and Family Services (CYFS) at the Centre for Addiction and Mental Health (CAMH) between 1976 and 2013. Mean age at the time of assessment was 16.66 years (standard deviation [SD] = 1.70), and there was no significant difference in age between the males and females, t(326) < 1. Depending on the year of assessment, DSM-III, DSM-III-R, or DSM-IV criteria were used to diagnose Gender Identity Disorder (GID) or Gender Identity Disorder Not Otherwise Specified (GIDNOS) (in DSM-III and III-R, the diagnostic term was Transsexualism, not GID, which was first used as the diagnostic term in the DSM-IV). All probands met criteria for either GID or GIDNOS. Beginning in 2001,

<sup>&</sup>lt;sup>1</sup>For ease of readability, we truncate hereafter the use of the terms natal males and natal females to males and females, respectively.

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