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Documenting an epidemic of suffering: Low health-related quality of life among transgender youth

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Abstract

Purpose—To quantify HRQOL of TGN patients using the PedsQL 4.0 generic core scales, and to compare reported HRQOL of TGN adolescents with published data from comparison populations.

Methods—Transgender children and adolescents (N=142; 68% natal females) ages 6–23 years (M= 15.9, SD=3.7) attending an outpatient clinic for TGN care at an academic pediatric hospital and caregivers of children and adolescents (N=95) completed the PedsQL 4.0 generic core scales. Scores were compared with published scores for healthy adolescents and adolescents with 10 chronic diseases.

Results—TGN youth reported significantly lower overall HRQOL (more than twice the clinically meaningful difference) compared to youth without chronic disease. Total self-reported TGN HRQOL (M(SD), 65.72 (17.40)) was lower than all chronic disease comparison groups except for rheumatology and cerebral palsy. TGN youth reported physical functioning (M(SD), 75.33(22.87)) lower than or similar to chronically ill comparisons, but higher than rheumatology and cerebral palsy groups. Psychosocial functioning (M(SD), 59.87(17.83)) was lower than all comparison samples and similar to youth with cerebral palsy. Results were similar for parent proxy-reports of TGN youth HRQOL (LS means: 68.75; 95%CI: 65.87–71.61 versus 66.16; 95% CI: 62.87–69.45; p=0.12).

Conclusions—TGN youth reported low HRQOL across all domains; most were significantly lower than healthy peers or peers with chronic diseases. Clinicians should understand the

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COMPLIANCE WITH ETHICAL STANDARDS

All authors declare that they have no conflicts of interest. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. This article does not contain any studies with animals performed by any of the authors. Informed consent was not obtained because deidentified data, collected in the course of routine clinical care, was used for the analyses described in this article.

magnitude of TGN youth's low HRQOL and offer them and their caregivers resources to maximize their ability to achieve their full potential for healthy and productive lives.

Introduction

The condition of being transgender or gender nonconforming (TGN) is when physical sex does not align with one's internal sense of gender[1]. This may contribute to gender dysphoria[2], or distress about one's gender, which carries significant public health implications for the TGN population. Depressive symptoms, self-injurious and/or suicidal behaviors, substance abuse, increased risk for HIV acquisition[3,4], homelessness[5], and family rejection[6] are significantly higher compared to cisgender peers[4,7]. Medical models are used to provide health care because evidence has shown that medical interventions with this population decrease risks[8]. Additionally, TGN patients often have co-occurring health conditions requiring treatment, including mental health disorders, obesity and or body dysmorphia[9]. Being TGN affects all aspects of adolescents' lives. In 2015, nearly 18% of LGBT youth missed one or more school days in the prior month due to feeling unsafe or uncomfortable, and nearly 22% reported verbal harassment related to gender expression[10]. Only 12% of TGN youth participate in sports "very often", and 64% "never" participate, compared with a national average of 61% participation in a national survey of 8th, 10th and 12th grade students[11].

Health-related quality of life (HRQOL) is defined as an "Individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns"[12]. It is a broad ranging concept affected in a complex way by the persons' physical health, psychological state, level of independence, social relationships and their relationship to salient features of their environment. Pediatric HRQOL is frequently operationalized using the PedsQL scale[13]. One benefit of using generic HRQOL instruments such as the PedsQL scale, rather than condition-specific instruments, is that they make possible comparisons between healthy groups and groups with significantly different medical conditions[13,14]. Research on pediatric HRQOL is limited. Simons and colleagues found that higher QoL was associated with parental support[15]. Improved HRQOL has been reported by TGN persons after their transition from gender assigned at birth to their preferred gender[16,15,17]. De Vries and colleagues report a longitudinal study of 55 TGN young adults prior to initiating puberty suppression (mean age, 13.6 years) through one year after gender reassignment surgery (mean age 20.7 years)[17]. HRQOL was measured using the WHOQOL-BREF, the domains of which do not include school functioning. Inclusion of school functioning as a facet of pediatric HRQOL is vital, especially in a TGN sample due to school-based violence. TNG-related school harassment or aggression is linked to increased risk for sexually transmitted diseases, including HIV[18]. Goldblum and colleagues reported that TGN persons reporting gender-based violence at school were almost four times as likely to report a suicide attempt as those not experiencing gender-based violence [19]. Newfield and colleagues reported improved HRQOL in a female to male TGN sample after initiating gender-affirming hormone therapy (GAHT)[16]. The average age in the sample was 32.8 years (SD 11.2) and 40% had already completed gender reassignment surgery. HRQOL was measured using the SF36v2 which also does not include a school functioning domain. Murad and colleagues

reviewed 28 studies of HRQOL and mental health outcomes related to GAHT and sex reassignment[20]. They report higher HRQOL after initiating GAHT although they note that some studies report the opposite effect among male to female persons.

Given the lack of inclusion of school functioning as part of HRQOL measurement in prior studies, and the generally older age range, this study's purposes were to (1) quantify HRQOL of TGN patients using the PedsQL 4.0 generic core scales and, (2) to test the hypothesis that TGN patients would report lower HRQOL compared to published HRQOL data from adolescent populations with and without significant chronic diseases.

PATIENTS AND METHODS

Participants and Measure

This study was carried out in the Transgender Clinic of the Division of Adolescent and Transition Medicine in a 629-bed academic pediatric medical center and was approved by the institution's Institutional Review Board. A waiver of informed consent was granted because the PedsQL was being routinely used in clinic, and inclusion of the data in this study presented no more than minimal risk of harm to the participants and involved no procedures for which written consent is normally required outside of the research context. Eligible participants were aged 4–25 years old, and followed by this clinic. Caregivers of all persons up to age 18 years seen in clinic were invited to complete the parent proxy scale. Audits for data entry accuracy were performed on 25% of the scales. Demographic data, including participant age and gender (sex assigned at birth and current gender) were obtained by chart review.

During a six-month period, the clinic's routine care included completion of the PedsQL 4.0 Generic Core Scales (and parent proxy measure) as part of a quality improvement initiative. The PedsQL 4.0 Generic Core Scales consist of physical functioning (8 items), emotional functioning (5 items), social functioning (5 items), and school functioning (5 items), and was chosen for this study because it is validated and reliable with healthy and chronically ill children and young adults between the ages of 2 and 25 years. It is recognized as developmentally appropriate, multidimensional, and responsive to clinical changes and its use and scoring have been described elsewhere[13,21].

Statistical Analysis

Demographic data were summarized using appropriate summary statistics for continuous and categorical variables. Independent two-sample t-tests were used to compare HRQOL scores of the TGN study population with healthy and 10 disease samples[22]. When needed, unequal group sizes or variances were accounted for in the t-test by using the Satterthwaite Approximation to pool the SD and adjust degrees of freedom of the test appropriately. Effect size determined the magnitude of the differences between TGN youth and each reference group, and was calculated by taking the difference between the TGN and reference sample means and dividing by the pooled standard deviation. Effect sizes for differences in means are designated as small (0.2), medium (0.5), and large (0.8)[23]. Internal consistency was estimated by calculating Cronbach's alpha coefficient[24].

The minimal clinically important difference (MCID) for PedsQL 4.0 Scale scores was used to characterize the score difference for all domains between TGN youth and other reference groups[25]. The MCID has been defined as the smallest difference in a score of a domain of interest that patients perceive to be beneficial and that would mandate, in the absence of troublesome side effects and excessive costs, a change in the patient's management[25]. MCID was calculated through standard error of measurement (SEM) and was derived by multiplying a standard deviation by the square root of 1-alpha (Cronbach's alpha reliability coefficient)[25,26]. We calculated the 95% confidence interval (CI) of the difference between the mean of each reference group and the TGN group (reference group-TGN group) and then compared the lower bound of the CI to the corresponding MCID. Line graphs were used to identify TGN-related comparisons in which the MCID was exceeded. Means and standard errors for differences between groups are provided as supplemental material (see eTables 1–2).

The influence of demographic characteristics (e.g., patient age and gender) on PedsQL scores was examined for both child self-report and parent proxy data. Pearson correlation coefficients (r) were used to estimate associations between child age and all PedsQL scales. Correlation coefficient effect sizes were designated as small (0.10–0.29), medium (0.30–0.49), and large (>0.50)[20]. Differences in PedsQL scores between sexes were explored using the Wilcoxon Mann-Whitney test. All statistical testing used a significance level of $p < 0.05$.

Parent and child differences in perceptions of HRQOL were tested with linear mixed effect models, which accounted for the parent-child dyad effects[27]. Each model result is reported as a least-square (LS) mean and with corresponding 95% CI, adjusted for age, gender and comorbidities. Child self-report and parent proxy report agreements were examined through Bland-Altman analysis and plots[28] (see eFigures 1–6). Agreement analysis was conducted using MedCalc for Windows, version 16.8 (MedCalc Software, Ostend, Belgium), and other analyses were implemented using SAS 9.3 (SAS Institute, Cary, NC).

RESULTS

A total of 142 TGN participants aged 6–23 years old enrolled in the study; 134 completed the PedsQL 4.0 generic core scales; one participant did not report age. Out of 95 parents who enrolled in the study, 94 completed the parent proxy scales. The data are available in Online Resource 1. This represents 52% of the patients seen in the clinic during this period. Ninety-six TGN youth were assigned female at birth (AFAB) (68.3%) and 45 (31.7%) TGN youth were assigned male at birth (AMAB). This ratio is consistent with data from other clinics[29]. The mean (SD) age was 15.9 (3.7) years. HRQOL outcomes were evaluated on the entire sample for child self-report and parent proxy report. The distribution of PedsQL scores are characterized in Table 1. The values of Cronbach's alpha for all self-report and proxy total scales and its subscales met or exceeded the statistical minimum reliability standard of 0.70 for group comparisons[22], indicating sufficient internal consistency.

Relationships between TGN participant age, gender and HRQOL

Age was not significantly correlated with overall HRQOL score or other subscales except for social functioning. Age was significantly related to social functioning ($r = 0.20$, $p = 0.022$) for patient report, indicating that social functioning increased as a function of age. AMAB TGN participants had significantly higher total score, physical health, psychosocial health, and school functioning than those of AFAB TGN participants (Table 1).

Transgender adolescent/child and parent comparisons.—As shown in Table 3, linear mixed effect models indicated no significant difference between parent and child ratings for overall HRQOL and subdomains in physical, psychosocial, social and school functioning. For emotional functioning, children reported significantly higher scores than parent proxies (LS means: 55.5; 95% CI: 51.6 to 59.4 versus 49.98; 95% CI: 45.50 to 54.47; $p = 0.014$). Bland-Altman analysis indicated the mean differences and 95% LOA for self-report and proxy report were 1.9 (−30.5 to 34.3) for total score, 2.5 (−34.5, 39.5) for physical health, 1.9 (−34.5, 38.2) for psychosocial health, 5.3 (−36.2, 46.8) for emotional functioning, 2.4 (−38.8, 43.6) for social functioning, and −2.5 (−49.5, 44.4) for school functioning. Agreement analysis showed that self-reported total score, physical health, psychosocial health, social functioning, and school functioning sufficiently agreed with proxy-reported score. Bland-Altman plots and agreement analyses are available in Online Resource 2. Emotional functioning, with the 95% CI of the mean difference above the line of equality, showed a significant systematic difference. Self-reported emotional function was found higher than that of proxy reported emotional score, which is consistent with the mixed model results.

Comparisons across transgender sample and reference groups

Total HRQOL.—TGN youth reported significantly lower total HRQOL in comparison to healthy children and patients across the chronic disease samples, except for the rheumatology and cerebral palsy samples (Table 2). The differences between the TGN sample compared to healthy patients, diabetes, gastrointestinal conditions and cardiac samples surpassed the MCID.

Physical health.—TGN youth reported significantly lower physical health in comparison to healthy children and patients in diabetes, gastrointestinal conditions, cardiac and psychiatric disorders samples. The differences for the TGN sample surpassed the corresponding MCID only for comparisons between TGN and healthy cohorts.

Psychosocial health and emotional functioning.—TGN youth reported significantly lower psychosocial health in comparison to healthy children and patients across all the disease samples except cerebral palsy cluster. TGN youth reported significantly lower emotional functioning in comparison to healthy children and patients across the disease samples. Most differences for the TGN sample surpassed the MCID for comparisons with healthy youth and several of the other cohorts.

Social functioning.—TGN youth reported significantly lower social functioning in comparison to healthy children and patients across the disease samples except for the

obesity, psychiatric disorders, and cerebral palsy samples. Most differences for TGN participant self-report exceeded the MCID when comparing the TGN group to healthy children, diabetes, and gastrointestinal condition samples.

School functioning.—TGN youth reported significantly lower school functioning in comparison to healthy children and patients across the disease samples except for the end stage renal disease, psychiatric disorders, cancer, and cerebral palsy samples. The self-reported scores exceeded the MCID for the comparison between the TGN group and healthy children.

DISCUSSION

This study presents HRQOL self-report and parent proxy data from a TGN clinic sample and the first description of TGN youth HRQOL in comparison to youth with and without chronic diseases. The present study found that AMAB patients had significantly higher total, physical, school, and psychosocial quality of life subscores than AFAB patients. Patient self-report and parent proxy report of HRQOL were congruent.

Second, the clinically meaningful difference in HRQOL was lower among the TGN participants than that of youth without chronic conditions, and lower than that in many of the samples of youth with chronic conditions. TGN children and young adults may have significantly lower HRQOL than those who are healthy or who have a chronic disease for many reasons. First, most of the chronic medical conditions that are being compared to gender dysphoria are not questioned by caregivers. Caregivers may not want their child to receive a diagnosis of asthma or cancer, but accept it, whereas for children with gender dysphoria, families may wonder if it is a phase or may never understand the validity of the diagnosis. Second, gender dysphoria has a lower prevalence than the comparison conditions, and some people may have preconceived notions about gender dysphoria due to media representation. Third, for many of the comparison conditions, only the patient may only be affected and have visible symptoms in certain situations. For TGN youth it affects all areas of their life and is visible in almost all situations.

Compared to the healthy adolescents' published scores[22], physical scores were significantly lower among TGN adolescents. Although they may not have complicated medical regimens or poor disease prognosis, they typically need many appointments and/or hospitalizations to support both physical and mental health. Many TGN youth are overweight or obese. Since many TGN youth have comorbid depression and/or issues with sleep, they may report low energy levels at higher rates than their healthy peers or those with other chronic medical conditions.

The low emotional and psychosocial scores are consistent with other studies. The Human Rights Campaign 2012 survey[1] found that only 4% of gender expansive youth reported being "very happy", compared to 27% of cisgender males. Gender expansive youth had the highest percentage of being "very unhappy" compared to other respondents. A recent study compared TGN youth with matched cisgender controls and found significant mental health differences[30]. They found TGN youth had a 2–3 fold increased risk of depression, anxiety

disorder, suicidal ideation, suicide attempt, self-harm without lethal intent, and both inpatient and outpatient mental health treatment[31]. While consistent with other TGN studies, the very low emotional functioning score is strikingly lower than that found in the comparison samples. Mental health as a comorbid condition is of increasing interest for adolescents with chronic diseases[31,32]. Routine screening for mental health concerns, with appropriate referrals, is warranted[33].

The psychosocial health construct is a combination of emotional, social and school functioning. Since TGN youth scored lower than their health peers or peers with other chronic medical conditions, it is not surprising that they scored lower on this measure. TGN youth with gender dysphoria are often thought of as healthy, since many do not have a chronic medical condition. However, most chronic illnesses are not as stigmatizing and people with these conditions are not usually harassed, abandoned or victimized. For TGN youth, not coming out and living in their new gender means living inauthentically, and there is stress, anxiety and depression associated with this choice. Those who choose to live in their new identities may have a difficult time “passing,” or being treated as a person of their new gender would. TGN youth who are less than 18 years old need to be “out” to at least one adult to attend clinic. Those who are not “out” in all areas of their lives may be afraid or scared to have conversations about this topic due to fear of rejection, violence or other negative outcomes. [30]When TGN youth respond to the item, “I cannot do things that other teens my age can do”, they may be thinking about using the restroom of their choice or playing on the gendered team of their choice or even wearing certain clothing.

Many TGN youth have difficulty in the traditional school environment. Bullying, harassment and mental health diagnoses, may lead TGN youth to struggle with concentration and may not be able to learn in an unsafe environment. Absenteeism due to these conditions, or appointments to manage these conditions, may lead them to fall behind or have trouble keeping up with their work. Injustice at Every Turn is a report of the national transgender discrimination survey[34]. Of TGN youth in school, 78% reported harassment, 35% reported physical assault, and 12% reported sexual violence. Fifty-three percent of transgender people reported verbal harassment and disrespect in public accommodations (retail stores, doctor’s offices, restaurants, etc.)

Limitations of the present study include the following. The usual practice at this Center is to enter the person’s sex assigned at birth into their medical record; however, it is possible that new patients’ current genders were entered. It is also possible that the results reported by Varni and colleagues contain data from persons who are TGN. No attempt was made to identify persons in the sample from this center who may have comorbid chronic conditions. Data were collected cross-sectionally, therefore some patients may have been in different stages of transition to their affirmed gender. Data on completion rates for the PedsQL measures was not kept because this was a quality improvement project within an ongoing clinic practice, potentially limiting the generalizability of the findings. However, participation in other quality improvement studies in this clinic have been as high as 98%[35]. Both the CI and MCID are dependent upon sample size; hence, the graphical inspection of their overlap could change with a future study. In an effort to maintain a consistent level of confidence, 95% CIs were reported for each comparison with no

multiplicity adjustment. If a larger TGN cohort with similar characteristics were studied, it is possible that additional differences may be deemed clinically relevant based on this approach because of the narrowing width of the CI. It is also possible that MCID, which was calculated using a distribution-based method, would differ, compared to the current study. Distribution-based methods are dependent upon measurement error, which can differ between studies. Additional studies are needed that employ a combination distribution-based and anchor-based methods[36], in order to optimize the clinical significance of MCID for the TGN population. It is worth noting that the MCID values reported here for the TGN cohort are largely consistent with those of other samples reported by Varni and colleagues. Despite these caveats, important conclusions can be drawn. Although unsurprising that the TGN youth reported very low HRQOL, it is nonetheless important to have documented this substantial disparity. This study suggests that there is a clinically meaningful decrease to their quality of life, compared to their counterparts (healthy or otherwise). This study should help health care providers, school personnel, and families understand the difficulties inherent in what appears to be an epidemic of suffering, and serve as a call to receive culturally competent training and to use compassion when caring for and supporting these youths. Future directions could include collecting HRQOL data as significant events occur, such as initial visit to a TGN clinic, prior to initiating and following transition to affirmed gender, as well as the extent to which puberty impacts HRQOL. This would best be served through the use a TGN-specific HRQoL scale. Development of such a module is currently underway in order to avoid the use of generic core scales, which have been criticized for lacking sensitivity to population-specific issues[37]. Intervention development targeted for TGN youth to promote higher HRQOL is needed. Distribution of parental proxy data did not differ significantly from their child's self-report. When parents express concern to their TGN child's health care provider, providers should take it seriously, especially when there is discordance between parent and child reports[38]. It is important to utilize these results to develop interventions to improve QoL for TGN youth. Interventions to improve HRQOL for children and youth with other conditions have been successful[39–43]. As the number of TGN youth increases, children for whom poor quality of life is a major factor will continue to present to community physicians as well as specialists in TGN care. These patients and their caregivers need to be taken seriously when they talk about these issues, and work to find interventions to improve QoL.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1.

PedsQL scores for transgender participants according to gender assigned at birth

Scale	Female (n=96)			Male (n=45)			
	Median	Interquartile range	Mean (sd)	Median	Interquartile range	Mean (sd)	P-value *
Total Score	66.30	53.26–77.17	65.87 (16.67)	77.72	66.30–82.61	74.45 (14.31)	0.003
Physical Health	75.00	62.50–90.63	73.98 (17.90)	87.50	81.25–100.00	84.23 (18.31)	0.0007
Psychosocial Health	58.33	50.00–75.00	61.54 (18.47)	70.00	60.00–81.67	69.20 (16.05)	0.018
Emotional Functioning	50.00	35.00–70.00	52.54 (23.64)	60.00	40.00–80.00	61.25 (22.97)	0.066
Social Functioning	70.00	55.00–85.00	69.40 (20.37)	85.00	65.00–90.00	75.95 (21.67)	0.059
School Functioning	60.00	50.00–75.00	62.77 (21.60)	70.00	57.50–85.00	70.69 (17.12)	0.045

* P-values based on Wilcoxon Mann-Whitney test; natal gender was not reported for one subject.

Table 2.

PedsQL scores for transgender participants and comparison populations

Self-Report	n	Scale	Total Score	Physical Health	Psychosocial Health	Emotional Functioning	Social Functioning	School Functioning
TGN	142	Mean (SD)	68.42 (16.44)	77.15 (18.53)	63.76 (18.13)	54.99 (23.86)	71.34 (20.90)	64.99 (20.64)
Alpha			0.91	0.82	0.89	0.83	0.83	0.76
Heal.	5480	Mean (SD)	83.84 ^a (12.65)	87.53 ^a (13.50)	81.87 ^a (14.09)	79.33 ^a (18.15)	85.15 ^a (16.76)	81.12 ^a (16.45)
		ES	-1.21	-0.76	-1.27	-1.33	-0.82	-0.97
Diab.	300	Mean (SD)	80.35 ^a (12.89)	85.89 ^a (13.33)	77.34 ^a (14.62)	72.37 ^a (19.57)	85.63 ^a (16.24)	74.20 ^a (18.08)
		ES	-0.84	-0.58	-0.86	-0.83	-0.80	-0.49
GI	280	Mean (SD)	77.79 ^a (13.24)	80.80 ^c (13.84)	76.18 ^a (14.63)	73.95 ^a (18.76)	84.33 ^a (15.77)	70.29 ^c (18.56)
		ES	-0.65	-0.23	-0.78	-0.92	-0.74	-0.27
Card.	250	Mean (SD)	77.47 ^a (14.51)	82.28 ^b (15.68)	74.88 ^a (16.10)	73.78 ^a (20.38)	78.74 ^a (19.52)	72.09 ^a (19.01)
		ES	-0.59	-0.31	-0.66	-0.87	-0.37	-0.36
Asthma	162	Mean (SD)	74.85 ^a (16.52)	76.51 (18.01)	73.95 ^a (18.35)	72.93 ^a (22.58)	78.94 ^b (19.79)	70.00 ^c (21.44)
		ES	-0.39	0.035	-0.56	-0.77	-0.37	-0.24
Obesity	63	Mean (SD)	74.00 ^c (14.20)	77.50 (17.90)	72.10 ^a (14.10)	68.60 ^a (18.50)	72.60 (18.20)	75.00 ^a (14.50)
		ES	-0.35	-0.019	-0.49	-0.61	-0.063	-0.53
ESRD	85	Mean (SD)	73.97 ^c (15.22)	74.73 (20.43)	73.54 ^a (14.80)	75.16 ^a (18.88)	78.46 ^b (17.79)	66.93 (19.15)
		ES	-0.35	0.13	-0.58	-0.91	-0.36	-0.10
Psych.	296	Mean (SD)	72.20 ^c (12.70)	81.20 ^c (14.20)	67.40 ^c (14.70)	61.30 ^b (19.50)	73.00 (20.40)	67.90 (16.70)
		ES	-0.27	-0.26	-0.23	-0.30	-0.081	-0.16
Cancer	393	Mean (SD)	71.97 ^c (16.12)	71.97 ^b (21.37)	72.10 ^a (16.31)	72.20a (20.84)	75.54 ^c (21.09)	68.30 (19.53)
		ES	-0.22	0.25	-0.50	-0.79	-0.20	-0.17
Rheum	336	Mean (SD)	70.35 (17.83)	65.99 ^a (23.81)	72.67 ^a (17.07)	68.32 ^a (22.85)	80.10 ^a (19.10)	69.86 ^c (19.97)
		ES	-0.11	0.30	-0.51	-0.58	-0.45	-0.24
CP	77	Mean (SD)	66.85 (16.73)	64.40 ^a (22.08)	68.11 (16.52)	68.60 ^a (22.93)	70.52 (19.26)	65.61 (22.18)
		ES	0.095	0.52	-0.25	-0.58	0.04	-0.03

Note:

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100%
p < .001
p < .01
p < .05
c

ES: effect size

TG = Transgender; Diab = Diabetes; Card = Cardiac; ESRD = End Stage Renal Disease; Psych = Psychiatric Disorders; Rheum = Rheumatology; CP = Cerebral Palsy; GI = Gastrointestinal Conditions.
Alpha: Cronbach's alpha coefficient

Table 3.

Concordance between transgender participants' PedsQL self-report and parent proxy-report

Scale	Self-report		Proxy-report		P Value *
	L-S means *	95% CI *	L-S means	95% CI	
Total Score	68.74	65.87, 71.61	66.16	62.87, 69.45	0.12
Physical Health	79.35	75.73, 82.97	77.23	73.14, 81.32	0.28
Psychosocial Health	63.89	60.81, 66.97	60.44	56.87, 64.02	0.067
Emotional Functioning	55.52	51.60, 59.43	49.98	45.50, 54.47	0.014
Social Functioning	71.43	67.84, 75.02	67.38	63.23, 71.53	0.054
School Functioning	64.88	61.19, 68.58	64.14	59.83, 68.45	0.75

* LS-means, 95% CI and P-value are based on the mixed effect model comparing self-report and proxy-report scores.