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Whose quality of life is it anyway? Discrepancies between youth and parent health-related quality of life ratings in type 1 and type 2 diabetes

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Abstract

Purpose—Health-related quality of life (HRQOL) is a critical diabetes outcome, yet differences between youth and parent-proxy ratings can make interpretation difficult. This study aims to explore potential differences between self- and parent-reports of Pediatric Quality of Life

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Compliance with ethical standards

Conflict of interest No authors have any reported conflict of interest.

Ethical approval 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.

Informed consent Informed consent was obtained from all individual participants included in the study.

Inventory (PedsQL) scores from youth with type 1 (T1D) or type 2 diabetes (T2D) and to evaluate associations between discrepancies, PedsQL scores, and glycemic control (HbA1c).

Methods—Youth and parents in the SEARCH for Diabetes in Youth Study (T1D: age 5–18, *n* = 3402; T2D: age 8–18, *n* = 353) completed the PedsQL Generic and Diabetes Modules, and youth provided a blood sample to assess HbA1c. Discrepancies (youth minus parent PedsQL ratings) were calculated and examined by age and diabetes type, and associations with youth PedsQL scores and HbA1c were evaluated.

Results—Discrepancies existed between youth and parent-proxy reports of generic and diabetes PedsQL scores in T1D and T2D (all *p* values < 0.01). Higher (more favorable) ratings were reported by youth except for those 5–7-years old, where parents' scores were higher. When parent-proxy scores were higher, discrepancies were largest when the child reported low PedsQL scores. Higher HbA1c was associated with larger discrepancies (youth scores higher) for adolescents with T1D.

Conclusions—Discrepant PedsQL ratings suggest that parents may often underestimate youths' HRQOL except in the youngest children. Although examining both reports is optimal, the youth report should be prioritized, particularly for young children with T1D and for adolescents with either T1D or T2D.

Keywords

Type 1 diabetes; Type 2 diabetes; Quality of life; Glycemic control

Introduction

Health-related quality of life (HRQOL) is an important construct assessing the impact of a medical condition on physical and mental well-being [1]. Research has demonstrated that poorer HRQOL is associated with higher HbA1c and greater depressive symptoms in the pediatric type 1 diabetes (T1D) and type 2 diabetes (T2D) populations [2, 3]. Clinical assessment and discussion of HRQOL is important to comprehensive management of diabetes spanning both physical and mental health, and interventions to improve HRQOL may promote optimal metabolic and psychosocial outcomes for this population [4].

Administration of the Pediatric Quality of Life Inventory (PedsQL) [5] as a marker of HRQOL in health research frequently assesses both the youth and parent perspectives (proxy) of the youth's HRQOL [5, 6]. However, parent-proxy and youth self-reports often differ [7]. Little is known about what discrepant scores mean and what they may indicate in relation to child health outcomes. This "proxy problem" has been debated in the HRQOL literature, [7–9] but no conclusion has been reached on how to handle the apparent discrepancies.

Parents of children without chronic illness typically rate their child's HRQOL better than the children themselves; in contrast, parents of children with a variety of chronic health conditions (including diabetes) typically rate their child's HRQOL as worse than children themselves [2, 8–10]. However, across studies, the findings tend to be mixed, with discrepancies commonly reported in both directions [7, 11–14]. In a cross-sectional analysis

of adolescents with chronic conditions and their parents, differences between adolescents and parent-proxy scores were found to be statistically significant, although absolute differences were small and observed in both directions (i.e., some with youth ratings higher, some with parent ratings higher) [7]. Further, analysis of a variety of demographic and disease-related factors such as age, gender, and education varied in terms of how they associated with the direction of discrepancies across the multiple studies, when reported [7,12–14]. In summary, the direction and magnitude of HRQOL discrepancies remain unclear, and there are no data on the potential importance of discrepant scores within families in relation to clinical outcomes.

Given that many studies, including large-scale clinical trials, collect both the patient and parent-proxy reports of HRQOL, understanding discrepancies and their associations with glycemic outcomes can inform and clarify the clinical utility and predictive value of these tools. We explored these questions with data from the SEARCH for Diabetes in Youth Study [15]. Our objectives were to explore the direction and magnitude of discrepancies between self- and parent-proxy reports of PedsQL scores in youth with T1D and T2D and to examine whether discrepancies were associated with youth-reported PedsQL scores or glycemic control. Based on the previous research cited above, we hypothesized that there would be discrepancies in both directions and that it would be more common for parental scores to be lower than youth scores. Given the minimal evidence in previous literature, our investigation of differences between T1D and T2D on discrepancies and demographic and clinical predictors of discrepancies was exploratory.

Methods and materials

Participants

SEARCH for Diabetes in Youth is a large multicenter study that conducts population-based ascertainment of youth with clinically diagnosed, non-gestational diabetes who are <20 at the time of diagnosis [16]. SEARCH has enrolled youth newly diagnosed with diabetes from 2002 through the present. Cases are ascertained from geographically defined populations in Ohio, Colorado, South Carolina and Washington, Indian Health Service beneficiaries from four American Indian populations, and enrollees in a managed health care plan in California. Youths whose diabetes is not secondary to other conditions are invited to a SEARCH study visit. After obtaining informed consent and assent, physical measurements were taken, and fasting blood samples are collected from metabolically stable children, and questionnaires are administered to the children and their accompanying parent. The study protocol was approved by the institutional review boards at all of the participating centers.

Youths whose diabetes was incident in 2002 through 2005 or prevalent in 2001 and who completed a baseline study visit were eligible for inclusion in these analyses. From this group, we selected children with T1D or T2D aged 5 through 18 at the time of their initial study visit and for whom we had completed child and the parent-proxy versions of the PedsQL questionnaires.

Measures

Demographic variables—Demographic variables included age at study visit, sex, race/ethnicity, highest level of parental education (either parent), and insurance status. Insurance was categorized as private, state-funded (Medicaid/Medicare, etc.), other (which included student health clinics, military, Indian Health Services), or none. Family composition was categorized as two-parent household, one-parent household, or other/unknown composition.

Clinical variables—Clinical variables included duration of diabetes at the time the survey was completed, insulin regimen, and glycemic control. Insulin regimen was categorized as (1) basal-bolus using the insulin pump, (2) basal-bolus with glargine plus rapid-acting insulin, (3) multiple daily injections (MDI) with ≥3 injections/day, using glargine plus more than/or other than rapid-acting insulin type, (4) MDI with ≥3 injections/day, using any insulin types excluding basal insulin, or (5) 1–2 injections/day, excluding glargine [17]. Detemir and glulisine insulin use was not reported by participants during the data collection period.

Glycemic control—Glycemic control was assessed using blood samples shipped to a central laboratory (Northwest Lipid Research Laboratories, Seattle, WA) for analysis. An ion exchange unit (Variant II; Bio-Rad Diagnostics, Hercules, CA) quantified the glycated hemoglobin (HbA1c) levels.

Health-related quality of life (HRQOL)—Health-related quality of life (HRQOL) was assessed using two modules of the Pediatric Quality of Life Inventory (PedsQL): the Generic Core (generic HRQOL) and Diabetes Module (diabetes HRQOL). All youths aged 5 years and older completed an age-appropriate self-report version of the two modules. For children unable to read, items were read out loud. A parent was also invited to complete a parent-proxy version of each PedsQL module for all youths who were aged <18 years at the time of their visit. Discrepancy scores were calculated as youth total scores minus the parent-proxy scores. Individual rating discrepancies were then categorized as “Youth score higher” for dyads where the youth scores were higher than parent score or “Parent-proxy score higher” for dyads where the parent-proxy scores were higher than the youth score.

Statistical analysis

Diabetes duration, age, sex, race/ethnicity, insulin regimen, health insurance, highest parental education, family income, and family composition were compared by diabetes type. Differences were assessed using ANOVA for continuous measures and the Chi-squared tests or Fisher’s exact tests for categorical responses. Multivariate linear regression models stratified by diabetes type were used to model absolute differences in generic and diabetes-specific PedsQL scores. Age, gender, race (non-Hispanic White vs. other), type of health insurance (private insured vs. other), parental education (less than high school vs. high school or more), family composition (one-parent household or other vs. two-parent household), and duration of diabetes were included in multivariate linear regression models.

Paired *t* tests were used to test for overall differences in parent and child scores. Discrepancies in parent-proxy and youth-reported PedsQL scores stratified by the direction of the discrepancy, age group, and diabetes type were examined. We explored the average differences in discrepancy magnitude across PedsQL tertiles representing the lowest one-third of youth-reported PedsQL scores, the middle one-third, and the highest one-third. *p* values were assessed using ANOVA to determine whether the discrepancy (for diabetes type and direction of discrepancy) differed by tertile.

T tests were used to compare HbA1c values across the two discrepancy direction categories (youth score higher vs. parent-proxy score higher), stratified by diabetes type and age group. Linear regression models were used to determine the relationship of discrepancy size and HbA1c. Models were additionally adjusted for discrepancy direction (youth score higher), gender, race, type of health insurance, family composition, number of household members, diabetes duration, and age group. We tested for interactions between discrepancy size and direction, discrepancy size and age group, and discrepancy direction and age group; no interactions were significant and thus were not retained in the presented models. For interpretability, a ten-point change in the discrepancy was used. All analyses were performed in SAS version 9.4 (Cary, NC), and a 0.05 significance level was used throughout this analysis.

Results

Participants

The study included responses from 3755 youth with diabetes of which 3402 had T1D and 353 had T2D. As expected, there were significant differences in age group, sex, race/ethnicity, diabetes duration, treatment regimen, health insurance, highest parental education, family income, and family composition (all p's < 0.001) by diabetes type (Table 1). Therefore, we conducted the analysis stratified by diabetes type.

Size and direction of PedsQL rating discrepancies

Mean youth and parent-proxy scores on the generic and diabetes-specific PedsQL are displayed in Table 2. Youth with T1D and T2D reported higher scores than parent-proxy scores for both generic and diabetes PedsQL modules (all p's < 0.01). The size and direction of the discrepancies, stratified by age, are shown in Table 2. Among youth with T1D between the ages of 8–12 and 13–18, it was more common (approximately 2:1) for them to rate their generic and their diabetes PedsQL higher than their parents' proxy scores. Among the 5–7-year-olds with T1D, higher parental scores were more common.

For all ages of youth with T2D, it was more common for the youths' scores to be higher than the parents' scores for both the generic and diabetes PedsQL. All parental and child scores significantly differed ($p < 0.01$ for all comparisons).

PedsQL discrepancies and demographic variables

Age, sex, race, and insurance were associated with generic PedsQL score discrepancy size in youth with T1D. Among youth with T1D, for generic PedsQL, the youngest group (age 5–7)

had larger discrepancies compared to adolescents (age 13–18; $\beta = 2.27$, $p < 0.001$). Males had larger discrepancies than females ($\beta = -0.83$, $p = 0.01$), and those of non-White race had larger discrepancies than White participants ($\beta = 1.21$, $p < 0.01$). Those with private insurance had smaller discrepancies than those with public insurance ($\beta = -2.27$, $p < 0.01$), and those with two-parent households had smaller discrepancies than those with one-parent households ($\beta = 1.34$, $p < 0.01$). For diabetes PedsQL scores in youth with T1D, only insurance was associated with discrepancy size, such that those with private insurance had smaller discrepancies ($\beta = -1.24$, $p = 0.01$). For youth with T2D, males had larger discrepancies than females in generic HRQOL scores ($\beta = 3.79$, $p = 0.01$). No other demographic variable was associated with discrepancy size.

PedsQL discrepancies and glycemic control

Mean HbA1c values for each type of discrepancy (youth score higher vs. parent-proxy score higher), stratified by age and diabetes type, are presented in Table 3. For the full sample of youth with T1D, HbA1c values were significantly higher among youth whose PedsQL scores (both generic and diabetes) were higher than the parent-proxy scores compared to those whose parent-proxy ratings were higher. Stratified by age group, this pattern held only for youth aged 13–18 ($p < 0.01$). There were no HbA1c differences by discrepancy direction for youth aged 5–7 or 8–12. There were no HbA1c differences by discrepancy direction for youth with T2D at any age.

Linear regression models were also used to quantify the relationship between discrepancy sizes and HbA1c values (Table 4). Larger discrepancies and the “Youth score higher” group were associated with higher HbA1c in T1D after adjusting for sex, insurance, parental education, household composition, number of household members, diabetes duration, and age group. A ten-unit increase in generic and diabetes-specific PedsQL discrepancy size was associated with a 0.07 % and 0.08 % increase, respectively, in HbA1c. Youths who scored higher than their parents were associated with an 0.11 (for generic PedsQL) and 0.12 (for diabetes PedsQL) percent increase in HbA1c.

Discussion

This study investigated the magnitude and direction of discrepancies between youth and parent-proxy reports of both generic and disease-specific PedsQL scores in a large, national sample of youth with T1D and T2D. We found that the majority of youth with T1D and T2D reported higher generic and diabetes-specific PedsQL scores than their parent reported. The only exception was in the T1D 5–7-year-old age group, where the majority of parents rated their child’s generic and diabetes-specific HRQOL higher than the youth.

Previous studies of the “proxy problem” have not been conducted in such large samples nor have they been stratified by age or diabetes type. Our report suggests that parents may underestimate youths’ PedsQL scores, except in the youngest children with T1D. Also of note in the 5–7-year-old T1D group was the finding that for parents rating youth PedsQL higher than the child (55 % of all parents for generic and 53 % for diabetes-specific), the magnitude of discrepancy was also the largest. Clearly there is a disconnection between parents’ and youths’ perceptions of youth HRQOL in this young age group. Given that

parents are doing much of the diabetes care at this stage, many may underestimate the effect diabetes has on their young child. Parents of young children with diabetes may have difficulty distinguishing between normative and diabetes-related behavior, so it may be difficult to accurately assess their child's overall well-being [18].

When we examined discrepancies of PedsQL reports in relation to youths' HbA1c levels at the time of the study visit, we found that among adolescents 13–18-years old with T1D, HbA1c values were higher when the youth reported higher PedsQL scores than their parent reported, for both the generic and diabetes-specific PedsQL modules. Further, larger discrepancies were associated with worse glycemic control. Given adolescents are more likely to have worsening treatment adherence and poor glycemic control [19], it is possible that parental perceptions of adolescent HRQOL may take adherence or glycemic control into consideration, thus rating HRQOL lower when HbA1c is poor; however, teens' own perceptions of HRQOL may not be related to HbA1c. These results may also reflect differences between parent and youth perspectives on HRQOL that encompass broader family issues that were not measured in this study, such as family conflict or poor communication in the home, as both have been associated with HRQOL and HbA1c [15–17]. This finding was only observed among youth with T1D. There were no associations between discrepancies and HbA1c among the youth with T2D.

We found consistent differences between T1D and T2D groups in relation to discrepancy size and demographic and clinical correlates of discrepancies. The smaller HRQOL discrepancies in T1D may reflect a relatively higher level of involvement in diabetes management among caregivers of youth with T1D; however, this is speculative as we are not aware of research comparing parent involvement in T1D versus T2D. Additionally, larger discrepancies were associated with demographic variables such as race and insurance status for T1D. More research is needed on the relationships between parental involvement, reported discrepancies, and demographic variables, particularly ones that reflect socio-economic status that we found significant in the T1D sample as they may be another indicator of the negative effects of health disparities. The lack of association between demographic variables and HRQOL discrepancies in T2D may be related to less variability (i.e., lower SES overall, more racial/ethnic minorities) in the T2D sample.

Limitations of this study included the cross-sectional design, which prohibits our ability to establish causality, particularly in the analyses with HbA1c in which the directionality of the associations we found remains unclear. Further, our study was not able to provide clarity on the reasons for the differences between the discrepant reports. Future research would benefit in understanding more about the nature of these reasons and how to reduce discrepancies. Lastly, we were unable to answer the question of whose HRQOL is more important to collect, as that becomes more of a philosophical versus empirical question undoubtedly influenced by many factors beyond what we have collected here.

In summary, our study investigated the difference between child and parent-proxy scores on the generic and diabetes-specific PedsQL modules. Despite the limitations listed above, we found that indeed discrepancies not only exist, but they relate to glycemic outcomes among adolescents with T1D. Thus, in the context of clinical care it is important to consider

discrepancies in HRQOL reports as much as possible, as large discrepancies, particularly when the parents report higher scores than their child, can indicate a worrisome lack of correspondence between the parent's and the adolescent's perspectives. If providers note large discrepancies, it may be beneficial to dedicate more time to discussing HRQOL issues with families. However, more research is needed to determine whether HRQOL interventions [19] for families with larger versus smaller discrepancies are impactful.

Taken together, our findings support prior recommendations [17, 18] to use the youth report (when available) in conjunction with the parent-proxy report when making determinations on youth HRQOL. However, when youth and parent-proxy scores are highly discrepant, they should be considered individually and not be averaged together or otherwise aggregated. This may be particularly important in adolescence, given the large discrepancies found in T2D and the association of larger discrepancies with HbA1c in adolescents with T1D. Although examining both reports is optimal, if it is unrealistic to collect both, the youth report should be prioritized.

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Table 1

Demographic and clinical information characteristics of the 3755 participants in the study sample, by diabetes type: the SEARCH for diabetes in youth study

Characteristic	T1D, *N* = 3402		T2D, *N* = 353*	
	N	% or M (SD)	*N*	% or M (SD)
Age at study visit, years				
5–7	581	17.1	0	–
8–11	1438	42.3	68	19.3
13–18	1383	40.7	285	80.7
Age (mean, SD years)		11.9 (3.4)		14.9 (2.0)
Duration (months)		38.3 (39.6)		17.6 (16.5)
Gender (female)	1702	50.0	222	62.9
Insulin regimen				
Pump	533	15.9	1	0.7
Long + short/rapid insulin, three or more times a day	833	24.8	16	11.6
Long + any other combination, two or more times a day	317	9.4	5	3.6
Any combination of insulins excluding long, three or more times/day	516	15.4	27	19.6
Any insulin(s) taken 1x/day, or any insulin combination excluding long 2x/day	1158	34.5	89	64.5
Not on insulin	44	1.3	211	60.5
Race/ethnicity				
Black	319	9.4	124	35.1
Hispanic	382	11.3	91	25.8
Other	103	3.0	55	15.6
Non-hispanic White	2598	76.4	83	23.5
Type of health insurance				
None	32	0.9	12	3.4
Other	59	1.7	15	4.3
Medicaid	577	17.0	134	38.4
Private	2719	80.3	188	53.9
Highest level of education of either parent				
Bachelors degree or more	1575	46.5	53	15.1
Some college through associate degree	1163	34.3	126	35.8
High school graduate	504	14.9	112	31.8
Less than high school graduate	145	4.3	61	17.3
Family composition				
One-parent household	939	27.7	169	48.0
Two-parents/one household	2350	69.3	160	45.5
Other	100	3.0	23	6.5
Income				
$25–49 K	747	22.1	93	26.4
$50–74 K	697	20.6	38	10.8
$75 K+	1336	39.5	33	9.4

Characteristic	T1D, *N* = 3402		T2D, *N* = 353*	
	N	% or M (SD)	*N*	% or M (SD)
< $25 K	432	12.8	151	42.8
Don't know or refused	173	5.1	38	10.76

*All *p's* < 0.001 for comparison by diabetes type

Table 2

Overall youth and parent scores, and direction and magnitude of discrepancy scores (absolute value), stratified by age, for generic and diabetes-specific PedsQL Modules

	Age group	PedsQL score: M ± SD		Youth score higher		Parent-proxy score higher	
		Youth	Parent-proxy	Percent of age group	Discrepancy size, M ± SD	Percent of age group	Discrepancy size, M ± SD
Type 1 diabetes[a,b]							
Generic	All	80.3 ± 13.2	78.0 ± 14.08				
	5–7	71.7 ± 14.6	78.4 ± 12.7	45	10.0 ± 8.6	55	15.5 ± 11.9
	8–12	81.7 ± 12.7	78.6 ± 13.6	62	11.4 ± 9.7	38	10.0 ± 8.4
	13–18	82.5 ± 11.6	77.1 ± 15.0	67	12.4 ± 11.0	33	9.0 ± 6.9
Diabetes	All	74.7 ± 13.5	70.4 ± 13.1				
	5–7	68.3 ± 14.3	71.1 ± 11.9	47	10.6 ± 9.5	53	14.5 ± 11.6
	8–12	77.1 ± 13.1	71.5 ± 12.5	68	13.2 ± 9.8	32	10.3 ± 8.9
	13–18	74.9 ± 12.7	69.0 ± 14.1	68	13.2 ± 10.0	32	9.8 ± 7.8
Type 2 diabetes[a]							
Generic	All	75.0 ± 15.4	67.4 ± 17.4				
	8–12	73.1 ± 19.3	66.2 ± 17.7	71	15.5 ± 12.0	29	13.4 ± 15.3
	13–18	75.5 ± 14.4	67.7 ± 17.3	65	17.8 ± 12.9	35	10.7 ± 8.7
Diabetes	All	71.5 ± 15.6	68.0 ± 15.9				
	8–12	69.6 ± 19.1	68.9 ± 15.3	62	12.3 ± 9.9	38	18.0 ± 15.0
	13–18	72.0 ± 14.7	67.8 ± 16.0	61	14.3 ± 11.3	39	11.4 ± 8.4

[a] All p values < 0.01 for comparisons of youth versus parent-proxy scores

[b] All p values < 0.001 for comparisons between age groups per type of discrepancy

Table 3

T-tests comparing HbA1c values by discrepancy direction, stratified by diabetes type and age group

	Generic PedsQL				Diabetes PedsQL			
	HbA1c, M ± SD		*p* value	Effect size	HbA1c, M ± SD		*p* value	Effect size
	Youth score higher	Parent-proxy score higher			Youth score higher	Parent-proxy score higher		
Type 1 diabetes								
All Ages	8.2 ± 1.7	8.0 ± 1.4	<0.0001	0.14	8.2 ± 1.6	8.0 ± 1.5	0.00	0.13
5–7 years	7.9 ± 1.3	7.9 ± 1.1	0.82	0.02	7.9 ± 1.2	7.9 ± 1.1	0.81	0.02
8–12 years	8.0 ± 1.4	8.0 ± 1.3	0.44	0.04	8.0 ± 1.4	7.9 ± 1.4	0.07	0.11
13–18 years	8.4 ± 1.9	8.1 ± 1.7	0.00	0.18	8.4 ± 1.9	8.2 ± 1.8	0.04	0.12
Type 2 diabetes								
All Ages	7.8 ± 2.3	7.3 ± 2.2	0.06	0.22	7.7 ± 2.3	7.5 ± 2.1	0.29	0.12
8–12 years	6.8 ± 1.6	7.5 ± 2.2	0.17	0.37	7.1 ± 2.1	7.5 ± 2.0	0.41	0.21
13–18 years	7.4 ± 2.3	7.8 ± 2.3	0.12	0.20	7.5 ± 2.1	7.8 ± 2.4	0.42	0.10

Table 4

Linear regression models of generic and diabetes HRQOL predicting HbA1C, stratified by diabetes type

Parameter	HbA1c							
	Version	Beta	SE	*p* value	Version	Beta	SE	*p* value
Type 1 diabetes								
PedsQL: Absolute difference (youth–parent), 10-point difference	Generic	0.07	0.03	0.01	Diabetes-Specific	0.08	0.03	0.00
Youth PedsQL score higher		0.11	0.05	0.04		0.12	0.06	0.03
Female sex		0.14	0.05	0.01		0.14	0.05	0.01
Non-White race		0.43	0.07	<.0001		0.43	0.07	<.0001
Private insurance		−0.28	0.07	0.00		−0.28	0.07	<.0001
Parental education > HS		−0.22	0.07	0.00		−0.23	0.07	0.00
Not living in a two-parent household		0.34	0.06	<.0001		0.35	0.06	<.0001
Number of household members		0.04	0.02	0.08		0.04	0.02	0.08
Diabetes duration (months)		0.01	0.00	<.0001		0.01	0.00	<.0001
Age group								
Ages 5–7		−0.1	0.08	0.21		−0.1	0.08	0.2
Ages 8–12		−0.1	0.06	0.09		−0.11	0.06	0.06
Ages 13–18		Ref				Ref		
Type 2 diabetes								
PedsQL: Absolute Difference (youth–parent), 10-point difference	Generic	0.1	0.1	0.32	Diabetes-Specific	0.04	0.11	0.72
Youth PedsQL score higher		0.52	0.26	0.04		0.28	0.24	0.25
Female sex		0.22	0.25	0.38		0.18	0.25	0.48
Non-White race		0.58	0.29	0.04		0.64	0.29	0.03
Private insurance		0.1	0.25	0.69		0.13	0.25	0.6
Parental education > HS		−0.03	0.24	0.9		−0.09	0.24	0.71
Not living in a two-parent household		−0.75	0.25	0.00		−0.77	0.26	0.00
Number of household members		0.06	0.07	0.44		0.05	0.08	0.54
Diabetes duration (months)		0.04	0.01	<.0001		0.04	0.01	<.0001
Age group								
Ages 8–12		−0.08	0.3	0.79		−0.07	0.3	0.81
Ages 13–18		Ref				Ref		