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Medical care transition planning and dental care use for youth with special health care needs during the transition from adolescence to young adulthood: a preliminary explanatory model

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Abstract

Objectives—To test the hypotheses that youth with special health care needs (YSHCN) with a medical care transition plan are more likely to use dental care during the transition from adolescence to young adulthood and that different factors are associated with dental utilization for YSHCN with and YSHCN without functional limitations.

Methods—National Survey of CSHCN (2001) and Survey of Adult Transition and Health (2007) data were analyzed (N=1,746). The main predictor variable was having a medical care transition plan, defined as having discussed with a doctor how health care needs might change with age and having developed a transition plan. The outcome variable was dental care use in 2001 (adolescence) and 2007 (young adulthood). Multiple variable Poisson regression models with robust standard errors were used to estimate covariate-adjusted relative risks (RR).

Results—About 63% of YSHCN had a medical care transition plan and 73.5% utilized dental care. YSHCN with a medical care transition plan had a 9% greater relative risk (RR) of utilizing dental care than YSHCN without a medical care transition plan (RR:1.09; 95% CI:1.03–1.16). In the models stratified by functional limitation status, having a medical care transition plan was significantly associated with dental care use, but only for YSHCN without functional limitations (RR:1.11; 95% CI:1.04–1.18).

Conclusions—Having a medical care transition plan is significantly associated with dental care use, but only for YSHCN with no functional limitation. Dental care should be an integral part of the comprehensive health care transition planning process for all YSHCN.

Keywords

children with special health care needs; adolescent; health care transition planning; dental care use; oral health; explanatory models

INTRODUCTION

Dental care is the most common unmet need for youth with special health care needs (YSHCN) [1]. Special health care needs are defined as mental, physical, or behavioral conditions expected to last 12 months or longer [2]. The 2011 Institute of Medicine Report “*Improving Access to Oral Health Care for Vulnerable and Underserved Populations*” specifically highlights disparities in dental care use experienced by YSHCN [3]. Dental

visits are important because they give dentists the opportunity to assess risk for oral diseases, provide parents and patients with tailored anticipatory guidance on oral hygiene and diet, and deliver preventive and restorative care. Furthermore, dental visits reduce the odds experiencing toothaches and other sequelae of poor oral health [4]. The inextricable link between oral and systemic health makes dental care particularly important for YSHCN. While advanced therapies have increased the life expectancy of medically vulnerable patients [5], the fragmented health care system has failed to meet the needs of an aging YSHCN population [6].

The American Academy of Pediatrics (AAP) issued a consensus statement on health transitions for YSHCN in 2002 [7]. Health transitions are defined as “the purposeful, planned movement of adolescents and young adults with chronic physical and medical conditions from child-centered to adult-oriented health care systems” [8]. However, health transition services are commonly unavailable and studies indicate numerous barriers to transitions for YSHCN [9–11].

Similar problems with inadequate transitions exist across pediatric subspecialties, including dentistry. Some pediatric dentists “graduate” adolescent patients after they reach a certain age, which may leave adolescents with special health care needs with no place to go to for dental care. Other pediatric dentists may continue treating adult patients because of a shortage of general dentists willing to see patients with special health care needs, especially patients with intellectual and/or developmental disabilities or functional limitations. Barriers to dental transitions as reported by pediatric dentists include a shortage of general dentists and specialists, lack of reimbursement by insurance companies for transition planning, and emotional difficulties of breaking bonds with patients [12]. These barriers to transitions may explain why 71% of pediatric dentists treat adult patients older than age 21 years [12]. The upper age limit of adult patients within pediatric dental practices is unknown. However, pediatric dentists commonly treat patients with special needs who are in their 40s or 50s. This scenario is potentially problematic because pediatric dental offices are not equipped to deliver adult-centered dental care (e.g., dentures, implants, permanent tooth crowns). Over time, adult patients may accumulate within maturing pediatric dentistry practices and younger patients may experience difficulties getting appointments. The dearth of programs to help YSHCN transition from child-to adult-centered dental care is a growing problem [13].

Maintaining optimal oral health over the life course is critical [14]. Consistent with the philosophy that continuous access to dental care services is an integral part of the broader health care transition planning process for YSHCN and previous studies demonstrating associations between medical and dental care use [15–17], two hypotheses were tested: 1) having a medical care transition plan is associated with dental care use during the transition from adolescence to young adulthood for YSHCN; and 2) different factors are associated with dental utilization for YSHCN with and YSHCN without functional limitations.

METHODS

Design

This secondary data analysis was a retrospective cohort study. The study was exempted by the University of Washington Institutional Review Board.

Data and Population

Two linked U.S. datasets were analyzed: the 2001 National Survey of Children with Special Health Care Needs (NS-CSHCN) and the 2007 Survey of Adult Transition and Health (SATH). The NS-CSHCN is a household survey of caregivers of CSHCN ages birth to 17

years. The SATH is a survey of young adults ages 19 to 23 years whose caregivers were originally interviewed for the 2001 NS-CSHCN when participants were ages 14 to 17 years. Survey details are reported elsewhere [18–19]. The current study focused on participants of both surveys (N=1,865). Participants must have had a special health care need, defined as meeting at least one CSHCN Screener criterion, to participate in the NS-CSHCN. Previous work has described the development, evaluation, and psychometric properties of the CSHCN Screener [20–21]. The current study focused on youth whose dental care needs were met during adolescence. YSHCN with unmet dental care needs and YSHCN who did not get all needed dental care in adolescence were excluded (n=119). The final study population consisted of YSHCN who utilized dental care in 2001 and for whom follow-up data were available in 2007 (N=1,746) (Figure 1).

Outcome Variable

The outcome was whether the youth utilized preventive dental care during the transition from adolescence to young adulthood (no/yes). This measure is based on the National Committee for Quality Assurance's Healthcare Effectiveness Data and Information Set (HEDIS) metric on annual dental visits [22].

Main Predictor Variable

The main predictor was whether the youth had a medical care transition plan (no/yes), measured in 2007 using two binary items: whether the youth reported doctors ever having discussed how health needs might change with age and whether the youth had ever developed a transition plan. Youths who responded yes to both items were classified as having had a medical care transition plan.

Model Covariates

A preliminary model on dental care use was developed based on previous studies [10,23]. The 15 model covariates were classified into three domains:

Child and family sociodemographic factors: age, gender, self-reported race (White; non-White), education (<high school; high school; some college; 4-year degree or more), maternal education (same categories as child education), and family income (<100% Federal Poverty Level [FPL]; 100% to 200% FPL; 200% to 300% FPL; 300% to 400% FPL; 400% FPL).

Child health status and medical care factors: self-reported health status (5-level variable, poor to excellent, measured in 2007), health status change from 2001 to 2007 (stayed the same; got worse; got better), functional limitation (condition interferes with ability to participate in activities, no/yes), medical insurance status in 2007 (no insurance; private insurance and Medicaid; private insurance only), medical insurance met needs in 2007 (4-level variable, never to always), had a usual source of medical care in both 2001 and 2007 (no/yes). No variables were collinear with the main predictor variable. Therefore, all child health status and medical care factors were included in the final models.

Social support/life satisfaction: received social and emotional support (4-level variable, never or rarely; sometimes; usually; always), lives with parents (no/yes), self-reported life satisfaction (3-level variable, very dissatisfied or dissatisfied; satisfied; very satisfied). All were measured in 2007.

Statistical Analyses

The Pearson chi-square test was used to assess the relationship between model covariates and dental care use ($\alpha=0.05$). Multiple variable Poisson regression models with robust

standard errors were used to estimate covariate-adjusted relative risk (RR) of dental care use and corresponding 95% confidence intervals (CI) [24]. Functional limitation status was modeled a priori as a modifier of having a medical care transition plan based on previous studies suggesting an interaction between the two variables [25–26]. Regression models were run on all study participants and also stratified by functional limitation status. A conceptual model building approach was adopted and all covariates were included in the final explanatory models. All analyses were completed using PASW Statistics 18.0 for Windows (Chicago, IL).

RESULTS

Descriptive Statistics

Over 90% of the population was White and 67.9% completed at least some college (Table 1). Nearly 50% of the participants had mothers who completed a 4-year degree or more and 56.6% were raised in families with incomes $\leq$ 300% FPL. About two-thirds of participants were insured exclusively by private medical insurance. Overall, 62.5% of YSHCN had a medical care transition plan.

Factors Related to Dental Care Use

Nearly 74% of participants utilized dental care during the transition from adolescence to young adulthood (Table 2). Significantly larger proportions of YSHCN with a medical care transition plan utilized dental care than YSHCN without a medical care transition plan (78.9% and 70.2%, respectively; $P < 0.001$) (Table 2). The following factors were independently associated with dental care use for YSHCN: younger age, more education, more maternal education, higher family income, poorer self-reported health, private insurance, not having a usual source of medical care, more social support, living with parents, and greater life satisfaction.

Poisson Regression Models

YSHCN with a medical care transition plan were 1.09 times as likely to have utilized dental care as YSHCN without a medical care transition plan (RR:1.09; 95% CI:1.03,1.16; $P = 0.003$) (Table 3). YSHCN who completed high school or less were significantly less likely to have utilized dental care than YSHCN who completed college. An income gradient was apparent in which the relative risk of dental care use decreased with lower levels of family income. YSHCN with medical insurance, particularly private insurance and health insurance that met their needs, were significantly more likely to use dental care, whereas having a usual source of medical care was not associated with dental care use. Living with parents was significantly associated with dental care use (RR:1.07; 95% CI:1.01,1.14; $P = 0.02$).

Among YSHCN with no functional limitation, YSHCN with a medical care transition plan were 1.11 times as likely to use dental care (RR:1.11; 95% CI:1.04,1.18; $P = 0.001$). Other factors associated with dental care use for YSHCN without a functional limitation were younger age, more education, higher family income, poorer self-reported health, private medical insurance, and adequate health insurance.

For YSHCN with a functional limitation, medical care transition planning was not significantly associated with dental care use ($P = 0.98$). YSHCN with a functional limitation from the lowest income families ($< 100\%$ FPL) were less likely to use dental care than from the highest income families ($\geq 400\%$ FPL) ($P = 0.02$). The only other statistically significant covariate for YSHCN with a functional limitation was having adequate medical insurance.

Preliminary Model

An explanatory model on dental care use for YSHCN during the transition from adolescence to young adulthood is presented based on the regression results (Figure 2). This model highlights the role of having a medical care transition plan as a key determinant of dental care use, but only for YSHCN with no functional limitation. Two factors from two of the three domains were significant.

DISCUSSION

This publication is the first to examine dental care use for YSHCN during the transition from adolescence to young adulthood with an emphasis on the influence of having a medical care transition plan. In the final models, medical care transition planning was positively associated with dental care use, but only for YSHCN without a functional limitation. The two factors consistently associated with greater likelihood of dental care use for YSHCN, regardless of functional limitation status, were higher family income and adequate medical care insurance. Broadly, these findings suggest that: 1) medical care transition planning alone is insufficient to ensure dental care use for all YSHCN, particularly YSHCN with functional limitations; and 2) financial resources and medical care insurance are important factors related to dental care use during the transition from adolescence to young adulthood for YSHCN.

The main hypothesis was that medical transition planning would be significantly associated with dental use. Previous studies have reported associations between medical and dental care use [15–17]. Medical providers who discuss transition-related issues with YSHCN and their families are likely to adopt comprehensive approaches inclusive of the patient's anticipated specialty care needs [27–28], which includes dental care. However, medical care transition planning was not associated with dental utilization for YSHCN with functional limitations. These findings suggest that medical transition planning is not a sufficient determinant of dental care use during the transition from adolescence to young adulthood for youth with significant activity-limiting conditions. Potential barriers include loss of dental insurance and high out-of-pocket costs, difficulties finding dentists who treat YSHCN, higher priority systemic health care needs, and low perceived need for dental care [29]. In addition, there may be too few general dentists able to treat adults with functional limitations because of inadequate training [30]. While many of these barriers need to be investigated empirically, findings from the current study indicate that inadequate medical care insurance and lack of financial resources are important barriers to dental care use. Additional work is needed to identify the patient-, family-, and system-level barriers to dental care use for YSHCN during the transition from adolescence to young adulthood, especially for YSHCN with functional limitations.

Child and Family Sociodemographic Factors. In the non-stratified model, younger YSHCN were more likely to use dental care than older YSHCN, which is inconsistent with previous findings indicating a positive relationship between age and health transitions [31]. This downward trend is problematic because dental disease accumulates and periodic preventive care (e.g., topical fluoride, sealants) can help to ensure optimal oral health. Opportunities exist for health providers who see young adults with special health care needs to help reinforce positive oral health behaviors such as healthy eating, toothbrushing with fluoridated toothpaste, and visiting the dentist. Such medical office-based interventions could offer direct preventive care (e.g., topical iodine, fluoride varnish treatments) for high risk young adults, modeled on existing programs for young children [32]. While barriers to the development of such programs have been documented (e.g., limited oral health knowledge among medical providers, lack of reimbursement for non-dental healthcare providers to provide preventive dental care for adolescents, shortage of dentists to which

patients can be referred when treatment needs exist) [33], innovative dental-medical partnerships within academic and community health care settings could address these barriers.

One example of an innovative dental-medical partnership involves training primary care physicians and family medicine residents on infant oral health at the University of Washington [34]. Another example is a medical office-based oral health intervention in North Carolina in which primary care providers are trained to assess risk for tooth decay, provide anticipatory guidance, and deliver preventive dental care to Medicaid-enrolled infants. These innovative programs are based on interprofessional, community-based collaborations that seek to improve cultural competencies and shape the ethical and professional values of medical professionals. Programs to date have emphasized oral health promotion in young children. Similar oral health education programs should be developed to target health providers who treat adolescents and young adults with special health care needs.

YSHCN who did not finish high school were significantly less likely to use dental care than YSHCN who completed at least some college. This observation is consistent with previous findings that low educational attainment contributes to disparities in dental care use [35]. While residual confounding may still be problematic, the regression model accounted for confounders such as income and medical care insurance. Consistent with other studies on health transitions [10–11,31], there appeared to be no evidence of racial disparities in dental utilization. However, over 90% of youth were White, which is not representative of the YSHCN population. Two publications reported race and ethnicity as barriers to health transitions [26,36]. This issue warrants additional investigation. Furthermore, significant differences in dental utilization by maternal education were not apparent, which is also consistent with previous findings [31]. Finally, an income gradient was noted, with YSHCN from higher income families incrementally more likely to use dental care than YSHCN from lower income families, which is similar to the income gradient related to health transition services [26]. These findings suggest that future dental transition interventions should target economically vulnerable YSHCN with lower levels of education and YSHCN from lower-income families.

Child Health Status and Medical Care Factors. Of the five factors in this domain, only two were significantly associated with dental care use in the non-stratified model: having medical insurance and adequacy of insurance. YSHCN with private medical insurance or private insurance and Medicaid were more likely to use dental care than uninsured youth ($RR=1.15$ and $RR=1.21$, respectively). Adequate medical insurance was the strongest predictor of dental utilization for YSHCN ($RR=1.51$), which is consistent with other studies on health transitions [10,37]. Although health insurance is not a sufficient condition for dental care use, our findings support policies that enable youth to maintain comprehensive coverage under a parent's health plan until age 26 – a key feature of the U.S. Patient Protection and Affordable Care Act [38]. Self-reported health status, health status changes, and having a usual source of care were not related to dental care use, which is inconsistent with two studies on health transitions [27,39]. However, among YSHCN without functional limitations, YSHCN in good to excellent health were significantly less likely to use dental care than YSHCN in poor health. A potential explanation is that healthier YSHCN have low perceived need for dental care. Additional studies linking clinical oral health and utilization data are needed to determine the residual level of unmet need.

Social Support and Life Satisfaction. Living with parents was the only factor related to dental care use from this domain, but only in the non-stratified regression model. YSHCN living at home may have a parent to help manage dental appointments and provide

transportation and emotional support during dental visits. Nearly 40% of the YSHCN in our study lived independently. Providing care coordination support and resources to YSHCN who live independently could be a way to ensure access to health care services, including dental care. Such interventions should focus on building health management skills, account for patient preferences, and preserve autonomy.

Future dental interventions should be incorporated into existing medical transition programs. Many medical transition interventions do not include an explicit dental care component [40–41]. Health transition interventions must be comprehensive, patient-centered, and tailored to the youth's age and readiness to transition. These interventions should also involve parents and health providers with life-span oriented practice philosophies. Parents and providers may require training on how to work with youth to ensure that health-related responsibilities are transferred appropriately and incrementally. Finally, health transitions are one of the many types of transitions (e.g., education, employment, independent living, social skills, service system). Interventions emphasizing adult-centered primary care, including dental care and other types of specialty care, should be part of broader social interventions aimed at preparing YSHCN for the transition to independence. Such interventions will require rigorous evaluation to ensure that intended outcomes are met and to identify the active ingredients that enable proper program optimization for future dissemination and implementation activities.

Previous studies have noted the considerable state-level variation in the demographic characteristics of YSHCN and the availability of health transition programs [42]. Federal programs that include dental transition planning could help to reduce state-level disparities and standardize the availability of transition programs. Another factor that varies from state-to-state is adult Medicaid dental coverage. As of 2007, only 16 states offered dental benefits in all service categories to Medicaid-enrolled adults [43]. Six states offered no adult dental benefits, six states imposed caps, and 16 states offered emergency care only. To balance budgets, states continue to shortsightedly eliminate adult Medicaid dental benefits. These trends are problematic for YSHCN because Medicaid is the largest public source of dental care funding. Without coverage, many of these youth end up utilizing dental care in hospital emergency departments or inpatient units [44–45]. Management of dental problems in hospital settings is costly and an inefficient use of scarce health dollars. State legislatures must preserve full Medicaid health benefits, including dental care, for eligible YSHCN during the transition from adolescence to young adulthood. To acknowledge the importance of oral health, federal health care legislation should include explicit oral health provisions.

The main strength of this study was the use of the most current national data on health transitions for YSHCN. Our study contains two main limitations. First, there is no data on whether the dental care utilized during the transition from adolescence to young adulthood was child- or adult-centered. YSHCN who see a general dentist from a young age do not encounter the same barriers to dental care transitions as do YSHCN who seek dental care from a pediatric dentist. Additional research based on primary data collection is needed to assess the extent to which YSHCN are able to transition to adult-centered dental care and to assess the barriers to dental care transitions as reported by parents and youths. Second, the study population was mostly White and included youth from higher-income families. The 119 YSHCN who were excluded from the analyses because they had unmet dental care needs during adolescence were significantly more likely to be non-White, non-college graduates, from low-income households, and unhealthy. Future work should include youth from a range of racial, ethnic, and socioeconomic backgrounds. Broadly, additional theory-driven qualitative work is needed that focuses on the role of caregivers, youth, dental health professionals, and other health care providers in dental transition planning. Longitudinal studies are also needed to identify the determinants of the dental care use during the

transition from adolescence to young adulthood for YSHCN. The knowledge generated can be used to develop and test interventions and policies aimed at protecting the oral health of patients with special health care needs during the transition from adolescence to young adulthood.

The study findings suggest that medical care transition planning is associated with dental care use for YSHCN with no functional limitation. Interventions aimed at improving the oral and systemic health of YSHCN should include strategies to ensure adequate attention to dental care transitions within broader health transition planning.

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FIGURE 1.
Operationalization of Main Predictor Variable (Medical Care Transition Planning) and
Outcome Variable (Dental Care Use)

FIGURE 2.

Preliminary Explanatory Model on the Factors Associated with Dental Care Use from Adolescence to Young Adulthood for Youth with Special Health Care Needs with Main Predictor Variable (Medical Care Transition Planning) Italicized

* P<0.05

** P<0.0001

TABLE 1

Characteristics of Study Population of Youth with Special Health Care Needs (N=1,746)

	n (%)
Child and Family Sociodemographic Factors	
Age (years)	
20	460 (26.3)
21	461 (26.4)
22	456 (26.1)
23	369 (21.1)
Gender	
Female	794 (45.5)
Race	
White	1576 (90.5)
Non-White	166 (9.5)
Education	
<high school	158 (9.1)
high school or equivalent	400 (23.0)
post-high school education but no 4 year degree	874 (50.3)
4 year degree or more	305 (17.6)
Maternal Education	
<high school	54 (3.2)
high school or equivalent	345 (20.3)
post-high school education but no 4 year degree	454 (26.7)
4 year degree or more	846 (49.8)
Income (% Federal Poverty Level [FPL])	
<100% FPL	72 (4.1)
100% to <200% FPL	189 (10.8)
200% to <300% FPL	334 (19.1)
300% to <400% FPL	341 (19.5)
400% FPL	647 (37.1)
missing	163 (9.3)
Child Health Status and Medical Care Factors	
General self-reported health status in 2007	
Excellent	393 (22.5)
Very good	753 (43.2)
Good	471 (27.0)
Fair	117 (6.7)
Poor	11 (0.6)

	n (%)
Child and Family Sociodemographic Factors	
Change in health status (2001 to 2007)	
Got better	526 (30.2)
Got worse	181 (10.4)
About the same	1033 (59.4)
Has a functional limitation (2007)	
No	1484 (85.0)
Yes	260 (14.9)
Medical care insurance status in 2007	
Private insurance only	1149 (67.4)
Private insurance and Medicaid	218 (12.8)
None	339 (19.9)
Health insurance meets needs in 2007	
Never	160 (9.2)
Sometimes	287 (16.4)
Usually	627 (35.9)
Always	635 (36.4)
Had a usual source of medical care in 2001 and 2007	
No	580 (33.2)
Yes	1166 (66.8)
Had a medical care transition plan	
No	654 (37.5)
Yes	1092 (62.5)
Social Support and Life Satisfaction	
Receives social and emotional support in 2007	
Never/rarely	35 (2.0)
Sometimes	145 (8.3)
Usually	499 (28.6)
Always	1063 (61.0)
Lives with parents	1050 (60.3)
Satisfaction with life in 2007	
Very satisfied	728 (41.9)
Satisfied	923 (53.2)
Dissatisfied/very dissatisfied	85 (4.9)

TABLE 2

Proportions of Youth with Special Health Care Needs that Utilized Dental Care by Model Covariate

	Utilized Dental Care n (%)	p-value
All Children	1283 (73.5)	-
Main Predictor Variable		
Had a medical care transition plan		<0.0001
No	767 (70.2)	
Yes	516 (78.9)	
Child and Family Sociodemographic Factors		
Age (years)		0.001
20	360 (78.3)	
21	350 (75.9)	
22	328 (71.9)	
23	245 (66.4)	
Gender		0.09
Female	599 (75.4)	
Male	682 (71.8)	
Race		0.14
White	1167 (74.0)	
Non-White	114 (68.7)	
Education		<0.0001
<high school	88 (55.7)	
high school or equivalent	259 (64.8)	
post-high school education but no 4 year degree	689 (78.8)	
4 year degree or more	242 (79.3)	
Maternal Education		0.0001
<high school	32 (59.3)	
high school or equivalent	225 (65.2)	
post-high school education but no 4 year degree	325 (71.6)	
4 year degree or more	667 (78.8)	
Family Income (% Federal Poverty Level [FPL])		0.0001
<100% FPL	34 (47.2)	
100% to <200% FPL	113 (59.8)	
200% to <300% FPL	227 (68.0)	
300% to <400% FPL	255 (74.8)	
400% FPL	538 (83.2)	
missing income	116 (71.2)	

	Utilized Dental Care n (%)	p-value
Child Health Status and Medical Care Factors		
General self-reported health status in 2007		0.01
Excellent	294 (74.8)	
Very good	573 (76.1)	
Good	334 (70.9)	
Fair	72 (61.5)	
Poor	9 (81.8)	
Change in health status (2001 to 2007)		0.44
Got better	387 (30.3)	
Got worse	126 (69.6)	
About the same	766 (74.2)	
Has a functional limitation (2007)		0.55
No	1094 (73.7)	
Yes	187 (71.9)	
Medical care insurance status in 2007		<0.0001
Private insurance only	916 (79.7)	
Private insurance and Medicaid	155 (71.1)	
None	180 (53.1)	
Health insurance meets needs in 2007		<0.0001
Never	65 (40.6)	
Sometimes	214 (74.6)	
Usually	480 (76.6)	
Always	499 (78.6)	
Had a usual source of medical care in 2001 and 2007		0.01
No	879 (75.4)	
Yes	404 (69.7)	
Social Support and Life Satisfaction		
Receives social and emotional support in 2007		0.001
Never/rarely	18 (51.4)	
Sometimes	96 (66.2)	
Usually	385 (77.2)	
Always	780 (73.4)	
Lives with parents in 2007		0.01
No	483 (69.9)	
Yes	795 (75.7)	
Satisfaction with life in 2007		<0.0001

	Utilized Dental Care n (%)	p-value
Very satisfied	571 (78.4)	
Satisfied	656 (71.1)	
Dissatisfied/very dissatisfied	50 (58.8)	

Adjusted Relative Risk of Having Utilized Dental Care for U.S. Youth with Special Health Care Needs from Adolescence to Young Adulthood

TABLE 3

	All YSHCN N= 1,746		YSHCN with no functional limitation n= 1,484		YSHCN with a functional limitation n=260	
	RR	95% CI	p-value	RR	95% CI	p-value
Main Predictor Variable						
Had a medical care transition plan	1.09	1.03, 1.16	0.003	1.11	1.04, 1.18	0.001
Child and Family Sociodemographic Factors						
Age (years)						
20	1.18	1.07,	0.001	1.20	1.07,	0.002
21	1.15	1.31	0.01	1.19	1.34	0.001
22	1.06	1.04	0.24	1.07	1.07,	0.19
23 (ref)	1.00	1.27 0.96, 1.17	-	1.00	1.33 0.97, 1.19	-
Gender						
Female (ref)	1.00	-	-	1.00	-	-
Male	0.99	0.93, 1.05	0.64	0.98	0.92, 1.04	0.43
Race						
White	1.00	0.89,	0.96	1.02	0.89,	0.80
Non-White (ref)	1.00	1.13	-	1.00	1.16	-
Education						
<high school	0.78	0.66,	0.003	0.72	0.58,	0.004
high school or equivalent	0.82	0.92	0.001	0.78	0.90	<0.0001
post-high school education	0.93	0.73,	0.11	0.92	0.69,	0.07

	All YSHCN N= 1,746			YSHCN with no functional limitation n= 1,484			YSHCN with a functional limitation n=260		
	RR	95% CI	p-value	RR	95% CI	p-value	RR	95% CI	p-value
but no 4 year degree 4 year degree or more (ref)	1.00	0.92 0.86, 1.02	-	1.00	0.89 0.84, 1.01	-	1.00	1.18 0.72, 1.30	-
Maternal Education									
<high school	0.96	0.75, 1.22	0.71	0.92	0.69, 1.21	0.54	1.26	0.72, 2.22	0.43
high school or equivalent	0.96	0.87, 1.05	0.32	0.92	0.83, 1.02	0.10	1.13	0.92, 1.40	0.25
post-high school education	0.98	0.91, 1.05	0.57	0.98	0.91, 1.06	0.64	0.92	0.76, 1.13	0.43
but no 4 year degree 4 year degree or more (ref)	1.00	-	-	1.00	-	-	1.00	-	-
Family Income (% Federal Poverty Level [FPL])									
<100% FPL	0.65	0.50, 0.84	0.001	0.68	0.51, 0.91	0.01	0.53	0.31, 0.92	0.02
100% to <200% FPL	0.84	0.73, 0.96	0.01	0.84	0.72, 0.98	0.03	0.82	0.62, 1.08	0.15
200% to <300% FPL	0.90	0.83, 0.98	0.02	0.92	0.84, 1.01	0.07	0.84	0.69, 1.03	0.09
300% to <400% FPL	0.94	0.88, 1.01	0.11	0.95	0.87, 1.02	0.17	0.88	0.71, 1.08	0.21
400% FPL (ref)	1.00	-	-	1.00	-	-	1.00	-	-
Child Health Status and Medical Care Factors									
General self-reported health status in 2007									
Excellent	0.91	0.64, 1.30	0.61	0.76	0.60, 0.95	0.02	1.51	0.73, 3.13	0.27
Very good	0.93	0.66, 1.33	0.71	0.78	0.62, 0.97	0.03	1.25	0.61, 2.55	0.55
Good	0.91	-	0.61	0.76	-	0.01	1.22	-	0.59
	0.91	-	0.62	0.76	-	0.05	1.04	-	0.91

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	All YSHCN N= 1,746		YSHCN with no functional limitation n= 1,484		YSHCN with a functional limitation n=260	
	RR	95% CI	p-value	RR	95% CI	p-value
Satisfaction						
Receives social and emotional support in 2007	1.00	-	-	1.00	-	-
Never/rarely (ref)	1.04	0.74,	0.82	0.82	0.59,	0.24
Sometimes	1.11	1.47	0.56	0.85	1.14	0.32
Usually	1.04	0.79,	0.83	0.80	0.63,	0.16
Always		1.54 0.74, 1.45			1.16 0.59, 1.09	0.30
Lives with parents in 2007	1.00	-	-	1.00	-	-
No (ref)	1.07	1.01, 1.14	0.02	1.05	0.98, 1.12	0.18
Yes						0.07
Satisfaction with life in 2007	1.05	0.86,	0.64	1.17	0.89,	0.26
Very satisfied	1.03	1.29	0.78	1.16	1.53	0.29
Satisfied	1.00	0.84, 1.26	-	1.00	0.89, 1.51	-
Dissatisfied/very dissatisfied (ref)						0.44
						0.63
						-