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Mental Health Insurance Access and Utilization Among Childhood Cancer Survivors: A Report from the Childhood Cancer Survivor Study

Giselle K. Perez, PhD^{1,2}, Anne C. Kirchhoff, Ph.D., MPH³, Christopher Recklitis, PhD, MPH^{2,4}, Kevin R. Krull, PhD⁵, Karen A. Kuhlthau, Ph.D^{1,2}, Paul Nathan, MD, MSc⁶, Julia Rabin, B.A¹, Gregory T. Armstrong, M.D., M.S.C.E.⁵, Wendy Leisenring, Sc.D.⁷, Leslie Robison, PhD⁵, and Elyse Park, PhD, MPH^{1,2}

¹Massachusetts General Hospital, Boston, MA

²Harvard Medical School, Boston, MA

³Huntsman Cancer Institute and Department of Pediatrics, University of Utah, Salt Lake City, UT

⁴Dana-Farber Cancer Institute, Boston, MA

⁵St. Jude Children's Research Hospital, Memphis, TN

⁶The Hospital for Sick Children, Toronto, ON

⁷Fred Hutchinson Cancer Research Center, Seattle, WA

Abstract

Purpose—To describe and compare the prevalence of mental health access, preference, and use among pediatric cancer survivors and their siblings. To identify factors associated with mental health access and use among survivors.

Methods—698 survivors in the Childhood Cancer Survivor Study (median age=39.4; median years from diagnosis=30.8) and 210 siblings (median age=40.4) were surveyed. Outcomes included having mental health insurance coverage, delaying care due to cost, perceived value of mental health benefits, and visiting a mental health provider in the past year.

Results—There were no differences in mental health access, preferences, and use between survivors and siblings ($p>0.05$). Among respondents with a history of distress, most reported not having seen a mental health provider in the past year (80.9% survivors vs. 77.1% siblings; $p=0.60$). Uninsured survivors were more likely to defer mental health services due to cost (24.6% vs. 8.4%; $p<0.001$). In multivariable models, males ($OR=2.96$) and survivors with public

Corresponding author: Giselle K. Perez, PhD, Department of Psychiatry, Massachusetts General Hospital & Harvard Medical School, 50 Staniford St., 9th floor, Boston, MA 02114, USA; Phone: 617-724-0765; gperez@mgh.harvard.edu.

Disclosure of Potential Conflicts of Interest

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(OR=6.61) or employer-sponsored insurance (ESI; OR=14.37) were more likely to have mental health coverage.

Conclusions—Most childhood cancer survivors value having mental healthcare benefits; however, coverage and use of mental health services remains suboptimal. The most vulnerable of survivors, specifically the uninsured and those with a history of distress, are at risk of experiencing challenges accessing mental health care.

Implications for Cancer Survivors—Childhood cancer survivors are at risk for experiencing high levels of daily life stress that is compounded by treatment-related sequelae. Integrative, system-based approaches that incorporate financial programs with patient education about insurance benefits can help reduce some of the financial barriers survivors face.

Keywords

Childhood cancer; survivorship; insurance; mental health; distress

Improvements in cancer therapies have changed the landscape of pediatric cancer survivorship. Over the past several decades, declines in cancer mortality have led to a rapidly expanding number of childhood cancer survivors [1,2]. It is estimated that approximately 388,501 survivors are currently living in the United States, and survival rates are continuing to rise with current 5-year estimates surpassing 83% [3,4].

Increased survival rates have been met with concomitant increases in physical and psychosocial challenges. Approximately two-thirds of survivors will experience one late effect of treatment throughout their lifespan, and these after-effects have been shown to lead to functional impairments [5–11]. Age-appropriate demands faced by individuals throughout development are further compounded by the consequences of treatment, increasing survivors' risk for anxiety, depression, and overall distress. Indeed, previous studies within the Childhood Cancer Survivor Study (CCSS) report higher rates of distress among survivors compared to siblings and the general population, whereas other studies suggest that rates of psychological distress are low or similar to healthy controls [12–14].

Regardless of symptom severity, mental health support can help survivors manage the emotional and psychosocial challenges they experience throughout survivorship; however, survivors have been posited to underutilize mental health services [15–17]. Existing studies suggest that factors such as underinsurance and limited insurance knowledge can impact survivors' use of needed medical services [18, 19]. It is unclear, however, whether these findings extend to survivors' access and use of mental health services. Understanding and addressing the emotional needs of survivors is warranted, as chronic, unmanaged distress can contribute to neuroendocrine and immune dysregulation, physical disease, maladaptive health behaviors, and overall lower quality of life [20–23]. These consequences increase survivors' risk for cancer-related morbidity.

For the present study, we sought to 1) describe and compare the prevalence of mental health service access, preference and use among survivors of pediatric cancer and their siblings and 2) identify factors associated with mental health service access and use among survivors. Further, given their heightened risk for distress and financial need, we sought to 3) examine

patterns of mental health access and use among survivors with a history of distress and 4) among distressed survivors who were insured and uninsured. We hypothesized that compared to siblings, childhood survivors would have less mental health coverage and would utilize mental health services at a lower rate. Additionally, we hypothesized that disparities in mental health utilization would be particularly marked among survivors with a history of elevated distress. Understanding some of the psychosocial, disease, and treatment-related characteristics that limit mental health service use for survivors may help identify individuals who need, but do not access, mental health services and are therefore at risk for negative psychosocial and physical health outcomes.

Methods

The CCSS is a multi-institutional, retrospective cohort study with longitudinal follow-up of survivors diagnosed between 1970 and 1986 with Leukemia, lymphoma, central nervous system malignancies, Wilms Tumor, neuroblastoma, soft tissue carcinoma, or bone tumors before age 21, who received treatment at 1 of 26 North American hospitals and were at least 5-years post-diagnosis. The baseline survey was first administered in 1994; subsequent surveys were administered every 2–3 years (surveys available at www.stjude.org/ccss). The original cohort consisted of 14,357 survivors and 4,023 siblings [24–26]. Complete details on study design, recruitment and data collection procedures are described elsewhere [27].

Study Design

The current report is a cross-sectional analysis of a randomly-selected, age-stratified subset of survivors and siblings enrolled in the CCSS. This population was surveyed from May 2011–April 2012 to examine their knowledge, familiarity and experiences with current health insurance legislation [12, 19]. A total of 698 survivors (698 out of 1,101 selected; 63.4% response rate) and 210 siblings (210 participants of 360 selected; 58.3% response rate) completed this health insurance survey. Study procedures were approved by the MGH/Partners HealthCare and St. Jude Children's Hospital Institutional Review Boards.

Measures

Consistent with methods used in other CCSS studies [12,19,22], sociodemographic, cancer-related factors, and distress symptoms were collected from CCSS baseline and follow-up surveys; treatment exposures were abstracted from medical records at the initiation of the larger parent project [27]. Insurance survey items were developed based on an initial qualitative study, informed by national surveys on health insurance status, and refined following cognitive testing with adult survivors treated at MGH [19]. Participants were directed to complete an insured or uninsured version of the survey (<https://ccss.stjude.org/documents/original-cohort-questionnaires>) based on their response to the first survey item, "Do you currently have health insurance that covers doctor and hospital care?" The survey assessed marital status, employment status, income, insurance status, healthcare knowledge, preferences, and experiences.

Mental health insurance access was assessed with two questions. Participants were asked whether they had current mental health insurance coverage, to which they could respond

“most,” “some,” “no,” or “don’t know.” Participants were also asked to respond “yes,” “no,” or “don’t know” if they had put off or postponed mental health services over the past year due to cost concerns. Response options were dichotomized (“most/some” vs “no” or “yes” vs. “no”). “Don’t know” responses were removed.

Mental health insurance coverage preference was assessed by asking participants to rate how important mental health insurance benefits are when considering their ideal health insurance plan (“very important,” “somewhat important,” “not too important,” or “not at all important”). Responses were dichotomized to represent important (“very-somewhat important”) versus not important (“not too-not at all important”).

Utilization of mental health services was assessed by asking participants to indicate if they had seen or talked to a mental health provider in the past year. Positive responses were coded as “yes”.

Brief Symptom Inventory-18 (BSI-18) [40]—The BSI-18 is an 18-item self-report measure of psychological distress. It has been validated and used as a brief screening tool for distress in unaffected populations as well as in oncology populations [28, 29–31].

Participants are asked to rate how much they have been bothered by each symptom over the past week from 0=not at all to 4=extremely. The BSI-18 yields 3 subscales (i.e., anxiety, depression, and somatization) and a global severity index (GSI). Response items for each dimension are summed and converted to gender-normed standardized T-scores. Based on recent recommendations by Merport and Recklitis, we considered a GSI or subscale T-score 50 to reflect a potential history of distress symptoms [31]. We adopted this alternate, more sensitive case rule to better identify survivors who may be at risk for distress. For this paper, the 2007 follow-up survey GSI was used as an indicator of past distress.

Statistical Analyses

SPSS v.22 was used to conduct all statistical analyses. Descriptive statistics, including frequencies and means, were calculated to describe the sample. Since sampling for the Health Insurance Survey was carried out stratified on age, we accounted for survey weights in all analyses so that the data reflect the age distribution of the overall CCSS eligible population. Differences in sociodemographic, medical, and distress symptoms between survivors and siblings were assessed using Chi Square/Fisher’s Exact tests for categorical/dichotomous variables and two sample t-tests for continuous variables.

Multivariable logistic regression models compared survivors’ and siblings’ likelihood of having mental health service coverage, delaying mental health care due to cost, valuing mental health care, and using mental health services, adjusting for age, gender, and race. Among survivors, univariate analyses identified sociodemographic and medical characteristics associated with each of the four outcome variables; only factors significant at $p < 0.10$ were further explored in multivariable logistic regression models. P-values (two-sided) less than 0.05 were considered statistically significant.

Results

Participant Characteristics

There were 698 survivor participants (median age=39.4 years; median years from diagnosis=30.8; see Table 1). Most of the survivor and sibling sample was white, and approximately half were female. More than 75% of survivors reported having some college education. Similarly, approximately 75% were employed, and the majority had health insurance. Survivors were more likely than siblings to be single or never married (28.5% vs. 16.1%, respectively; $p=0.002$), have lower household incomes, and have public health insurance (10.9% vs. 2.9%, $p=0.002$). Among survivors, the most common cancers included leukemia, cancers of the central nervous system, and Hodgkin Lymphoma.

Mental Health Insurance Access, Preferences, and Use

Survivors and siblings—There were no significant differences in mental health access (i.e., coverage or cost-related delay) between survivors and siblings (Table 6 in Appendix and Figure 1). Approximately two-thirds of survivors and siblings reported some mental healthcare coverage; however, nearly one-third responded “Don’t know” to this question. While three-quarters of survivors and siblings considered mental health insurance coverage to be an important part of their plan, approximately 11% reportedly had seen a mental health provider in the past year ($p=0.58$).

Survivors and siblings: Distressed subsample—There were significant differences in the endorsement of symptoms of psychological distress between survivors and siblings (BSI-18 T-score = 50; see Table 5 Appendix). Survivors were more likely than siblings to have elevated levels of psychological distress across all BSI-18 indices, including anxiety (22.0% vs. 12.9%; $p=0.004$), depression (26% vs. 17.7%; $p=0.013$), somatic (31.1% vs. 18.2%; $p<0.001$) and GSI (28.4 vs. 16.7%; $p=0.001$). In this distressed subsample, there were no significant differences in mental health access, preferences, and use between survivors and siblings (Table 6 Appendix and Figure 1).

Survivors only: Insured vs uninsured—There were no significant differences in mental health service preferences and use between insured and uninsured survivors (Table 7 Appendix and Figure 2). However, significant differences were noted in cost-related service delay. Specifically, uninsured survivors were more likely than insured survivors to report wanting but delaying mental health services due to cost ($p<0.001$).

Survivors only: Insured vs. uninsured distressed subsample—There were no significant differences in distress between insured and uninsured survivors and in preferences for mental health coverage (Table 7 Appendix and Figure 2); there were, however, significant differences in reports of health care service access and use between the two samples. Nearly one out of every three uninsured distressed survivors reported delaying mental health services due to cost ($p=0.03$). Uninsured distressed survivors were less likely than insured distressed survivors to report having visited a mental health provider in the past year ($p=0.05$).

Predictors of mental health coverage among all survivors—Compared to survivors diagnosed at a younger age (age=0–5), those diagnosed during early adolescence (ages 11–15) were more likely to have mental health coverage (Odds Ratio [OR]=4.55, 95% Confidence Interval [CI]=1.30–15.90; Table 2). Mental health coverage was also significantly more likely among males (OR=2.96, 95% CI=1.31–6.67), survivors with public health insurance (OR=6.61, 95% CI=1.67–26.10) and among survivors with employer-sponsored or military insurance (ESI; OR=14.37, CI=4.81–42.10).

Predictors of mental health service use among all survivors—Survivors with a history of distress were more likely to report mental health service use in the past year (OR=2.25, 95% CI=1.35–3.75; Table 3). Compared to survivors diagnosed during late adolescence (aged 16–20), those diagnosed during childhood were less likely to report having sought mental health services in the past year (age=0–5, OR=0.52, 95% CI=0.27–1.01; age=6–10, OR=0.41, 95% CI=0.18–1.95).

Predictors of delay in use of mental health services among all survivors—Distress remained significantly associated with service delay; survivors with a history of distress were more likely to have postponed mental health treatment due to cost concerns (OR=2.42, 95% CI=1.32–4.45; Table 4). Survivors with household incomes greater than \$60,000 were less likely to report foregoing mental health care (\$60,000–\$79,000, OR=0.20, 95% CI=0.05–0.85); +\$80k, OR=0.18, 95% CI=0.06–0.60). Survivors with ESI were less likely than uninsured survivors to report delaying mental health care due to cost (OR=0.32, 95% CI=0.13–0.75).

Discussion

We found that both survivors and siblings alike view mental health benefits as an important feature of their health care plan. However, their actual coverage for, and thus access to, mental health care remains suboptimal. Specifically, only two-thirds of survivors and siblings report having health insurance benefits that cover mental health care. Notably, these proportions remained stable among survivors with a history of distress. Considering that the vast majority of our survivors have health insurance, our rates of mental health coverage are surprisingly low, particularly when examined in the context of federal laws designed to increase access to mental health services (The Mental Health Parity and Addiction Equity Act of 2008; MHPAE) [32]. In fact, our rates are lower than national estimates reported more than a decade earlier, wherein 75.5% of the U.S. population were purported to have mental health coverage [33]. Particularly alarming, our population of uninsured survivors were less likely to report ever having had mental health insurance. Our findings raise concern about the potential for survivors, particularly the most vulnerable, to experience enduring difficulties in accessing and affording mental health care despite having basic health insurance coverage.

Importantly, survivors' knowledge and understanding of insurance policies should be considered when interpreting these findings. It is uncertain whether our findings accurately represent the proportion of survivors who lack mental health coverage, or if they better reflect gaps in insurance knowledge, which have been noted in prior studies [19, 34]. The

fact that one third of survivors responded, “Don’t Know” to the question about mental health coverage suggests knowledge obstacles may partially explain this phenomenon. Even so, both issues of underinsurance and health insurance literacy can independently and collectively impede access to quality mental health care. In effect, survivors who want psychosocial services may face higher out of pocket costs while seeking treatment, or they may forego care altogether because they do not know how to pay for it [18]. Our finding that 9.9% of survivors delayed meeting with a mental health provider due to cost supports this theory. This proportion was even higher among the uninsured, with one out of every four survivors reportedly deferring needed care. Our study highlights the potential need to educate survivors about their health insurance plans in efforts to maximize survivorship care. Future work should explore how health insurance literacy may impact survivors’ use of mental health services.

Consistent with trends observed in the literature, use of mental health services in our survivor sample was remarkably low [15–17]. Although utilization patterns were comparable in our sibling cohort, a greater proportion of survivors presented with a history of distress. Indeed, while nearly a third of survivors endorsed distress symptoms, only 11% reported having met with a mental health provider in the past year. Rates of mental health service use was even lower among the uninsured survivor, as well as the distressed uninsured, with only 7% and 4% having seen a mental health provider in the past year. While concerning, our findings corroborate existing data that highlights unmet psychosocial needs of childhood survivors, particularly the most vulnerable. These disparities likely stem from a functional interplay of provider, systemic, and survivor-specific challenges. Specifically, providers have been shown to underestimate or misinterpret distress symptoms, thereby missing opportunities to identify and refer survivors to needed services [35]. These oversights are further magnified by the use of inadequate screening instruments, which lack the capacity and sensitivity to detect subtle symptoms of distress [36]. Additionally, childhood survivors are prone to minimizing or underreporting negative symptoms [37, 38]. In the event that referrals are made, perceived stigma surrounding mental illness and treatment may discourage survivors from seeking care [17]. The economic burden brought about by missing work or paying for childcare to visit a provider brings about its own set of challenges. Considering these obstacles, survivors’ increased risk for distress, and their relative underuse of mental health services, health care providers are encouraged to remain sensitive to the need for ongoing screening, thereby optimizing the opportunity to link survivors to supportive care services throughout each point of care.

Notably, several sociodemographic variables were associated with mental health coverage and use, providing us with a description of the survivor who may be most susceptible to having unmet needs. Specifically, males and survivors with ESI were more likely to have mental health benefits. Conversely, survivors who were uninsured, financially encumbered, and who endorsed a history of distress were more likely to experience financial barriers to mental health care. These findings are noteworthy, as they suggest that survivors who may be in most need of mental health services, specifically, those at greater risk for distress, are more likely to experience economic barriers to care. Equally important, when considering the role of different insurance types, only survivors with ESI were less likely to report concerns affording mental health services. This highlights important variations in the

breadth of services offered by different insurances. Individual insurance policies, while potentially less costly than employer-sponsored plans, may place survivors at risk for being underinsured. Essentially, because the burden of pay falls entirely to the individual, individual insurance plans may be limited in the benefits they cover depending on the policy purchased. As such, survivors, particularly the socioeconomically disadvantaged, may face higher out of pocket costs in efforts to maintain lower premiums. This may partially explain why, in multivariate analyses, survivors with higher incomes and those with ESI were less likely to postpone care. Additionally, publicly insured survivors, particularly those with Medicare, are exempt from the Mental Health Parity and Addiction Equity Act, suggesting they may still face higher premiums when seeking mental health care.

These findings have important implications for survivors and healthcare providers; however, they should be interpreted in light of important limitations. Because this study is based on data collected from a predominantly white sample, our findings are limited in generalizability and may not reflect the insurance status of survivors beyond this sample. Prior research has illustrated marked disparities in mental health care access and utilization among ethnic minorities, thus future studies should be undertaken with a racially and ethnically diverse sample to further discern the prevalence of these concerns [39]. Our findings are also limited by the retrospective, self-report nature of this survey, which itself had certain shortcomings. Particularly, our survey did not define “mental health provider.” Survivors may have different representations of what they consider to be a mental health provider, which may cause undue variability among respondents. Moreover, our utilization estimates may be subject to recall errors, which may contribute to under- or over-reporting [16]. Additionally, our measure of distress, the BSI-18, is more apt to capturing reports of acute versus persistent distress. While the case rule we chose for these analyses ($T > 50$) purposefully ensures successful screening and early detection of individuals with symptoms of emotional distress, it is not intended to identify a population with clinical distress. Furthermore, while gaps in knowledge about mental health benefits is an important finding, future endeavors should focus on examining survivors’ insurance policies and actual utilization rates to provide more accurate estimates of mental health access. Lastly, this study was limited by its use of siblings as a comparison group. Arguably, siblings resemble survivors because they share a similar environment and were themselves exposed to the trauma of seeing their siblings undergo treatment. However, future studies should compare these estimates with a more representative, unaffected sample.

Despite these limitations, this study is among the first to document potential gaps in mental health access and use among a national sample of childhood survivors. Though survivors and siblings demonstrate similar patterns of mental health coverage and use, survivors exhibited rates of distress that doubled those observed in their siblings. Together, our work suggests that survivors are facing important obstacles to accessing important psychosocial resources. Targeted, multifaceted solutions that address systemic, practice, and patient barriers to mental health use are needed in efforts to connect survivors with appropriate mental health services. Strategies, such as providing patient education about insurance benefits, implementing routine screening and provider training, and incorporating financial programs may facilitate survivors’ access to mental health services. The development of integrative survivorship clinics that offer a more direct interfacing of oncology, primary, and

mental health care may provide the platform we need to meet the complex needs of this vulnerable population.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Figure 1. Comparison of mental health service preferences, coverage, use and unmet needs among survivors and siblings

MH=Mental Health; Distress= We considered a subscale T-score 50 on the Brief Symptom Inventory-18 to reflect a potential history of distress symptoms.

Figure 2. Comparison of mental health service preferences, coverage, use and unmet needs among insured and uninsured survivors

MH=Mental Health; Distress=We considered a subscale T-score 50 on the Brief Symptom Inventory-18 to reflect a potential history of distress symptoms.

Table 1Demographic, Cancer and Treatment Characteristics of Survivors and Siblings^a

Characteristics	Survivor (N=698)			Sibling (N=210)			p- value
	N	Weighted % [*]		N	Weighted % [*]		
Age at evaluation (years)							
22–29	214	11.3		61	13.5		0.06
30–39	228	42.3		68	33.6		
40–62	256	46.2		81	53.0		
Sex (% female)	384	54.5		128	61.1		0.11
Race/Ethnicity							
White, Non-Hispanic	646	93.5		185	93.5		0.96
Black, Non-Hispanic	14	1.7		4	1.9		
Hispanic/Latino	24	3.0		6	2.4		
Other	12	1.8		5	2.2		
Education							
High school graduate or less	98	14.1		19	11.7		0.40
Some post-graduate college	179	26.8		51	23.3		
Completed college	352	59.1		122	65.0		
Marital Status							
Married, living as married	393	61.3		141	73.6		0.002
Single, never married	240	28.5		49	16.1		
Divorced or separated	59	10.2		19	10.3		
Employed (full-time or part-time)	510	74.7		163	80.3		0.002
Household Income							
Less than \$20,000	91	12.0		12	5.2		0.02
\$20,000 – \$39,999	106	14.9		24	10.7		
\$40,000 – \$59,999	104	15.8		35	16.9		

Characteristics	Survivor (N=698)		Sibling (N=210)		p- value
	N	Weighted % [*]	N	Weighted % [*]	
\$60,000 – \$79,999	95	14.8	32	16.1	
Over \$80,000	240	38.3	90	48.7	
Don't know	36	4.2	8	2.4	
Insurance Status (Insured)	619	89.8	189	92.1	0.31
Insurance Type					0.002
Employer-Sponsored	479	72.1	161	82.0	
Public (Medicaid, Medicare, state)	84	10.9	7	2.9	
Private (individual)	48	6.7	17	7.3	
Cancer Diagnosis					N/A
Leukemia	255	35.0	N/A	N/A	
Central Nervous System tumor	104	14.9			
Hodgkin lymphoma	71	12.9			
Neuroblastoma	67	6.1			
Wilms (Kidney) Tumor	66	8.1			
Soft tissue sarcoma	51	8.3			
Bone tumor	45	8.1			
Non-Hodgkin lymphoma	39	6.7			
Age at diagnosis (years)					
0–5	404	46.4	N/A	N/A	N/A
6–10	104	19.1			
11–15	109	19.8			
16–20	81	14.7			

* Percentages are weighted to reflect the population age distribution of the full original Childhood Cancer Survivor Study cohort

^aThe total number in the table does not sum to 698 for survivors and 210 for siblings, for certain variables, because of missing data.

Table 2Multivariable Model of Mental Health Insurance Coverage Among Childhood Cancer Survivors^a (N=698)

Category ⁺	Variable	OR	95% CI	p-value
Brief Symptom Inventory (BSI; 2007)	Little to no distress (ref)	1	N/A	N/A
	Elevated distress (T>50)	1.04	0.47–2.29	0.93
Age at diagnosis	0–5 (ref)	1	N/A	N/A
	6–10	1.15	0.47–2.82	0.76
	11–15	4.55	1.30–15.90	0.02
	16–20	1.28	0.44–3.70	0.65
Gender	Female (ref)	1	N/A	N/A
	Male	2.96	1.31–6.67	<0.01
Marital status	Single (ref)	1	N/A	N/A
	Married/partner	1.22	0.50–3.02	0.66
	Other [*]	0.73	0.23–2.35	0.60
Household income	Less than \$20k (ref)	1	N/A	N/A
	\$20K–\$39K	0.70	0.22–2.19	0.53
	\$40K–\$59K	2.09	0.49–8.87	0.32
	\$60K–79K	0.57	0.14–2.30	0.43
	+\$80K	2.17	0.55–8.57	0.27
	Don't Know	1.32	0.25–7.08	0.75
Medical insurance Type	Uninsured (ref)	1	N/A	N/A
	Public insurance	6.61	1.67–26.10	<0.01
	Private insurance	1.68	0.47–6.07	0.43
	Employer -sponsored	14.20	4.81–42.10	<0.01
Supplemental Security Income (SSI)	Never (ref)	1	N/A	N/A
	History of SSI	1.53	0.28–8.25	0.62
	Current SSI	0.69	0.19–2.52	0.57

^aThe total number in the table does not sum to 698 for survivors, for certain variables, because of missing data.⁺Includes characteristics that were associated with insurance outcome variable (*Coverage*; p<.01)^{*}Widowed, divorced, or separated

Abbreviation: OR, Odds Ratio; CI, Confidence Interval

Table 3Multivariable Model of Mental Health Use Among Childhood Cancer Survivors^a (N=698)

Category ⁺	Variable	OR	95% CI	p-value
Brief Symptom Inventory (BSI; 2007)	Little to no distress (ref)	1	N/A	N/A
	Elevated distress (T>50)	2.25	1.35–3.75	<0.01
Age at diagnosis	0–5	0.52	0.27–1.01	0.06
	6–10	0.41	0.18–0.95	0.04
	11–15	0.67	0.32–1.39	0.28
	16–20 (ref)	1	N/A	N/A
Gender	Male (ref)	1	N/A	N/A
	Female	1.55	0.93–2.58	0.10
Employed (full/part time)	No (ref)	1	N/A	N/A
	Yes	0.72	0.41–1.28	0.26
Insurance Type	Uninsured (ref)	1	N/A	N/A
	Public insurance	2.78	0.92–8.33	0.07
	Private insurance	2.43	0.72–8.25	0.15
	Employer-sponsored	1.47	0.54–3.99	0.45

^aThe total number in the table does not sum to 698 for survivors, for certain variables, because of missing data.⁺Includes characteristics that were associated with insurance outcome variable (*Use*; p<.01)

*Widowed, divorced, or separated

Abbreviation: OR, Odds Ratio; CI, Confidence Interval

Table 4

Multivariable Model of Mental Health Delay due to Cost Worry Among Childhood Cancer Survivors^a
(N=698)

Category ⁺	Variable	OR	95% CI	p-value
Brief Symptom Inventory (BSI; 2007)	Little to no Distress (ref)	1	N/A	N/A
	Elevated distress (T>50)	2.42	1.32–4.45	<0.01
Marital status	Single (ref)	1	N/A	N/A
	Married/partner	2.04	0.92–4.51	0.08
	Other [*]	1.72	0.67–4.39	0.26
Employed (full/part-time)	No (ref)	1	N/A	N/A
	Yes	0.66	0.42–1.73	0.85
Supplemental Security Income (SSI)	Never SSI (ref)	1	N/A	N/A
	Yes, past SSI	2.31	0.93–5.71	0.07
	Yes, current SSI	0.76	0.19–2.98	0.69
Household income	Less than \$20k (ref)	1	N/A	N/A
	\$20K–\$39K	1.35	0.53–3.44	0.54
	\$40K–\$59K	0.70	0.25–1.98	0.50
	\$60K–79K	0.20	0.05–0.85	0.03
	+\$80K	0.18	0.06–0.60	<0.01
	Don't Know	0.61	0.15–2.51	0.49
Insurance Type	Uninsured (ref)	1	N/A	N/A
	Public insurance	0.46	0.15–1.45	0.19
	Private insurance	0.57	0.16–2.00	0.38
	Employer-sponsored	0.32	0.13–0.75	<0.01

^aThe total number in the table does not sum to 698 for survivors, for certain variables, because of missing data.

⁺Includes characteristics that were associated with insurance outcome variable (*Cost Worry*; p<.01)

^{*}Widowed, divorced, or separated

Abbreviation: OR, Odds Ratio; CI, Confidence Interval