Examining the Impact of Child Adversity on Use of Preventive Health Care among Children

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Child adversity has a negative impact on child and adult health. The present study aimed to determine whether adverse family experiences (AFEs) were associated with use of preventive health care (PHC) among children and whether insurance status affected this association. This study examined data from the 2011–2012 National Survey of Children’s Health ($N = 88,849$) and included responses for children ages zero to 17 years. Logistic regression models were used to estimate odds of using PHC from AFEs. Results were stratified by insurance status and confounders were accounted for. Among the entire sample and the insured, most AFEs were not associated with use of PHC. Among the uninsured, several AFEs—lived with parents or guardians who were separated, lived with parent or guardian who was incarcerated, witnessing or experiencing violence in the household, and living with anyone who had substance abuse problems—and the sum of AFEs were associated with increased use of PHC. Findings are consistent with newer research showing that some disadvantage or adversity is associated with more optimal use of PHC. In addition, uninsured children with a history of AFEs would benefit from insurance, given their increased use of PHC.

KEY WORDS: *child adversity; children; health insurance; poverty; preventive health care*

Adverse childhood experiences (ACEs) (that is, child abuse, parental separation, neighborhood violence, financial hardship, and so on) are associated with a myriad of negative health outcomes later in adulthood, including cancer, chronic obstructive pulmonary disease, sexually transmitted diseases, and mental illness (Alcalá, Mitchell, & Keim-Malpass, 2016; Anda et al., 2008; Fuller-Thomson & Brennenstuhl, 2009; Fuller-Thomson, Roane, & Brennenstuhl, 2016; Hillis, Anda, Felitti, Nordenberg, & Marchbanks, 2000; Strine et al., 2012; Taylor, Bradbury-Jones, Lazenbatt, & Soliman, 2016; Timko, Sutkowi, Pavao, & Kimerling, 2008). ACEs encompass stressful events like child abuse or household dysfunction and are hypothesized to affect health through multiple pathways including lower socioeconomic status (SES) in adulthood, biological dysregulation, and adoption of risky health behaviors including use of tobacco products and substance dependence (Alcalá, 2016).

The increased burden of disease for adult survivors of ACEs (that is, child abuse, household dysfunction, and so on) is associated with altered patterns of access to and utilization of health care. The number of adversities experienced in

childhood is associated with higher levels of using general practitioner services, emergency department visits, and overnight hospitalizations among adults (Ashton, Bellis, Davies, Hardcastle, & Hughes, 2016). Also, overall annual cost of care is higher for survivors of child abuse (Bonomi et al., 2008). Specific childhood adversities have also been associated with increased use of regular care, emergency services, and a wide variety of specialty care (Bonomi et al., 2008; Chartier, Walker, & Naimark, 2007). This is perhaps unsurprising when considering that adults with histories of childhood adversity have a higher burden of a wide variety of illnesses and, consequently, a higher need of care (Chartier, Walker, & Naimark, 2010).

Preventive health care (PHC), such as regular checkups and annual exams, offers a unique opportunity to curtail the burden of disease as it is related to lower rates of avoidable hospitalizations, lower cost of care, and lower morbidity and mortality (Adams et al., 2015; Hakim & Bye, 2001; Savage, Lee, Kotch, & Vann, 2004). To date, however, very limited attention has been given to how childhood adversity affects the use of PHC. Available evidence shows that experiencing some specific childhood adversities, particularly child abuse, is associated with lower levels of both cervical and

colorectal cancer screening (Alcalá, Keim-Malpass, & Mitchell, 2017; Alcalá et al., 2016; Farley, Golding, & Minkoff, 2002). Relatedly, the number of ACEs reported by adult women is associated with lower odds of both breast and cervical cancer screening (Mouton, Hargreaves, Liu, Fadeyi, & Blot, 2016).

Even less attention has been paid to the impact of childhood adversity on use of preventive care among children. In general, adversity in childhood is associated with suboptimal use of PHC among children. For example, timely use of preventive care is lower among children in families below the federal poverty line, relative to their peers above the federal poverty line (Newacheck & Halfon, 1988; Newacheck, Hughes, & Stoddard, 1996). Also, children with divorced or separated parents are less likely to be compliant with the rotavirus immunization schedule (Kacenebnogen, Dramaix-Wilmet, Schetgen, & Roland, 2014). Overall, research has not examined the cumulative impact of childhood adversity on use of preventive care among children and has instead relied on examining the impact of specific adversities in isolation. Furthermore, only certain adversities have received attention, while others, like measures of household dysfunction, have been ignored.

To date, much of the research examining the use of health care has been guided by the Andersen model of health care utilization (Andersen, 1995). According to this model, utilization of health services is influenced by predisposing factors (that is, demographic characteristics, social structure, health beliefs), enabling factors (that is, access to care, family resources), and need (Andersen, 1995). Although early life adversity was not formally incorporated into the model by Andersen, we argue that it comprises both predisposing and enabling factors. Specifically, certain adversities are correlated with social structure and demographic characteristics (for example, experiencing discrimination), while others reflect access to resources (for example, financial hardship). Thus, we used the Andersen model to examine the association between early life adversity and use of PHC among children, while accounting for well-established correlates of health care utilization in a systematic fashion. We address the underlying assumption in early life adversity research that the impact of adversities is cumulative and also acknowledge that the Andersen model would potentially classify adversities into specific

types; we examined both the cumulative and specific impact of early life adversities. Furthermore, per the Andersen model, we examine whether relationships differ between those who have a more advantageous profile of enabling factors (that is, the insured) and those who have a less advantageous profile (that is, the uninsured), to understand how these factors interact with existing early life adversities.

METHOD

Data and Sample

The data come from the 2011–2012 National Survey of Children’s Health (NSCH), *Child and Adolescent Health Measurement Initiative* (2012), and a cross-sectional telephone survey of U.S. households with at least one child age zero to 17 years living in the household (Centers for Disease Control and Prevention [CDC], 2013). Respondents were contacted through list-assisted random digit dial (RDD) supplemented with an RDD sample of cell phone numbers. Eligible participants were asked to answer questions about themselves and one randomly selected child in the household. Surveys were completed in English, Spanish, Cantonese, Mandarin, Vietnamese, and Korean between February 2011 and June 2012 (CDC, 2013). Data were weighted to be representative of U.S. children ages zero to 17 (CDC, 2013). A total of 187,422 households screened eligible for inclusion, of which 95,677 interviews were completed by parents and caregivers for a completion rate of 51 percent (CDC, 2013). Respondents missing data on study variables were excluded, so the final analytic sample included 88,849 children with complete data on all study measures. This study relied on publicly available data and was deemed exempt from institutional review board approval by the University of Virginia.

Study Measures

PHC. The outcome of interest, *use of PHC*, was defined as having received physical examinations or well-child checkups in the preceding 12 months. Parents and caregivers were asked how many times the focal child had seen a doctor, nurse, or other health care provider for preventive medical care. We created a dichotomous indicator of use of PHC, with children who had one or more visits coded as using PHC. Children who

had not visited a doctor in the preceding 12 months were coded as not using PHC.

Adverse Family Experiences (AFEs). AFEs were assessed using a nine-item scale similar to the ACE scale, a well-known measure of child abuse and household dysfunction (Felitti et al., 1998). Whereas the ACE questionnaire traditionally asks adults to report incidents of abuse and dysfunction they experienced before the age of 18, the AFE scale does not include child abuse items but, rather, asks parents and guardians to report experiences of economic hardship, racial or ethnic discrimination, household drug use, neighborhood violence, and separation from parents. A complete list of AFE questions included in the NSCH and their coding schemes used in the study are presented in Table 1 (CDC, 2013). Additional details about these items have been previously published (see Lynch et al., 2016; Slopen et al., 2016). For the purposes of the present study, we treated AFEs in two different ways: (1) nine individual dichotomous variables and (2) a continuous scale indicating the number of AFEs the child had experienced. In this sample, the AFE scale had moderate internal consistency (Cronbach’s alpha = .63).

Confounders. Known correlates of preventive medical care utilization were included as confounders based on the Behavioral Model of Health Services Use (Andersen, 1995). Predisposing factors included children’s age, gender, ethnicity (Latino or not Latino), and race (black, white, or other). Predisposing factors included parental or household level factors, respondents’ relationship to the child (mother, father, or other), and primary language spoken at home (English or other). Enabling

factors included the child’s insurance status (insured or uninsured) and whether the child had a usual source of care (yes or no). In this study, insurance status was used to stratify analyses. Because household SES is captured in the AFE scale (via the measure of financial hardship), no additional SES measures were included as confounders. Last, the child’s overall health status (excellent, very good, or good versus fair or poor) was included as an indicator of need. Although the Andersen model includes other factors (for example distance to providers), not all were captured in the NSCH and were thus not included in analyses.

Statistical Analyses

We first calculated weighted univariate statistics for all variables. Next, 10 adjusted logistic regression models were fit separately for each of the nine AFE items and for the total number of AFEs reported. Models were then stratified by insurance status. We applied survey weights in all analyses and used the survey (svy) command in Stata 14.2 (Stata-Corp, 2015) to account for the complex survey design.

RESULTS

Table 2 shows weighted characteristics of the sample. The vast majority of children received PHC in the preceding 12 months (84.66 percent). Financial hardship was the most commonly experienced AFE (57.18 percent), experiencing the death of a parent or caregiver was the least reported (2.92 percent), and on average children experienced more than one AFE. The majority of children were male (51.16

Table 1: AFE Items and Coding Scheme	
Question	Coding
Since the selected child was born, how often has it been very hard to get by on your family’s income (for example, it was hard to cover the basics like food or housing)?	Ever/Never
Did the selected child ever live with a parent or guardian who got divorced or separated after the selected child was born?	Yes/No
Did the selected child ever live with a parent or guardian who died?	Yes/No
Did the selected child ever live with a parent or guardian who served time in jail or prison after the selected child was born?	Yes/No
Did the selected child ever see or hear any parents, guardians, or any other adults in [his or her] home slap, hit, kick, punch, or beat each other up?	Yes/No
Was the selected child ever the victim of violence or a witness to any violence in his or her neighborhood?	Yes/No
Did the selected child ever live with anyone who was mentally ill or suicidal, or severely depressed for more than a couple of weeks?	Yes/No
Did the selected child ever live with anyone who had a problem with alcohol or drugs?	Yes/No
Was the selected child ever treated or judged unfairly because of [his or her] race or ethnic group?	Yes/No

Table 2: Sample Characteristics (N = 88,849)

Variable	%	M	SE
Child received preventive health care in past 12 months	84.66		.14
Adverse family experiences			
Financial hardship	57.18		.37
Lived with parents or guardians divorced or separated	19.65		.31
Lived with parent or guardian who died	2.92		.12
Lived with parent or guardian who was jailed	6.55		.19
Saw adults abuse each other	7.08		.21
Witnessed or experienced violence in neighborhood	8.40		.22
Lived with anyone who was mentally ill	8.50		.20
Lived with anyone who had problems with drugs or alcohol	10.30		.23
Experienced racial or ethnic discrimination	3.89		.15
Number of adverse family experiences		1.24	.10
Child's gender			
Male	51.16		.38
Female	48.84		.38
Child's age		8.57	.04
Respondent's relationship to child			
Mother	70.87		.35
Father	23.78		.33
Other	5.35		.17
Primary language spoken at home			
Other	14.76		.33
English	85.24		.33
Child's ethnicity			
Not Latino	77.06		.38
Latino	22.94		.38
Child's race			
White	66.86		.38
Black	14.25		.27
Other	18.89		.34
Child's insurance status			
Not insured	5.42		.20
Insured	94.58		.20
Child has usual source of care			
No	5.99		.21
Yes	94.01		.21
Child's health status			
Excellent, very good, or good	97.00		.14
Fair or poor	3.00		.14

Note: Data are from the National Survey of Children's Health, 2011–2012, for children ages zero to 17 years.

percent); non-Latino (77.06 percent); white (66.86 percent); insured (94.58 percent); had a usual source of care (94.01 percent); and were in excellent, very good, or good health (97.0 percent). Over two-thirds of respondents were mothers (70.87 percent), and most families spoke English at home (85.24 percent).

As Table 3 shows, among all children, experiencing financial hardship was associated with 13 percent lower odds of receiving preventive care in the past 12 months (adjusted odds ratio [AOR] = 0.87, 95%

confidence interval [CI] = 0.79, 0.94). In addition, experiencing racial or ethnic discrimination was associated with 37 percent higher odds of receiving preventive care in the past 12 months (AOR = 1.37, 95% CI = 1.12, 1.69). Follow-up analyses (not shown) revealed that this association was not significant among non-Latino white respondents (AOR = 1.12, 95% CI = 0.73, 1.71), but was significant among racial or ethnic minorities (AOR = 1.45, 95% CI = 1.14, 1.84). No other AFEs were associated with odds of receiving preventive care.

Table 3: Odds of Receiving Preventive Health Care in Past 12 Months by Insurance Status

Variable	All (N = 88,849)		Insured (n = 85,201)		Uninsured (n = 3,648)	
	AOR	95% CI	AOR	95% CI	AOR	95% CI
Experiencing financial hardship	0.87	(0.79, 0.94)	0.93	(0.84, 1.02)	0.91	(0.64, 1.27)
Lived with parents or guardians divorced or separated	1.03	(0.92, 1.15)	0.97	(0.85, 1.09)	1.87	(1.27, 2.76)
Lived with parent or guardian who died	0.79	(0.61, 1.01)	0.80	(0.61, 1.05)	1.03	(0.52, 2.03)
Lived with parent or guardian who was jailed	0.92	(0.77, 1.10)	0.85	(0.70, 1.04)	2.14	(1.26, 3.65)
Saw adults abuse each other	1.03	(0.86, 1.23)	1.03	(0.84, 1.25)	1.47	(0.85, 2.56)
Witnessed or experienced violence in neighborhood	1.06	(0.89, 1.25)	1.01	(0.84, 1.22)	1.91	(1.17, 3.11)
Lived with anyone who was mentally ill	1.08	(0.92, 1.27)	1.10	(0.93, 1.31)	1.02	(0.58, 1.81)
Lived with anyone who had problems with drugs or alcohol	1.01	(0.86, 1.17)	1.00	(0.85, 1.19)	1.63	(1.04, 2.54)
Experienced racial or ethnic discrimination	1.37	(1.12, 1.69)	1.36	(1.09, 1.70)	1.93	(0.92, 1.36)
Number of adverse family experiences	0.98	(0.95, 1.02)	0.99	(0.95, 1.02)	1.18	(1.06, 1.32)

Notes: Data are from the National Survey of Children's Health, 2011–2012, for children ages zero to 17 years. AOR = adjusted odds ratio; CI = confidence interval. Significant associations denoted in boldface. Models adjust for child-level variables (age, gender, race, ethnicity, health status, and having a usual source of care) and family-level variables (respondent's relationship to child and primary language spoken in the household).

Also shown in Table 3, among children with insurance, experiencing racial or ethnic discrimination was associated with 36 percent higher odds of receiving preventive care in the past 12 months (AOR = 1.36, 95% CI = 1.09, 1.70). No other AFEs, or the count of AFEs, were associated with odds of receiving preventive care.

Among children without health insurance, each additional AFE was associated with 18 percent higher odds of using PHC (AOR = 1.18, 95% CI = 1.06, 1.32) (see Table 3). Living with parents or guardians who were separated or divorced was associated with 87 percent higher odds of using preventive care (AOR = 1.87, 95% CI = 1.27, 2.76). Living with parents or guardians who were incarcerated was associated with 114 percent higher odds of using preventive care (AOR = 2.14, 95% CI = 1.26, 3.65). Witnessing or experiencing neighborhood violence was associated with 91 percent higher odds of using preventive care (AOR = 1.91, 95% CI = 1.17, 3.11). Living with someone who had problems with drugs or alcohol was associated with 63 percent higher odds of using preventive care (AOR = 1.63, 95% CI = 1.04, 2.54).

DISCUSSION

This study expands on existing research examining how child adversity affects the use of health care among children. Whereas existing research has examined only specific adversities, like financial hardship, and effects among all children (Kacenelembogen et al., 2014; Newacheck & Halfon, 1988; Newacheck et al., 1996), this study examined a wide

variety of adversities and revealed a complex picture that depends on insurance status. First, two AFEs were associated with use of PHC among all respondents. Specifically, experiencing racial or ethnic discrimination was associated with increased use of PHC and experiencing financial hardship was associated with decreased use of PHC. It is notable that experiencing past financial hardship was not associated with use of preventive care, which diverges from research showing that current poverty is associated with suboptimal use of preventive care among children (Newacheck & Halfon, 1988; Newacheck et al., 1996). Second, the impact of AFEs on use of PHC varied by insurance status. Particularly, the impact of AFEs was mostly seen among those who lacked insurance. Among this group, four individual AFEs (lived with parents or guardians who were separated, lived with parent or guardian who was incarcerated, witnessing or experiencing violence in the household, and living with anyone who had substance abuse problems), as well as the cumulative number of AFEs, were associated with higher odds of using PHC.

Experiences of racial or ethnic discrimination were associated with higher odds of using PHC, particularly among racial and ethnic minority respondents. Racial and nonracial discrimination among adults is associated with lower rates of receiving certain PHC and appears to have no impact on use of other services (Benjamins, 2012; Benjamins & Whiteman, 2014; Cornelius, Smith, & Simpson, 2002; Hausmann, Jeong, Bost, & Ibrahim, 2008; Trivedi & Ayanian, 2006). Although existing research has not

focused on the impact of racial and ethnic discrimination on children's use of PHC, the literature on adults can be informative because children rely on adults for health care. As such, research should examine why adults may respond differentially to discrimination they experience compared with discrimination experienced by children in their care. We speculate that this "positive" impact of discrimination on use of PHC may indicate that parents who see their children experience discrimination may see them as more vulnerable and thus take proactive measures to ensure their health. Similar "protective" associations have been seen between experiences of child abuse and use of cancer screening services among adults (Alcalá et al., 2017; Alcalá et al., 2016).

Findings also suggest a unique role of insurance coverage in influencing how early life adversity affects use of preventive care. Because the vast majority of children in the United States have health insurance, thanks, in part, to public programs (Kenney, Haley, Anderson, & Lynch, 2015), the remaining uninsured may represent a special "hard to reach" population whose incomes are either too high to qualify for public programs or those who may qualify but do not take advantage of public insurance programs. Recent evidence shows that the vast majority of uninsured children do qualify for one or more public programs including Medicaid or the Children's Health Insurance Program (Kenney et al., 2015). Findings for the uninsured showed that many adversities were related to increased use of preventive care among the uninsured. Thus, parents are either paying out-of-pocket for their children's preventive care or using free or subsidized care from community clinics or community health centers. This pattern of apparent "benefit" of adversity among the uninsured is inconsistent with the available evidence examining the impact of a small number of childhood adversities on the use of PHC among children, which generally shows suboptimal use of care (Kacenelenbogen et al., 2014; Newacheck & Halfon, 1988; Newacheck et al., 1996). However, emerging evidence has shown that certain adversities are associated with increased odds of cervical or colorectal cancer screenings (Alcalá et al., 2016; Alcalá, Mitchell, & Keim-Malpess, 2018). Because these children already face the rare disadvantage of being uninsured, their parents may be particularly sensitive to other disadvantages their children face

and thus may seek preventive care in part because of added obstacles.

Methodologically, the current study also demonstrates the strengths of disaggregating items in scales like the ACE and AFE. Specifically, findings showed that most ACEs were not associated with use of PHC. Consequently, efforts to only examine summary measures rely on the assumption that all items are equally important and operate in the same direction for the outcome in question. This may not be the case. Thus, future research should consider examining both the cumulative and specific impacts of child adversity.

This study is subject to several limitations that must be considered in interpreting findings. First, the cross-sectional nature of the data precludes the establishment of a temporal sequence and, therefore, inferences on causality. Second, children who experience more severe forms of adversity (that is, physical abuse, sexual abuse) are more likely to come to the attention of the child welfare system and, thus, be with caregivers who are less familiar with a child's history. This could potentially introduce bias into the data for those experiencing the greatest adversity. Furthermore, because involvement with the child welfare system may connect children to public insurance programs, it is possible that AFEs that are not measured in the data set (like child abuse and neglect) make individuals more likely to be insured, thus promoting increased usage of care among the insured. These possible biases may be further compounded by underreporting by parents fearful of judgment from interviewers or being reported to Child Protective Services. Finally, moderate internal consistency values in this study suggest that AFE items do not function well as a cohesive scale and should not be analyzed as a sum. Despite these limitations, the strengths of this study lie in the inclusion of both individual measures of AFEs and a cumulative measure of adversity; a theory-based assessment of predisposing, need, and enabling factors related to utilization of PHC; and the use of a nationally representative data set.

Overall, findings highlight that specific adversities can affect the use of PHC among uninsured children. Although this pattern seems positive, children would be better served by having access to health insurance, to prevent their parents or guardians from paying out-of-pocket for care or relying on the limited available free clinic programs. Thus, efforts must be made to ensure access to health care among these

vulnerable children. Doing so not only will improve health by avoiding preventable diseases, but also may help establish a pattern of behavior that encourages regular health care utilization early in life. Social workers can contribute to these efforts through information sharing (for example, encouraging clients to enroll in health insurance, particularly those options newly available under the Patient Protection and Affordable Care Act) or through direct services (for example, helping families fill out and submit applications). Social workers who work in non-health-care-related fields (for example, schools) may be well positioned to share eligibility information with families and make referrals for direct assistance. For social workers working in children and youth services, the current study may suggest that experiencing early life adversities is not automatically indicative of a suboptimal pattern of PHC utilization. Also, additional research should examine why some AFEs are associated with increased use of preventive care among children. Although this study included a theory-driven selection of control variables, additional factors like access to free health care in community clinics and how parents respond to or perceive adversity experienced by their children should be considered. **HSW**

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