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Research article

Adverse childhood experiences: Evidence for screening beyond preventive visits

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ABSTRACT

Primary efforts to screen for adverse childhood experiences (ACE/ACEs) are often focused on the well child/adolescent visit. The purpose of this study was to examine relationships between ACEs and youth likelihood of receiving preventive care. Data are from 126,868 students in the 8th, 9th, and 11th grades who participated in the 2016 Minnesota Student Survey, an anonymous, self-report questionnaire examining youth behaviors, experiences, and perceptions. Logistic regression models were used to determine if 10 types of ACEs, including abuse, household dysfunction, and food and housing insecurity were associated with receipt of recommended preventive medical and dental care after adjustment for demographic covariates and self-reported health. ACEs scores were entered into regression models to test for cumulative impact of adversities on preventive care outcomes. More than one third (38.5%) of youth identified at least one ACE, most commonly having a parent or guardian who had ever been in jail or prison. Each type of ACE was significantly associated with reduced odds of receiving preventive care in the last year. Associations with food insecurity were of greatest magnitude, associated with 0.32 [CI: 0.64–0.72] to 0.54 [CI: 0.44–0.49] decreased odds of receiving care. Each one point increase in the total ACE score was associated with 0.07 [CI: 0.92–0.94] to 0.15 [CI: 0.84–0.86] decreased odds of having had a preventive care visit in the last year. Findings add to the growing literature documenting significant relationships between ACEs and health, in this case, youth missing opportunities to receive recommended surveillance and anticipatory guidance.

1. Introduction

Pediatric providers are charged with identifying and intervening in contexts of adversity as a means to improve youth health and mitigate health disparities across the life course (American Academy of Pediatrics, Committee on Psychosocial Aspects of Child and Family Health, Committee on Early Childhood, Adoption, and Dependent Care, & Section on Developmental and Behavioral Pediatrics, 2012; American Academy of Pediatrics, Committee on Early Childhood, Adoption, and Dependent Care, 2011; Flaherty, Stirling, American Academy of Pediatrics, Committee on Child Abuse and Neglect, 2010). Adversity and its relationship to health may be defined at multiple levels: institutions impact opportunity and environmental exposure; individual perceptions define threat and opportunity; and individual physiology translates exposure into a stress response (Shonkoff & Garner, 2012). The Adverse Childhood Experiences (ACE) Study links adversity in childhood, spanning categories of abuse, neglect, and household dysfunction, to the

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leading causes of morbidity and mortality for US adults (Centers for Disease Control and Prevention (CDC); Dube, Felitti, Dong, Chapman et al., 2003; Felitti & Anda, 2010; Felitti et al., 1998).

Childhood adversity is now broadly defined to include conditions of poverty, historical trauma and intergenerational transmission of oppression, disparities of experience (e.g. detention practices), and global occurrences (e.g. terrorism) (Anda, Butchart, Felitti, & Brown, 2010; Evans & English, 2002; Luby et al., 2013). Continued adversity in the absence of buffers gives way to toxic stress which has enduring impact via alterations in brain architecture, gene expression, immune status, cardiometabolic function, and behavior patterns (Anda et al., 2006; Anda et al., 2010; Danese & McEwen, 2012; Shonkoff & Garner, 2012).

Adverse childhood experiences (ACEs) are interrelated (Anda et al., 1999; Dong et al., 2004; Dube, Felitti, Dong, Chapman et al., 2003; Duke, Pettingell, McMorris, & Borowsky, 2010; Felitti & Anda, 2010; Felitti et al., 1998; Scott, Burke, Weems, Hellman, & Carrion, 2013) and cumulative in effect (Dube, Felitti, Dong, Giles, & Anda, 2003; Duke et al., 2010; Felitti & Anda, 2010; Felitti et al., 1998; Hughes et al., 2017). Using a public health lens, ACEs may be envisioned to push people into different health profiles. For example, when compared to individuals with no ACEs, individuals with an ACE score ≥ 4 are at significantly greater risk of developing lung disease (3.9 times), a stroke (2.4 times), hepatitis (2.4 times), heart disease (2.2 times), and any cancer (1.9 times) (Felitti et al., 1998). Among children, an ACE score ≥ 4 is linked to increased risk for learning-behavior problems and obesity (Burke, Hellman, Scott, Weems, & Carrion, 2011). Thus, reduction of ACEs as precipitants of toxic stress, and support of youth and family resilience are essential to address poor and discrepant health and developmental outcomes.

In the clinical setting, examples of ACEs screening most often are incorporated in the well child/adolescent visit or annual preventive care exam. The annual preventive care visit offers the best opportunity for youth and families to receive anticipatory guidance, developmental and psychosocial risk screening, and brief interventions to support development and maintenance of healthy behavior patterns (Hagan et al., 2008). However, too few adolescents are receiving recommended annual preventive care (Office of Disease Prevention and Health Promotion, Healthy People 2020). The Centers for Disease Control and Prevention estimates that almost one third of US adolescents (31.3%), ages 10–17 years, have not had a wellness check-up in the last 12 months (Office of Disease Prevention and Health Promotion, Healthy People 2020). With recognition that a sizable number of youth do not receive annual preventive care, a question arises as to whether or not focus on the well child/adolescent visit as the mechanism for ACEs screening may result in missed opportunities to identify and intervene in contexts of ACEs. Moreover, research examining the relationship between occurrence of ACEs and youth likelihood of receiving recommended preventive care is needed. The purpose of this study was to evaluate the relationship between 10 different types of ACEs, including types of abuse, household dysfunction, and food and housing uncertainty, and youth likelihood of having received preventive care in the last 12 months, including medical and dental care. Dental care is included in analyses, as these visits may serve as a referral base for annual medical visits. Dental health is essential for good general health, and review of the social context of the adolescent is recommended during dental assessments (American Academy of Pediatric Dentistry (2015); American Academy of Pediatric Dentistry, 2013). We hypothesized that ACEs would be related to reduced odds of receiving preventive care among youth, providing supporting evidence for extension of the conversation about screening contexts for ACEs.

2. Methods

2.1. Study design and population

This study is a secondary data analysis using the 2016 Minnesota Student Survey (MSS), a comprehensive, anonymous, in-school survey. In 2016, the MSS was delivered to a census of 5th, 8th, 9th, and 11th grades throughout the state ($N = 168,733$). The MSS is one of the longest running youth surveys in the United States; the first survey was administered in 1989. The survey asks about a wide range of topics impacting youth health, school and community engagement, and perceptions. The survey is administered every three years during one class period, most recently using paper and pencil or via computer (5th and 8th graders administered online; 9th and 11th graders given choice of paper vs. online; no mixing of delivery method within a single school). The same survey questions are contained in online and paper versions of the instrument. No differences in response patterns related to mode of administration have occurred (Minnesota State Epidemiological Outcomes Workgroup, 2014).

Survey administration is a collaboration between school districts, local schools, and four state agencies, the Minnesota Departments of Education, Health, Human Services, and Public Safety. All public schools are invited to participate, including regular public schools, charter schools, and tribal schools. Prior to survey administration, parents are notified of their right to review survey content and to opt their child out. Students provide assent for participation.

School district and student participation in the survey is voluntary. In 2016, 68% of the total student enrollment in the 5th, 8th, 9th, and 11th grades participated, corresponding to 282 school districts (approximately 85% of all public operating school districts) (Minnesota Student Survey Interagency Team, 2016). Participants included 66% of all 5th graders, 73% of all 8th graders, 71% of all 9th graders, and 61% of all 11th graders. As a school-based sample, the demographic profile of participants is judged to closely match the state's adolescent population overall (Minnesota State Epidemiological Outcomes Workgroup, 2014). With each survey administration, prior to data release, approximately 1–2% of surveys are eliminated from the dataset because respondent sex is missing, responses are highly inconsistent, or there is a response pattern suggestive of exaggeration. In 2016, 1.6% of all 8th grade, 1.8% of all 9th grade, and 2.2% of all 11th grade surveys were removed from the dataset due to abnormal, exaggerated, or inconsistent response patterns. Additional survey methodology and data management information is published elsewhere (Minnesota Department of Education, Minnesota Student Survey; Minnesota Department of Health, Center for Health Statistics, Minnesota Student Survey).

Data for the current analyses are from Minnesota 8th, 9th, and 11th graders ($n = 126,868$). Students in these grades were asked

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