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Original article

Expectancy and Achievement Gaps in Educational Attainment and Subsequent Adverse Health Effects Among Adolescents With and Without Chronic Medical Conditions

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A B S T R A C T

Purpose: While education-based disparities in health are common, the extent to which chronic conditions contribute to education gaps and to consequent health disparities is not fully understood. As such, we sought to investigate educational aspirations, expectations, and attainment among youth with and without chronic conditions and to determine if these relationships mediated subsequent disparities in health and well-being.

Methods: Longitudinal data on 3,518 youths are from the 1997–2013 Panel Study of Income Dynamics, a population-based survey. Multivariate regression was used to assess disparities in educational aspirations, expectations, and attainment by chronic conditions and the subsequent effects on health and well-being, adjusting for important potential confounders.

Results: Youth with chronic medical conditions (YCMCs) did not report significantly lower educational aspirations than their healthy peers; however, YCMC reported lower expectations for their educational attainment and fewer YCMC had earned their desired degree by the end of follow-up (e.g., ≥bachelor's degree: 19.9% for YCMC vs. 26.0% for peers, $p < .05$). YCMC reported significantly worse general health, lower life satisfaction, and lower psychological well-being in young adulthood than did their healthy peers. These disparities persisted after adjustment for confounders; the association between chronic disease and health was partially, but significantly, mediated by actual educational attainment.

Conclusions: Findings suggest an important risk mechanism through which YCMC may acquire socioeconomic disadvantage as they develop and progress through educational settings. Disproportionate lags in education, from expectation to attainment, may in turn increase YCMC's susceptibility to poor health and well-being in the future.

IMPLICATIONS AND CONTRIBUTION

Findings suggest that youth with chronic conditions are susceptible to lower educational attainment, despite not having different educational aspirations from their healthy peers and that these gaps in attainment partially contribute to the pathway leading from chronic disease to later adverse health and well-being.

The prevalence of pediatric onset chronic medical conditions, such as type 1 diabetes and asthma, has been steadily rising over the past several decades, leading to an unprecedented number of youth, over one in four, who must manage their condition [1] and cope with the associated financial and psychosocial burdens [2].

Conflict of Interest: The authors have no conflicts of interest to disclose.

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For youth with chronic medical conditions (YCMCs), disease burden may interfere with normal developmental processes and negatively affect near-term as well as subsequent health and well-being. While psychosocial and health decrements are commonly observed among YCMC during emergent adulthood [3–10], mechanisms are unclear.

Life-course theory and a multiple determinants of health model highlight the importance of considering the dynamic circumstances and developing socioeconomic contexts bearing on youth as they mature into adulthood [11–13]. Educational attainment, a critical component of socioeconomic status, has been shown to affect several health outcomes [14–16]. Education-based gradients in health likely operate by affecting individuals' ability to obtain and apply health-related knowledge, access health services, and regulate exposure to various health risks, all of which are especially critical for successful disease self-management among YCMC [17,18]. There is some evidence to suggest that YCMC may experience gaps in educational attainment [19,20], although there is a paucity of evidence about longitudinal processes linking chronic disease, education (from aspirations to attainment), and health.

To address this gap, we sought to quantify disparities in educational aspirations, expectations, and attainment as they manifest longitudinally among adolescents and young adults with and without chronic conditions; we further sought to determine if disparities in educational attainment in adolescence mediate subsequent disparities in health and well-being during emergent adulthood. If empirically validated, this model might help explain why "down-stream" adverse health outcomes are common among YCMC during emergent adulthood and guide the design and application of supportive interventions targeting "up-stream" causes during adolescence.

Methods

Data source and sample

Data are from the Panel Study of Income Dynamics (PSID), a nationally representative, longitudinal household survey. In 1997, children from birth to age 12 years residing in PSID households were recruited into the Child Development Supplement (CDS); repeat waves of the CDS were administered in 2002/2003 and 2007/2008. CDS participants who graduated or dropped out of high school and were at least 18 years old were interviewed for the Transition into Adulthood (TA) survey in 2005, 2007, 2009, 2011, and 2013. Respondents were eligible for this study if they were interviewed in the initial 1997 CDS wave and responded to questions about educational and health outcomes in a subsequent interview (N = 2,555); in addition, another 963 CDS respondents had a parent report or self-report of educational aspirations or expectations and were also included in analyses for those outcomes. As data were already collected and deidentified, this study was exempted from institutional review board approval.

Dependent variables

Educational outcomes. Both parents and youth reported on educational preferences/aspirations (respectively) and expectations in the CDS when youth were <18 years, and youth further reported on these outcomes in the TA. In the CDS, parents reported their preferences ("In the best of all worlds, how much schooling would you like [your child] to complete?") and expectations ("Sometimes children do not get as much education as we would like. How much schooling do you expect that [your child] will really complete?"), regarding their child's educational attainment. In the CDS and TA, youth (aged 12 years and older) reported their aspirations ("How far would you like to go in school?") and expectations ("Many people do not get as much education as they would like. How far do you think you will actually go in school?") for their own educational attainment. These outcomes were classified as follows: (1) graduate from high school or less; (2) vocational training after high school or some college; (3) graduate from a 2-year college; (4) graduate from a 4-year college; (5) earn a graduate degree (e.g., Master's, M.D., J.D., and Ph.D.); or (6) Do not know (youth respondents could additionally report wanting to "do something else").

Youth's self-reported educational attainment (including college enrollment status, receipt of academic degrees, and dates of matriculation and completion) was assessed at each TA administration and used to construct time-varying summary variables for attainment (did not graduate from high school or earn a general educational development (GED) certificate; graduated from high school or earned a GED; vocational training after high school or some college; graduated from a 2-year college; graduated from a 4-year college; or any graduate school) and conditional indicators of academic progression (e.g., matriculation into a 4-year college among anyone with a high school degree/GED; completion of a bachelor's degree among anyone who attended a 4-year college).

Health and well-being. Health status was measured as an ordinal variable using Likert-type responses from the following question: "Would you say your health in general is excellent, very good, good, fair, or poor?" A continuous measure for psychological well-being was constructed by reverse coding Kessler-6 psychological distress scores [21]. In the 2009–2013 administrations of the TA, respondents were asked to rate their life satisfaction on a Likert scale: "How satisfied are you with [your life-as-a-whole]? Are you completely satisfied, very satisfied, somewhat satisfied, not very satisfied, or not at all satisfied?"

Independent variables

Chronic medical conditions. Chronic conditions were conceptualized as those requiring regular, lifelong medical management with onset in childhood and identified by report of ever being told by a doctor or other health professional that they had attention-deficit/hyperactivity disorder or attention deficit disorder; asthma; autism; birth defects; breathing problems; cancer; chronic hypertension (reported ≥2 times); diabetes; digestive problems; emotional or psychological problems; epilepsy; heart conditions; kidney disease; learning disability or developmental delays; migraines; orthopedic conditions; sickle cell anemia; skin disease; hearing, speech, or visual impairments; and other conditions. Youth who did not report any of the aforementioned chronic conditions or reported only acute or episodic conditions (e.g., allergies and jaundice) were considered to have no chronic conditions. Youth with a reported diagnosis of intellectual disability were excluded.

Reported age of diagnosis for each condition (or age at first report of each condition when age was missing) was used to construct time-varying indicators of chronic condition status at each follow-up survey. For descriptive purposes (i.e., Table 1),