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SOCIOECONOMIC STATUS, SCHOOLS, AND ADOLESCENT DEPRESSION: PROGRESS IN THE SOCIAL EPIDEMIOLOGY OF ADOLESCENT HEALTH

Clinical depression among adolescents is relatively common, with an annual prevalence of 2% to 4%, and cumulative prevalence during adolescence of 25%.[1] Diagnosed cases likely represent a "tip of the iceberg" phenomenon, with a much larger incidence of less pervasive symptoms that may warrant clinical attention.[2] Depressive symptoms may be under-recognized in the context of other major causes of adolescent morbidity and mortality: attention deficit disorder; alcohol, tobacco, and other drug use; early pregnancy; and suicide, among others.[3] The importance of depression in adolescent health clearly supports detailed understanding of its epidemiology.

Among the risk factors associated with depression, socioeconomic status is consistently identified. Despite differences in definitions and measurement, persons in the lowest socioeconomic groups may have roughly twice the likelihood of depression as those in the highest socioeconomic groups.[4] Similar disparities have been demonstrated for adolescents and are linked to alcohol, tobacco and other drug use.[5,6]

In this issue, Goodman et al. confirm the linkage between household income and depression.[7] In addition, school-level income was significantly associated with depression: students from schools with higher average household income reported fewer depressive symptoms than those from schools with lower average household income. Most importantly, Goodman et al show that school-level income modifies the strength of the relationship between household income and adolescent depressive symptoms. This means for example, that average depression scores of teens from families with an annual household income of $20,000 (in 1994 dollars) attending schools in the lowest quartile of average income have about 11% more depressive symptoms than those attending schools in the highest quartile of average income. The effects are adjusted for covariates such as parental education, household size, sex, race, and age. Although these differences are modest given the developmental complexity of depression and its role in adolescent health, these findings are an important contribution to the understanding of disparities in adolescent health.

It is in this area of understanding of the social epidemiology of adolescent health that the article by Goodman et al makes a second and perhaps greater contribution. This contribution stems from the demonstration that an important element of poor health is at least partially rooted in the social environment. This may seem self-evident to many healthcare providers: the "new mor-

ADD Health National Longitudinal Study of Adolescent Health

See related article, p 451.

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bidities" of adolescence defined more than 25 years ago included violence, substance use, and early pregnancy associated in part with family poverty and meager scholastic and neighborhood environments.[8] However, progress in understanding these common problems seems to have been overshadowed by the explosion in understanding of the genetic and molecular basis of many conditions, including depression. Thrilling as these developments may be, I suspect that only the most positive among us believe that molecular medicine can cure the health consequences of multigenerational poverty and its corollaries of family dysfunctions, hopelessness, and social ostracism.

Understanding the mechanisms by which these family and social influences translate into morbidity has been accelerated by availability of two relatively new tools. First, surveys such as the National Longitudinal Study of Adolescent Health (ADD Health) provide high-quality data that is appropriate for a variety of investigations. ADD Health represents a technically complex survey design, as well as the social and political commitment to allocate (albeit not without controversy) adequate resources to the task. Clearly, continued investment in high quality, public-use data sets is critical to the understanding of adolescent health in the context of changing economic and social influences.

Second, analytic methods and software allow multilevel analyses that account for shared variance as a result of the attendance at the same school, for example, or residence in the same neighborhood. Although many of the statistical insights underlying multilevel methods have been available for many years, only recently have software packages been developed that broaden the applications of these methods. Failure to use multilevel approaches leads to both statistical and conceptual problems. Statistical problems occur if data from each student is treated as if it were independent of observations from other students in the same school. In fact, students within a school share common factors that may influence their individual data. Such data, analyzed at an individual level without accounting for the school-level influences, risks creation of nominally significant but spurious results.[9] Conceptual problems may arise because of the incorrect inferences made from such data. New data analytic techniques are often challenging to clinical readers: Goodman et al are to be congratulated for providing an accessible example of this analytic approach.

The field of social epidemiology itself is not without controversy. Some writers question the validity of "social epidemiology" as a distinct area of inquiry, arguing that inquiries crossing multiple disciplines risk statistically proper results that lack meaning.[10] Certainly, the conceptual and methodologic challenges of this area of inquiry are complex.[11] This controversy notwithstanding, inquiries into the social origins of adverse health conditions offers important insights into potential interventions as well as highlighting the limitations of individually targeted programs and therapies.

The Goodman et al article appropriately leaves two key issues unresolved. First, the data are cross-sectional and can not assess directions of influence. Among adults, for example, most studies support the notion of a causal link between socioeconomic status and depression (ie, low socioeconomic status is causally linked to increased rates of depression).[4] A similar causal pathway may exist for adolescents and depression. Alternatively, selection factors (eg, parental depression) could be associated with both adolescent depressive symptoms and decreased household income. The moderating effect of schools described by Goodman et al could then be a result of purposeful movement of parents (perhaps in response to treatment) in an effort to choose better environments despite constrained family circumstances. However, an intergenerational study including a measure of parental psychopathology suggested a causal association rather than selectivity as an explanation for these relations.[12] Obviously, additional research is needed to disentangle these complex relations.

Second, the data do not offer insight into the mechanisms by which school economic characteristics buffer the effect of socioeconomic status on depressive symptoms. Many studies show that low socioeconomic status is inherently stressful, and that individual characteristics (eg, coping style), familial factors (eg, family support) and contextual factors such as attendance at schools with more resources could reduce the depressive effects of these stressors.[4] Higher resource schools could have this affect in several ways: by direct teaching of adaptive coping skills, by provision of larger systems of effective social support (eg, after-school programs, counselors, teachers, coaches) and by moderating the effect of other important stressors such as family conflict.[13]

More detailed understanding of the mechanisms by which schools could contribute to the amelioration of mental health disparities is clearly important. Goodman et al suggest that politically and socially controversial educational reforms such as school voucher programs would allow parents to choose higher resource schools, whose benefits presumably include reduction in depressive symptoms. Such programs have been shown to be associated with increases in test scores for some groups, but changes in depressive symptoms have not been examined.[14] Although this issue ultimately may be decided by our political process, an empirical evaluation of the effect of school vouchers on depression and other health-related outcomes would be useful.

Health disparities as a result of socioeconomic status, race/ethnicity, and culture reflect much that is "worst" about our country and society. Efforts to understand and repair these disparities reflect much that is "best." As others have noted, no single strategy will ultimately reduce social inequalities in health.[15] Data such as that presented by Goodman et al represent important progress in identification of strategies that may contribute to the egalitarian goal of health for all youth.

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