

What Proportion of Failure to Complete Secondary School in the US Population Is Attributable to Adolescent Psychiatric Disorder?

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Abstract

Using information available from the longitudinal Children in Community Study, population-attributable risk percentage was calculated to estimate the amount of failure to complete secondary school in the United States that is associated with adolescent psychiatric disorder. Over half the adolescents in the United States who fail to complete their secondary education have a diagnosable psychiatric disorder. The proportion of failure to complete school that is attributable to psychiatric disorder is estimated to be 46%. School failure among young persons with psychiatric disorder exacts a large toll from individuals and society.

Introduction

Several service system-based longitudinal studies have called attention to the impact of disability due to serious emotional/behavioral disturbance (SED/SBD) on educational outcomes.¹⁻⁴ Based on a sample of over 8,000 secondary school students, the National Longitudinal Transition Study (NLTS) reported that fewer than 50% of students who were enrolled in special education programs because of emotional/behavioral disability completed high school.¹ Furthermore, the proportion of school completers in this disability group was found to be 20 percentage points lower than in the two disability groups with the next lowest levels of school completion (ie, students with mental retardation and students with multiple handicaps). Other studies²⁻⁴ have shown that adolescents in psychiatric residential treatment programs have even poorer educational outcomes.

According to the 1990 census, 19% of 20 to 24 year olds in the United States have not completed their secondary education.⁵ The broader question of how many children in the overall US population

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with psychiatric disorder (PD) fail to complete school has not been adequately addressed. Knowing the true population impact of psychiatric disorder on failure to complete secondary school will enable appropriate prioritization of mental health and education resources.

Method

Data from a community-based study were used to estimate the proportion of failure to complete secondary school in the general US population that can be attributed to psychiatric disorder. This estimate is obtained by calculating the population-attributable risk percentage (PAR%), a commonly used epidemiologic construct that estimates the fraction of the occurrence in a given population of a particular adverse health outcome that results from a particular exposure.⁶ The magnitude of the PAR% is a function of both the strength of the association between an exposure and an outcome and the prevalence of the exposure within the general population. It is calculated as the difference between the incidence of the outcome in the total population and the incidence in the unexposed portion of the population ($I_t - I_0$) as a percentage of the incidence in the total population. $PAR\% = ((I_t - I_0)/I_t) * 100\%$.

For example, there is a large relative increase in risk in lung cancer among cigarette smokers in the United States (5- to 20-fold depending on the intensity and recency of smoking), in part because lung cancer is rare in the absence of cigarette smoking. The PAR% is also high (80% to 90%), due both to the large relative increase in risk and the high level of cigarette smoking in the population.⁷ One way to interpret the PAR% is as the percentage reduction in incidence of an outcome (lung cancer, school drop out) that would be achieved if the population had had no exposure (smoking, adolescent psychiatric disorder) compared with its current (actual) exposure pattern.⁸

The field now has the necessary means to compute the proportion of overall school dropout that is attributable to PD: well-designed epidemiologic studies yielding the occurrence of school non-completion in adolescents who suffer from PD relative to its occurrence in the general population. Since 1975, the Children in Community Study (CICS) has followed a cohort of 967 children from randomly sampled households in two counties in upstate New York.⁹ The cohort comprises 48% female and 52% male children who were between the ages of 1 and 10 years in 1975. In 1983, trained lay interviewers administered structured diagnostic interviews to children and mothers in their homes, yielding PD in four categories: anxiety, depressive, substance abuse, and disruptive disorders.¹⁰ School completion was classified on the basis of questions about school status asked of youth and mothers in 1985 to 1986.

The calculation of PAR% is based on the 181 CICS subjects who were adolescents under age 18 at the time of the 1983 interview and had crossed the threshold into young adulthood (18 years and older) by the time of their next interview, an average of 2.5 years later.¹¹ School completion among adolescents who did and did not meet PD criteria was compared. The extent to which failure to complete secondary school is attributable to diagnosable PD was estimated based on the following findings:

- 18.2% of the children met the criteria for PD during adolescence (This estimate is within .5% of four other major community-based epidemiologic studies conducted in the same decade.¹²)
- 13% of young adults in the entire community sample did not complete secondary school (I_t). Of the adolescents with PD, 39% did not complete school (I_e). Of the adolescents without PD, 7% did not complete school (I_0)

To calculate PAR%, the authors subtracted the estimate of the occurrence of school non-completion among adolescents without PD (I_0) from the estimate of the occurrence of school non-completion among adolescents in the general population (I_t), and then divided this difference by the estimate of occurrence in the general population (I_t). In a secondary analysis, household socioeconomic status (SES) was classified on the basis of mother's education, father's education, father's occupation and family income; the PAR% was then calculated in high and low SES strata.

Table 1
Psychiatric disorder and school non-completion per 100 adolescents

| | Psychiatric disorder | No psychiatric disorder | Total | PAR % |
|------------------------------|-----------------------------|--------------------------------|--------------|--------------|
| School non-completion | 7 | 6 | 13 | |
| School completion | 11 | 76 | 87 | |
| Total | 18 | 82 | 100 | |
| % with school non-completion | 38.9 | 7.3 | 13.0 | 43.8 |

Results

Several statistics emerged from these data (Table 1) as follows:

- In the two New York counties, 7% (18.2%* 38.9%) of the young adult population are persons with PD who fail to complete secondary school.
- Forty-four percent ([13% – 7.3%]/13%) of the failure to complete school can be attributed to PD.

Within both high and low SES strata, adolescent psychiatric disorder is seen to have a very large effect on school completion and to account for a large proportion of failure to complete school (Table 2). In the lower SES stratum, where 23% of adolescents have PD, 50% who have PD fail to complete school compared with 11.3% without PD. In the upper SES stratum, a considerably lower proportion fails to complete school (only 6.4% compared with 20% in the lower stratum). However, the discrepancy in school completion between adolescents with and without PD is still very high (26.7% versus 2.5%). The proportion of school failure attributable to PD is 44% in the lower stratum and 61% in the upper stratum.

Discussion

Embedded within the concept of PAR% is the assumption that a causal association has been established. Which criteria for causality have been met in the association between adolescent psychiatric disorder and failure to complete secondary school?

Table 2
Psychiatric disorder and school non-completion per 100 adolescents stratified by socioeconomic status (SES)

| | Psychiatric disorder | No psychiatric disorder | Total | PAR % |
|------------------------------|-----------------------------|--------------------------------|--------------|--------------|
| Below median SES | | | | |
| School non-completion | 9 | 7 | 16 | |
| School completion | 9 | 55 | 64 | |
| Total | 18 | 62 | 80 | |
| % with school non-completion | 50.0 | 11.3 | 20.0 | 43.5 |
| Above median SES | | | | |
| School non-completion | 4 | 2 | 6 | |
| School completion | 11 | 77 | 88 | |
| Total | 15 | 79 | 94 | |
| % with school non-completion | 26.7 | 2.5 | 6.4 | 60.9 |

- The association is strong and consistent.^{11,13,14}
- Temporal sequence exists. In each of the treatment-based and community-based studies, the identification of PD preceded school drop out.^{1-3,11}
- A strong dose-response gradient exists. Study populations with more severe psychiatric disturbance have lower rates of school completion.¹³
- A plausible psychological model exists. Anxiety, depression, substance abuse, and disruptive behavior disorders impair cognitive, emotional, and social development, all of which are critical ingredients to school success.¹⁵⁻¹⁹

Even if the word “attributable” seems too strong, the algebraic formula used to calculate the PAR% can be logically applied. A more conservative interpretation of the application of this formula would be: “the amount of school failure that is *associated with PD*.”

The authors acknowledge two limitations to these findings. First, the estimate of school non-completion in the CICS (13%) differs from the estimate of school non-completion in the US general population (19%). The household sample from upstate New York, while reflecting the demographic characteristics of the population sampled and the socioeconomic distribution of the US population in the 1980s,²⁰ was predominantly white, with only 6% minority representation. Children of color are at increased risk for school dropout.²¹ The impact of psychiatric disorder on school non-completion may be different in different communities.

Second, epidemiologic studies are able to sweep only broad brushstrokes across the landscape of an etiologic question. Although the studies cited were longitudinal, sorting out the onset of mental health problems leading to diagnosis from the onset of school problems leading to dropout is difficult. Longitudinal studies whose methods include frequent interviews and more refined measures of school performance and psychiatric distress are needed to build a solid and finely tuned causal model.

Concern about the failure of students with mental health disorders to complete school has prompted policy and program initiatives nationwide. At the policy level, in 1997 the US Office of Special Education and Rehabilitation worked closely with Congress to reauthorize the Individuals with Disabilities Education Act (IDEA),²² which incorporates performance indicators to address past weaknesses in special education outcomes. States have been charged with improving and measuring indicators related to IDEA objectives, spawning task forces whose work is directed toward improving the plight of particular disability groups. In Washington State, for example, a set of recommendations for improving school and community programs on behalf of students with emotional or behavioral disabilities includes developing a mandated infrastructure to coordinate services in a “comprehensive system of care.” Such a system would cut across boundaries of funding, profession, discipline, and roles and would rely on extensive collaboration among families; educators; and social, human, and health service providers.²³

At the program level, since adolescents with psychiatric disorders have limited academic success in either self-contained special education or general education classrooms,²⁴ experts have argued that the educational offerings for this population be carefully tailored to promote slow and steady progress along a developmental continuum toward adult roles.²⁵ School programs that provide supports such as accommodation, symptom management, peer counseling, personal support, and mental health services have been shown to promote success with respect to school retention.²⁵⁻²⁸ To be successful, youth with depression, anxiety, disruptive behavior, and other psychiatric disorders require skillful tuning of their strengths and capacities to available academic and vocational opportunities.²⁹⁻³¹

Prior longitudinal studies demonstrated that young people who were enrolled in programs targeting adolescents with a recognized emotional or behavioral disability had poor educational outcomes. Calculating the PAR% on the basis of information from the general population highlights that the educational problems experienced by adolescents with mental health disorders reach beyond the scope of the problems of those adolescents enrolled in special education or residential treatment programs. Only 1% of secondary school students carry the SED/SBD special education designation,³²

whereas 7% of all secondary school students have psychiatric disorders and will fail to complete school.

Implications for Behavioral Health Services

In the United States, completing secondary and post-secondary education is associated with personal, social, and economic success during adulthood.³³ Between 1950 and 2000, the proportion of available unskilled jobs fell from 60% to 15%.³⁴ People who fail to complete secondary school earn less income, experience less home and work stability, and are more likely to require public assistance than secondary school completers.^{35,36} While educational policies and programs are being conceived, planned, studied, and implemented, each year in the United States an estimated 42,000 adolescents with psychiatric disorders cross the threshold into adulthood without completing secondary school and, as such, may be ill prepared for employment and citizenship.

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