Prevalence and Correlates of School Drop-Out Prior to Initial Treatment of Nonaffective Psychosis: Further Evidence Suggesting a Need for Supported Education

Sandra M. Goulding[a], **Victoria H. Chien**[a], and **Michael T. Compton**[a],[*]
[a] Emory University School of Medicine, Department of Psychiatry and Behavioral Sciences, Atlanta, Georgia, U.S.A.

Abstract

Background—Because dropping out of high school (i.e., secondary education) contributes prominently to numerous social, economic, and health conditions, formal public health initiatives promoting population health and social justice, especially in at-risk populations, are increasingly encouraged to address high school drop-out. The relative dearth of research attention on school drop-out prior to first treatment contact in young adults with psychotic disorders indicates a need for investigation of the associations between school drop-out and illness-related variables so that interventions may be tailored appropriately to this unique population.

Methods—This study provides a descriptive characterization of the prevalence and correlates of high school drop-out in a sample of 109 patients hospitalized for the evaluation and treatment of a first episode of nonaffective psychosis.

Results—Findings from this urban, socially disadvantaged, predominantly African American sample indicate that school drop-out is a marker of diverse detrimental social problems in first-episode psychosis, and that further research is required to fully characterize the most appropriate interventions for such individuals.

Conclusions—Future research might seek to intervene through an integrated treatment approach that incorporates supported education, symptom reduction and management, and comorbid substance use treatment in first-episode patients.

Keywords

Education; First-episode psychosis; Psychosis; Schizophrenia; School drop-out; Supported education

1. Introduction

High school drop-out (i.e., discontinuing school during the years of secondary education, which, in many countries, is the final stage compulsory education) is a problem contributing to numerous adverse social, economic, and health conditions (Freudenberg and Ruglis, 2007). While educational attainment is known to be highly associated with both income level and occupational status, research also indicates that education may be a very important influence on an individual's health (Cutler et al., 2006; Deaton, 2002; Jemal et al., 2008; Molla et al., 2004; Winkleby et al., 1992). For example, having less formal education is associated with greater levels of risky health behaviors (e.g., substance use, inadequate physical activity) and is predictive of earlier mortality (Jemal et al., 2008; Lantz et al., 1998; Molla et al., 2004). The higher the level of educational attainment, the greater one's access to resources (e.g., money, belongings, housing, food, medical care), information and skills (e.g., the ability to acquire adequate help and resources), and social support that engenders a sense of control over one's own life (Cutler et al., 2006, Day and Newburger, 2002; Ross and Mirowsky, 1989; Ross and Wu, 1995). Given that numerous individual-, school-, and community-level factors are associated with high school drop-out, public health professionals are increasingly encouraged to simultaneously target both improvement of health and reduction of school drop-out rates in formal public health initiatives that promote population health and social justice, especially in at-risk populations (Freudenberg and Ruglis, 2007).

High school represents an important context for adolescent psychological and social development. Thus, dropping out of secondary education can substantially interfere with the achievement of critical psychosocial milestones. Individuals with mental illnesses account for a significant percentage of high school drop-outs (Fine and Zane, 1989; Haynes, 2002). Because psychiatric disability often begins in late adolescence or early adulthood, many affected by serious mental illnesses (e.g., schizophrenia and related psychotic disorders) have difficulty completing high school and entering postsecondary education. This, in turn, can result in inadequate basic knowledge and stunted development of interpersonal skills that are critical for success in a variety of life roles. Since much of the psychosocial disability associated with schizophrenia accumulates before the first treatment contact, those who also have dropped out of school have two strikes against them in terms of both social outcomes and physical health outcomes, in addition to mental health outcomes. Surprisingly, little research attention has been given to the issue of school drop-out prior to first treatment in young adults with psychotic disorders. Given the dearth of empirical findings in this area, research is needed on the association between school drop-out and illness-related variables (e.g., age at onset, course, long-term symptomatic and psychosocial functioning) so that psychosocial interventions can be developed to best meet the needs of adolescents and young adults with emerging psychiatric disabilities.

The objective of the present study was to provide a descriptive characterization of the prevalence and correlates of high school drop-out in a sample of patients hospitalized for a first episode of nonaffective psychosis. In particular, this sample included a relatively large group of urban, socially disadvantaged, low-income, predominantly African American patients. The study's aims were to provide a descriptive summary of school drop-out in this sample, and to examine associations between school drop-out and a number of key demographic, social, and clinical variables. In doing so, it is hoped that such descriptions may draw attention to the complex interactions between social disadvantage (as exemplified by school drop-out) and serious mental illnesses, even at the time of initial onset and treatment-seeking. Further, such findings will provide data to support future research on psychosocial interventions addressing high school drop-out in individuals affected by such illnesses.

2. Methods

2.1. Setting and Sample

Participants in this study took part in *The ACES Project* (Atlanta Cohort on the Early course of Schizophrenia), a study designed primarily to examine predictors of treatment delay and the duration of untreated psychosis in first-episode patients in an urban, low-income, predominantly African American population. All participants were hospitalized for an initial manifestation of a primary, nonaffective psychotic illness either in an inpatient psychiatric unit of a large, university-affiliated, public-sector hospital or an urban county psychiatric crisis center. Patients who were between the ages of 18 and 40 years and able to speak and read English were eligible to participate. Exclusion criteria included: known mental retardation, a Mini-Mental State Examination (MMSE; Cockrell and Folstein, 1988; Folstein et al., 1975) score of <24, a significant medical condition compromising ability to participate, prior treatment for psychosis for >3 months, previous hospitalization for psychosis >3 months prior to index hospitalization, and inability to provide informed consent.

The 109 first-episode patients had a mean age of 23.1 ± 4.7 years (range: 18–39), and 83 (76.1%) were male. The majority self-identified as Black/African American (98, 89.9%), and the remainder identified as White/Caucasian (7, 6.4%), Asian American (2, 1.8%), and of African/Ethiopian descent (2, 1.8%). Diagnoses based on the *Structured Clinical Interview for DSM-IV Axis I Disorders* (SCID-I; First et al., 1998) were as follows: 62 (56.9%) with schizophrenia (48 with paranoid type, 10 with disorganized type, two with residual type, and two with undifferentiated type); eight (7.3%) with schizoaffective disorder (five with bipolar type and three with depressive type); 22 (20.2%) with schizophreniform disorder; 12 (11.0%) with psychotic disorder not otherwise specified; four (3.7%) with brief psychotic disorder; and one (0.9%) with delusional disorder.

2.2. Procedures and Materials

Participants underwent a clinical research assessment during hospitalization, once acute psychosis was stabilized satisfactorily for the informed consent process and research participation. Data were collected from 2004 to 2008. The research was approved by all relevant institutional review boards.

Seven sociodemographic variables of interest in the present study were: gender, age at hospitalization, whether or not the patient had been in any special classes for learning or behavioral problems, who the patient lived with during the month prior to hospitalization, who primarily raised the patient during most of childhood, whether or not the patient has any children, and employment status during the month prior to hospitalization. Participants were classified as having graduated high school or not. Comparative statistics of high school drop-out from the Fulton and DeKalb county school systems of Atlanta, Georgia between the years of 2004 and 2008 were gleaned from census data provided by the U.S. Department of Education (USDE, 2008).

Eight social and clinical characteristics (variables or categories of variables) were examined in relation to school drop-out. Dichotomized variables indicating history of daily nicotine use, weekly alcohol use, and daily cannabis use were created, as described previously (Compton et al., 2009; Stewart et al., 2009). The use of other drugs was not examined given the low prevalence of other drug use in this sample of relatively young first-episode patients (e.g., only six participants (5.5%) had a history of cocaine abuse or dependence, and none had a history of opioid abuse or dependence, whereas 63 (57.8%) had a history of cannabis abuse or dependence).

Premorbid functioning was rated using the *Premorbid Adjustment Scale* (PAS; Cannon-Spoor et al., 1982), a reliable and valid measure that assesses the degree of attainment of specific developmental goals across life stages prior to onset of prodromal or psychotic symptoms in individuals with schizophrenia (Alvarez et al., 1987; Cannon-Spoor et al., 1982; Krauss et al., 1998). Higher scores indicate poorer premorbid functioning. As in a previous study (Monte et al., 2008), academic and social domain scores for childhood, early adolescence, and late adolescence were analyzed. To prevent inadvertent assessment of prodromal functioning, premorbid functioning was not assessed in any age period that included the year prior to onset of prodromal symptoms.

Recent social adjustment was evaluated with the *Social Functioning Scale* (SFS; Birchwood et al., 1990), a reliable and valid 71-item measure assessing abilities and performance in individuals with schizophrenia, with higher scores indicating higher levels of social competence. A summary score indicating the number of Axis IV psychosocial problems, based on definitions from the *Diagnostic and Statistical Manual of Mental Disorders*, *Fourth Edition* (American Psychiatric Association, 2000), was computed. Finally, symptoms were rated with the *Positive and Negative Syndrome Scale* (PANSS; Kay et al., 1987), using data obtained from a chart review and an in-depth semi-structured clinical research interview.

2.3. Data Analyses

Basic descriptive statistics were examined for the variables of interest. Associations between high school drop-out and demographic, social, and clinical variables were assessed using chi-square tests of independence, independent samples Student's *t*-tests, and Mann-Whitney *U*-tests, as appropriate. All analyses were conducted using the *SPSS 15.0* statistical software package.

3. Results

Of the 109 participants, 48 (44.0%) had dropped out of high school. The prevalence of school drop-out in this first-episode cohort was much higher than the reported 12.8–17.8% of high school drop-out in urban African American youth from Fulton and DeKalb county school systems (the counties where the study was conducted) between the years 2004 and 2008 (USDE, 2008). Associations between high school drop-out and select demographic variables and high school drop-out are shown in Table 1. Of the seven variables examined, those who had dropped out of high school were significantly younger at the time of hospitalization (20.9 ±3.3 years) than those who had graduated from high school (24.9±5.0; t=5.03, df=104.02, p<.001).

The two most common diagnoses for both the patients who had dropped out of high school and those who had graduated were schizophrenia, paranoid type (45.8% and 42.6%, respectively) and schizophreniform disorder (18.8% and 21.3%, respectively). Associations between high school drop-out and select social or clinical variables are shown in Table 2. High school drop-out was significantly associated with having ever used nicotine on a daily basis (χ^2=18.96, df=1, p<.001) and a history of daily cannabis use (χ^2=6.92, df=1, p=.01). Of the six PAS scores examined, participants who had dropped out of high school had, as expected, a significantly higher late adolescence (ages 16–18) academic mean score (4.1±1.4), indicating poorer late adolescent academic performance, than those who had completed high school (2.3 ±1.3; t=5.42, df=102, p<.001). High school drop-out also was associated with a lower mean SFS score (t=2.55, df=92, p=.01), indicating poorer overall social functioning, as well as a higher number of Axis IV problems (U=703.00, p<.001). Further, participants who had dropped out of high school had a significantly higher mean PANSS negative symptom score (23.0±7.0) than those who had completed high school (20.1±6.3; t=2.29, df=107, p=.02).

4. Discussion

Several findings emerged from this descriptive study. First and foremost, the prevalence of school drop-out in this urban, predominantly African American sample was remarkably high relative to that reported in local census data for urban, African American youth during the same years. Further, school drop-out was associated with: history of daily nicotine use, history of daily cannabis use, poorer late adolescence academic functioning, poorer social functioning, a greater number of self-reported psychosocial problems, and greater negative symptoms. Those who had dropped out were also significantly younger at hospitalization than those who had remained in school. Thus, school drop-out among patients with first-episode nonaffective psychosis is a marker of numerous disadvantageous social problems, indicating a potential point of intervention to enhance long-term psychosocial functioning. Supported education is one such intervention that researchers have begun to successfully tailor and apply to samples of individuals with schizophrenia-spectrum disorders (Egnew, 1993, 1997; Neuchterlein et al., 2008; Unger, 1998). Supported education is a particularly appealing psychosocial treatment modality in first-episode psychosis given that it is especially developmentally appropriate to this phase of life and this early stage of the illness.

With improved pharmacological treatments and empirically driven psychiatric rehabilitation techniques focused on symptom reduction and management, and an increased emphasis on empowering mental health consumers to choose their own goals and acquire the tools necessary to achieve those goals, adults with psychiatric disabilities are more likely to lead productive and meaningful lives in their local communities (Mowbray, 2000). Several reports have suggested that supported education programs promote positive outcomes such as graduation (e.g., high school diploma/general equivalency diploma), development of valued interpersonal and work-related skills (e.g., task-specific and social interactions), employment, and positive self-esteem (Cook and Solomon, 1993; Hoffman & Mastrianni, 1993; Unger et al., 1991). While there remains a relative dearth of empirical investigation of supported education in first-episode samples, one such program (Neuchterlein et al., 2008) has successfully adapted supported education used with chronic patients (Egnew, 1993, 1997; Unger, 1998) to fit the needs of first-episode patients. Findings from the current study point to the need for further investigation of supported education as a treatment modality to be implemented alongside other psychosocial interventions in first-episode samples. Such an approach would not only assist in the betterment of the patient and perhaps the family unit, but also in the overall improvement of social outcomes in the local, state, and national communities that support these individuals.

Given that previous research on supported education did not include first-episode patients with comorbid substance abuse, further research should clarify how this psychosocial intervention would be applied to such individuals (Nuechterlein et al., 2008), given the high rates of substance use comorbidity in first-episode samples (especially nicotine, alcohol, and cannabis use). Prior research in this same sample revealed that nicotine and cannabis use were commonly initiated and progressed well before the onset of psychotic symptoms (Stewart et al., 2009). Substance use is likely to intensify certain symptoms and interfere with adherence to pharmacological and psychosocial treatment modalities. Because high school drop-out is associated with nicotine and cannabis use, integrated treatments involving supported education, symptom reduction and management, health behavior improvement, and comorbid substance use treatment are clearly needed in this at-risk population.

Caution should be taken in generalizing the present findings to dissimilar populations given the sociodemographic and clinical characteristics specific to this unique sample. Nonetheless, it seems imperative to study such issues among urban, low-income, socially disadvantaged, predominantly African American first-episode patients, given the paucity of prior studies from the United States and the traditional under-involvement of such populations in psychiatric

research. The cross-sectional nature of the data does not allow for causality to be inferred from the results of this descriptive report. Yet, given the scarcity of research on school drop-out in such an understudied population, cross-sectional studies represent an important initial descriptive approach to understanding the complexity of an important public health problem in at-risk populations. Finally, measurement of school drop-out was limited in its scope within this project. A more detailed approach in establishing a timeline to measure school drop-out in relation to the onset of premorbid functional decline, prodromal symptomatology, and emerging psychotic experiences would benefit future research involving first-episode samples.

Despite the aforementioned limitations, the present findings suggest two separate but interrelated policy questions. First, does the high prevalence of high school drop-out in young people with mental health conditions require tailoring of services for this population? As discussed previously, supported education seems to be a compelling psychosocial treatment modality requiring further implementation and research, especially for young people with first-episode psychosis who have encountered school difficulties or have dropped out. Second, can high school personnel improve in their identification of young people with mental illnesses and work more closely with mental health professions in providing early intervention services that ultimately increase school completion rates? That is, the latter approach may be more proactive, assisting students with emerging mental illnesses to *stay* in school, rather than only repairing the collateral damage of drop-out before or during the initial psychotic episode. Future research on preventing and addressing school drop-out should examine multimodal education-based interventions that are relevant to first-episode patients. Incorporating supported education along with traditional pharmacological and psychosocial modalities, while also paying close attention to comorbid substance use, would help to further characterize the most appropriate treatment apporach for first-episode patients.

Acknowledgments

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Table 1

Associations between High School Drop-Out and Select Demographic Variables (*n*=109)

Demographic Characteristics	Dropped Out of High School (n=48)	Completed High School (n=61)	test statistic, df, p
Gender			
Female	9 (34.6%)	17 (65.4%)	χ^2=1.23, *df*=1, *p*=.27
Male	39 (47.0%)	44 (53.0%)	
Age at hospitalization, in years	20.9±3.3	24.9±5.0	*t*=5.03, *df*=104.02[*], *p*<.001
Ever in any special classes for learning or behavioral problems			
No	33 (41.8%)	46 (58.2%)	χ^2=0.60, *df*=1, *p*=.44
Yes	15 (50.0%)	15 (50.0%)	
Lived with during the month prior to hospitalization			
Family	37 (49.3%)	38 (50.7%)	χ^2=2.74, *df*=1, *p*=.10
Other	11 (32.4%)	23 (67.6%)	
Primarily raised by during most of childhood *(n=100)*			
One parent	29 (51.8%)	27 (48.2%)	χ^2=2.37, *df*=1, *p*=.12
Two parents	16 (36.4%)	28 (63.6%)	
Has any children			
No	35 (42.7%)	47 (57.3%)	χ^2=0.25, *df*=1, *p*=.62
Yes	13 (48.1%)	14 (51.9%)	
Employment status during the month prior to hospitalization			
Unemployed	34 (50.7%)	33 (49.3%)	χ^2=3.18, *df*=1, *p*=.08
Employed	14 (33.3%)	28 (66.7%)	

[*] degrees of freedom based on a significant Levene's test for equality of variances

Table 2

Associations between High School Drop-out and Select Social and Clinical Variables (*n*=109)

Social and Clinical Characteristics	Dropped Out of High School (n=48)	Completed High School (n=61)	test statistic, df, p
History of daily nicotine use *(n=104)*			
No	12 (23.5%)	39 (76.5%)	χ^2=18.96, *df*=1, *p*<.001
Yes	35 (66.0%)	18 (34.0%)	
History of weekly alcohol use *(n=102)*			
No	20 (38.5%)	32 (61.5%)	χ^2=1.38, *df*=1, *p*=.24
Yes	25 (50.0%)	25 (50.0%)	
History of daily cannabis use *(n=103)*			
No	18 (33.3%)	36 (66.7%)	χ^2=6.92, *df*=1, *p*=.01
Yes	29 (59.2%)	20 (40.8%)	
Premorbid Adjustment Scale (PAS) scores			
Childhood academic	1.7±.0.9	1.5±0.9	*t*=1.07, *df*=102, *p*=.29
Childhood social	1.3±1.1	1.2±1.2	*t*=0.71, *df*=102, *p*=.48
Early adolescence academic	2.1 ±0.9	1.8±0.8	*t*=1.81, *df*=102, *p*=.07
Early adolescence social	1.5±1.1	1.5±1.1	*t*=-0.30, *df* =102, *p*=.76
Late adolescence academic	4.1±1.4	2.3±1.3	*t*=5.42, *df*=102, *p*<.001
Late adolescence social	1.7±1.2	1.4±0.9	*t*=1.09, *df*=46.65 [*], *p*=.28
Social Functioning Scale (SFS) scores	115.4±24.3	129.2±27.3	*t*=2.55, *df*=92, *p*=.01
Number of Axis IV problems	5.14±1.71	3.71±1.72	*U*=703.00, *p*<.001
Positive and Negative Syndrome Scale (PANSS) scores			
Positive symptoms	24.1 ±4.7	24.3±5.2	*t*=-0.18, *df*=107, *p*=.86
Negative symptoms	23.0±7.0	20.1±6.3	*t*=2.29, *df*=107, *p*=.02
General psychopathology symptoms	43.6±8.9	41.4±8.9	*t*=1.25, *df*=107, *p*=.22

[*] degrees of freedom based on a significant Levene's test for equality of variances