Soc Psychiatry Psychiatr Epidemiol (2008) 43:975–982 DOI 10.1007/s00127-008-0397-y

ORIGINAL PAPER

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Mode of onset of psychosis and family involvement in help-seeking as determinants of duration of untreated psychosis

Received: 9 January 2008 / Accepted: 9 June 2008 / Published online: 5 July 2008

Abstract *Background* The duration of untreated psychosis (DUP) is a potentially modifiable determinant of the early course of nonaffective psychotic disorders, though a paucity of research has addressed determinants of DUP. Recent data from London and Nottingham, UK indicated that a shorter DUP was predicted by: (1) an acute mode of onset, (2) employment, and (3) active involvement of at least one family member in seeking evaluation (Morgan et al. Br J Psychiatry 189:446–452, 2006). The present analysis was conducted in an effort to replicate those findings in a predominantly low-income, urban, African American sample. *Method* DUP and the three key predictors of interest were assessed using standardized procedures. All analytic plans replicated those of Morgan and colleagues (Morgan et al. Br J Psychiatry 189:446–452, 2006) to the largest extent possible. Sufficient information was available to rate DUP for 73 patients. *Results* The median DUP was 23.4 weeks. Bivariate tests, survival analysis, and Cox regression revealed that an insidious mode of onset was associated with a substantially longer DUP compared with an acute onset, and that family involvement in help-seeking was independently associated with a longer duration. *Conclusions* While mode of onset is a reliable illness-related determinant of DUP, further research is needed on the complex ways in which family-related variables influence DUP.

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Key words duration of untreated psychosis – mode of onset – psychosis – schizophrenia – treatment delay

Introduction

Initiation of mental health care services is often substantially delayed among adolescents and young adults experiencing a first episode of psychosis. From a secondary prevention perspective of psychosis, delayed detection, diagnosis, and intervention are associated with poorer disease outcomes. In an effort to clarify the complex treatment delay construct, early psychosis researchers of the past decade have increasingly focused on a variable termed duration of untreated psychosis (DUP). Generally defined as the period of time between the onset of psychosis and initiation of adequate treatment [4, 11, 16], remarkable variability in DUP has been found within and across first-episode samples. Extensive research, summarized by two recent independent meta-analyses [10, 19], demonstrates that DUP significantly predicts symptomatic and functional outcomes, aside from effects of premorbid functioning, during the first months-to-years of the illness. Thus, DUP is considered to be a potentially modifiable determinant of the early course of nonaffective psychotic disorders.

Community-level interventions may have the potential to reduce median DUP within a defined healthcare sector [12]. However, successful reductions of DUP at the population level are largely dependent on elucidation of its causes. Efforts to reduce DUP should be based on knowledge of which factors both strongly influence it and are changeable [22]. Yet, to date, a paucity of research has addressed potential determinants of DUP [13], as most studies have focused on consequences of DUP. Despite a lack of empirical data, numerous illness- and patient-level factors may influence DUP, including denial of

the illness, withdrawal from friends and relatives, paranoid views of the mental health system, and the presence of negative symptoms [11]. Other individual-level factors such as ego-syntonic nature of some symptoms, attempts at self-medication with substances, and fear of stigmatization also may influence help-seeking behaviors [21].

Drake and colleagues [5] demonstrated that a longer DUP is predicted by poor insight, social isolation, and preserved coping skills, but is not predicted by demographic factors. Shorter treatment delays have been shown to be associated with later onset of the prodromal period, a prodrome of less than 2 years in duration, an acute development of psychotic symptomatology, initial presence of grandiosity or disorganization, and less social withdrawal [14, 15]. In addition to these illness- and patient-related factors, family characteristics likely impact DUP [22]. Delays in treatment-seeking may be associated with a lack of recognition of problematic symptoms by the patient, his or her family, or healthcare providers, and the failure of primary care providers to refer to appropriate services [21]. However, currently there is a paucity of research investigating family-level factors (e.g. family cohesion, coping, and involvement in the initiation of care) that may be relevant in understanding DUP.

Morgan and colleagues [13] conducted an analysis using data from the Aetiology and Ethnicity in Schizophrenia and Other Psychosis (ÆSOP) study to examine potential clinical (insidious mode of onset), sociodemographic (unemployment, living alone, being single), and family-related (the absence of family involvement in help-seeking) factors as potential determinants of DUP among first-episode patients in London and Nottingham, UK. Their first-episode sample included patients aged 16–65 years, 58% of whom were male, 44% of whom were White British, and most of whom were single (73%). Even after adjusting for potential confounders using Cox regression techniques, DUP was found to be associated with three key determinants. Specifically, a shorter DUP was predicted by an acute mode of onset, employment prior to evaluation for the first episode of psychosis, and the active involvement of at least one family member in seeking appropriate health care services for the patient.

The present analysis was conducted as a replication of the work of Morgan and colleagues [13]—specifically in a predominantly low-income, urban, African American sample—and in doing so, the methodology mirrored theirs to the largest extent possible. As per their findings, it was hypothesized that (1) an insidious mode of onset, (2) unemployment prior to the first hospitalization, and (3) lack of family involvement in help-seeking would be independently associated with a substantially longer DUP. Although there were no a priori hypotheses on how differences in treatment systems or cultural factors may influence associations between these hypothesized variables and DUP, comparisons across settings will inform further research and programs designed to foster early intervention. A replication of the ÆSOP findings versus those of other studies was based on the similarity of collected variables rather than a belief that these determinants are more important than others. Future analyses will examine a large number of other variables from the present study.

The investigative team thought that it was important to study select determinants of DUP in this unique sample for a number of reasons. First, given the dearth of empirical research on predictors of DUP, replications of early findings constitute a meaningful scientific endeavor to advance the field. Second, particularly few studies of predictors of DUP are available from the U.S. Third, replications across settings are crucial because such predictors are likely to vary prominently across different racial and cultural groups and across diverse health care settings.

Method

Sample and setting

This replication analysis was conducted using data from the Atlanta Cohort on the Early Course of Schizophrenia (ACES) Project, an ongoing study investigating potential determinants of DUP. Hospitalized patients with a first episode of nonaffective psychosis are recruited from three inpatient psychiatric units—a short-stay crisis-stabilization unit and a longer-stay inpatient psychiatric milieu unit of a large, urban, public-sector, general county hospital, and a public-sector crisis stabilization unit in an adjacent urban county within the same metropolitan area. Exclusion criteria included: (1) an age of <18 or >40 years, (2) inability to speak English, (3) known mental retardation, (4) Mini-Mental State Examination [1, 7] score of <23, and (5) prior outpatient antipsychotic treatment lasting >3 months or any prior hospitalization(s) for psychosis more than 3 months before the current admission. Of note, however, nearly all patients were completely treatment-naïve.

During the study period (July 2004–April 2007), 209 potential participants were briefly screened, and the 82 determined as eligible for inclusion in the study underwent an assessment during hospitalization. Of the 127 not included, 28 (22.0%) declined participation and 21 (16.5%) were discharged before the research assessment could be conducted; the remaining patients were deemed to not meet inclusion criteria: 16 (12.6%) had received prior treatment, 11 (8.7%) were outside the specified age range for inclusion, 10 (7.9%) were given a clinical diagnosis other than a nonaffective psychotic disorder (e.g., an affective psychosis), and the remaining 41 (32.3%) were excluded for other reasons (e.g., inability to speak English fluently, suspected mental retardation, or inability to provide informed consent). There were no significant differences in age, gender, or race between the 82 participating patients and the 49 who were eligible for the study but who declined participation or who could not participate due to being discharged before they could be assessed. Among the 82 assessed, sufficient information was available to rate DUP for 73 (89.0%).

Data collection

Schizophrenia-spectrum diagnoses were confirmed and specified using the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID) [6], relying on a comprehensive semi-structured interview, as

well as consultation with other sources of information including patients' hospital charts and family member data. Research diagnoses were derived after review of SCID interviews and all other available information from the patient's—and, when available, a family member's—assessment, by the assessor and the lead investigator.

The three main predictor variables (mode of onset of psychosis, employment status prior to the first hospitalization, and family involvement in help-seeking) were coded in accordance with the previous ÆSOP report. First, mode of onset was operationalized, using definitions developed for the World Health Organization International Pilot Study of Schizophrenia [9], as acute with sudden onset, acute with precipitous onset, subacute, gradual, and insidious. Categorization of the mode of onset of psychosis was done using a consensus-based best estimate approach, based on review of all available information by the assessor and the lead investigator. Consistent with Morgan and colleagues [13], for the purposes of this analysis, mode of onset was dichotomized as *acute* (comprising the sudden, precipitous, and subacute categories) versus *insidious* (including gradual and insidious categories).

Employment status prior to the first hospitalization was dichotomized as *unemployed* versus *employed* (which included all those who were employed full-time or part-time, or were students). Third, family involvement in help-seeking was defined as "at least one family member (including partner or adult children) was involved in actively seeking help for the patient" [13].

DUP was measured in a systematic manner in an effort to avoid, to the largest extent possible, a number of limitations that have been discussed in detail previously [2]. Dating the onset of positive psychotic symptoms relied on information from the Symptom Onset in Schizophrenia (SOS) inventory [20], as well as select items from a semi-structured interview, the Course of Onset and Relapse Schedule/Topography of Psychotic Episode (CORS/TOPE) [17]. DUP was defined as the number of weeks from the onset of positive psychotic symptoms until first hospital admission. Dating of the onset of positive symptoms was operationalized by an estimate of the date on which hallucinations or delusions would have met the threshold for a Positive and Negative Syndrome Scale (PANSS) score of ≥3. Systematic methods were used to resolve difficulties of obtaining exact dates for the onset of psychotic symptoms, as described in a prior report [3]. For example, an exact date was used when it was known. When the exact date was not known, "near the beginning of the month" was coded as the 1st, "near the middle of the month" was coded as the 14th, "near the end of the month" was coded as the 28th, and "sometime during the month" was coded as the 14th. Cross-referencing with milestones and memorable events was used to enhance the accuracy of such dating.

All interviews were conducted during the patient's hospitalization for treatment for a first episode of psychosis, once psychotic symptoms were adequately stabilized to allow for the informed consent process to take place. For many of the patients, family members also provided collateral reports for the SCID and SOS. After completion of all interviews with the participant and any informants, consensus-based best estimates were determined for variables in which there may have been discrepancies between clinician, patient, and family reports (e.g., DUP, and mode of onset). Patients for whom DUP or mode of onset could not be confidently determined were not included in the analyses. Although six clinical research assessors participated in collecting data across the study period, each assessment was conducted by only one assessor. When informants were available, two assessors collected data—one administering the assessment to the patient and the other to the family member; in these instances, reviews of assessments and consensus-based best estimates involved both assessors and the lead investigator. The study was approved by the university's institutional review board, and all participants provided written informed consent.

Analysis

All analytic plans replicated those of Morgan and colleagues [13] to the largest extent possible given the current dataset. Comparisons between each group within a variable of interest were conducted using χ^2 tests, Fisher's exact tests, independent samples Student's *t* tests, and Wilcoxon rank-sum tests. Due to the heavily skewed distribution of DUP values (as is characteristic in DUP research), the median DUP (rather than mean) for each group was described. Preliminary analyses of differences between groups relied on the non-parametric Wilcoxon rank-sum test. Univariable associations between DUP and the key determinants of interest were analyzed further using survival analysis, with onset of psychosis as the entry point and hospitalization as the end-point. Survivor functions representing survival rate as a function of time (Kaplan–Meier survival curves) were constructed to represent the cumulative probability of contact with services over time in different groups. For ease of comparison with Morgan and colleagues [13], Kaplan-Meier survival curves are presented going upwards.

Log-rank tests were performed to assess whether the probability of first hospitalization over time differed between defined groups. Then, Cox regression (which predicts survival time from covariates) was used to confirm and further quantify associations in terms of the hazard ratio, and to assess the independent effects of the key variables.

Results

Sample characteristics

Of the 73 patients included in the main analyses, data from collateral informants (usually family members) were available for 35 (47.9%). There was no evidence of significant differences in sociodemographic or clinical characteristics or in DUP between those for whom information from a collateral informant was available and those for whom it was not (Table 1). However, there was a trend for patients with collateral informants to be younger at the time of onset of psychosis and first hospitalization (21.6, SD = 4.3 years and 22.5, SD = 4.1 years, respectively) compared to those without collateral informants (23.6, SD = 5.8 years and 24.5, SD = 5.2 years, respectively; $z = 1.83$, $P = 0.07$ and $z = 1.84$, $P = 0.07$, respectively).

The median DUP was 23.4 weeks (range: 0–590.3; mean = 62.7, SD = 95.9 weeks). The average age of onset of psychosis in the overall sample was 22.6, SD = 5.2 years. This mean age was slightly lower for men (22.1, SD = 4.9) than for women (24.4, SD = 5.6), though this difference failed to reach statistical significance ($z = 1.36$, $P = 0.17$). Table 2 shows the social and clinical characteristics of the sample.

Clinical and social correlates of DUP

The following social and clinical characteristics were not associated with DUP: gender, race/ethnicity (Black/African American *versus* White/Caucasian), living circumstances (lives alone *versus* lives with others, usually parents), relationship status (single and never married *versus* married or living with a partner), educational attainment, or employment status.

DUP was significantly associated with mode of onset, consistent with the ÆSOP findings. Specifically, the median DUP for the 58 patients with an acute

Table 1 Social and clinical variables by whether or not a collateral interview was available

	Yes (n = 35)	No (n = 38)	Statistical test	P
Age at onset, mean (SD)	21.6 (4.3)	23.6 (5.8)	z = 1.83	0.07
Age at hospitalization, mean (SD)	22.5 (4.1)	24.5 (5.2)	z = 1.84	0.07
DUP, weeks (consensus-based)				
Median (range)	39.3 (0.43–337.7)	22.8 (0–590.3)	z = 0.66	0.51
Mean (SD)	69.1 (88.0)	56.7 (103.5)		
Gender, n (%)				
Male	24 (68.6)	32 (84.2)	χ^2 = 2.49, df = 1	0.11
Female	11 (31.4)	6 (15.8)		
Race/ethnicity, n (%)				
Black/African American	34 (97.1)	33 (89.2)	χ^2 = 1.76, df = 1	0.36[a]
White/Caucasian	1 (2.9)	4 (10.8)		
Living circumstances, n (%)				
Lives alone	2 (6.3)	5 (15.2)	χ^2 = 1.34, df = 1	0.43[a]
Lives with others	30 (93.8)	28 (84.8)		
Relationship status, n (%)				
Single and never married	33 (94.3)	34 (89.5)	χ^2 = 0.56, df = 1	0.68[a]
Married or living with a partner	2 (5.7)	4 (10.5)		
Educational attainment, mean (SD)	11.4 (2.1)	11.6 (3.3)	z = 0.35	0.72
Employment status, n (%)				
Unemployed	22 (62.9)	22 (57.9)	χ^2 = 0.19, df = 1	0.67
Other	13 (37.1)	16 (42.1)		
Mode of onset, n (%) (consensus- based)				
Acute (sudden, precipitous, or subacute)	27 (77.1)	30 (78.9)	χ^2 = 0.04, df = 1	0.85
Gradual or insidious	8 (22.9)	8 (21.1)		

[a]Fisher's exact test

mode of onset was 20.7 weeks, whereas the median DUP for the 19 patients with a gradual or insidious mode of onset was 100.8 weeks (z = 2.95, P = 0.003). DUP was significantly associated with the variable coding family involvement in help seeking. However, *in contrast to* the findings from the ÆSOP study, the median DUP for the 25 patients with no family members involved in help-seeking was shorter (12.0 weeks), than the median DUP for the 53 patients with family involvement in help-seeking (37.4 weeks, z = 2.03, P = 0.04).

Survival analysis, Kaplan-Meier survival curves, and log-rank tests

As shown in Fig. 1, Kaplan-Meier survival curves revealed the remarkable difference in cumulative probability of first hospitalization following onset of psychosis according to mode of onset (log-rank test χ^2 = 5.89, df = 1, P = 0.015). As expected based on the above Wilcoxon rank-sum test, employment status was not associated with DUP (log-rank test χ^2 = 1.89, df = 1, P = 0.169). When examining the family-involvement variable, Kaplan-Meier survival curves (Fig. 2) again revealed the difference in cumulative probability of first hospitalization (log-rank test χ^2 = 4.81, df = 1, P = 0.028).

Cox regression and hazard ratios

Even when adjusting for the effects of the other, each of these two variables was significantly associated with DUP using Cox regression. A hazard ratio of <1 indicates a longer DUP on average, and a hazard ratio of >1 indicates a shorter DUP on average. Unadjusted and adjusted hazard ratios for mode of onset were 0.50 (95% CI: 0.28, 0.88) and 0.51 (95% CI: 0.28, 0.91). Unadjusted and adjusted hazard ratios for family involvement in help-seeking were 0.55 (95% CI: 0.32, 0.95) and 0.58 (95% CI: 0.34, 0.99). Thus, patients with an insidious mode of onset were about 50% less likely to be hospitalized at any given point in time than those with an acute mode of onset at the same point in time. Similarly, those who ultimately had family involvement in treatment initiation were roughly 50% less likely to be hospitalized at any given point in time than those without family involvement at the same point in time.

Discussion

The first key finding of this study is that for hospitalized first-episode patients with an acute mode of onset, the time from the beginning of psychosis to initial hospitalization was on average shorter (median DUP of 21 weeks) than for those with an insidious mode (median of 101 weeks). Morgan and colleagues [13] found that the median DUP for those with an acute mode of onset was 3 weeks, compared with a median of 32 weeks for those with an insidious onset. However, it should be noted that the ÆSOP sample included patients with affective psychoses, and those illnesses are more likely to have an acute mode of onset and be characterized by a shorter DUP [13].

Table 2 Social and clinical characteristics of the full sample (n = 73)

Age at onset of psychosis, mean (SD)	22.6 (5.2)
Age at hospitalization, mean (SD)	23.5 (4.8)
DUP, weeks (consensus-based)	
Median (range)	23.4 (0–590.3)
Mean (SD)	62.7 (95.9)
Gender, *n* (%)	
Male	56 (76.7)
Female	17 (23.3)
Race/ethnicity, *n* (%)	
Black/African American	67 (91.8)
White/Caucasian	5 (6.8)
Asian American	1 (1.4)
Living circumstances, *n* (%)	
Lives alone	7 (9.6)
Lives with others	58 (79.5)
Homeless	3 (4.1)
Other	5 (6.8)
Relationship status, *n* (%)	
Single	67 (91.8)
Married or living with a partner	3 (4.1)
Divorced	3 (4.1)
Educational attainment, mean (SD)	11.5 (2.8)
Employment status, *n* (%)	
Unemployed	44 (60.3)
Employed or student	29 (39.7)
Family involvement in help-seeking, *n* (%) (n = 71)	
No	19 (26.0)
Yes	52 (71.2)
Mode of onset, *n* (%) (consensus-based)	
Acute (<1 week), prodromal signs absent (sudden)	11 (15.1)
Acute (<1 week), prodromal signs present (precipitous)	15 (20.5)
Subacute (<1 month)	31 (42.5)
Gradual (>1 month)	14 (19.2)
Insidious (no clear demarcation from premorbid personality)	2 (2.7)
Diagnosis, *n* (%)	
Schizophreniform disorder	17 (23.6)
Schizophrenia, paranoid type	31 (43.1)
Schizophrenia, disorganized type	3 (4.2)
Schizophrenia, residual type	2 (2.8)
Schizophrenia, undifferentiated type	2 (2.8)
Schizoaffective disorder, bipolar type	4 (5.6)
Schizoaffective disorder, depressive type	3 (4.2)
Psychotic disorder not otherwise specified	6 (8.3)
Brief psychotic disorder	4 (5.6)

This replication of the Morgan and colleagues' [13] finding suggests that mode of onset is a reliable illness-related determinant of DUP. Given that mode of onset has been conceptualized by some as the duration of the prodrome (though this research team views these two constructs as separate, albeit somewhat overlapping), further theoretical conceptualization and research are needed to clarify the ways in which the rapidity of development of psychosis (mode of onset) and the duration of the prodrome influence DUP. As noted previously [2, 13] an inherent limitation of the measurement of the retrospective DUP construct is that in cases in which psychosis emerges insidiously, it is more difficult to clearly identify the onset of psychosis. It is possible that this potential systematic measurement error may overestimate the association between mode of onset and DUP. However, mirroring Morgan and colleagues [13], this investigative team carefully assessed the two constructs separately using consensus-based best-estimate procedures. As in Morgan and colleagues [13], the Kaplan-Meier curve shows that some people with an acute mode of onset experience long DUPs and some with an insidious mode have a relatively short treatment delay.

The second main finding of the current analysis was that, unlike the ÆSOP findings, employment status prior to hospitalization was not a significant determinant of DUP in this sample. The lack of association may have been due to differences in sample characteristics between ÆSOP and ACES. For example, the current study recruited only hospitalized patients with a first episode of nonaffective psychosis. The more heterogeneous sample from the ÆSOP group (which included both hospitalized patients and outpatients with either nonaffective or affective psychoses) may have allowed for this potential determinant to be detectable. As in the prior study, this current analysis did not find an association between

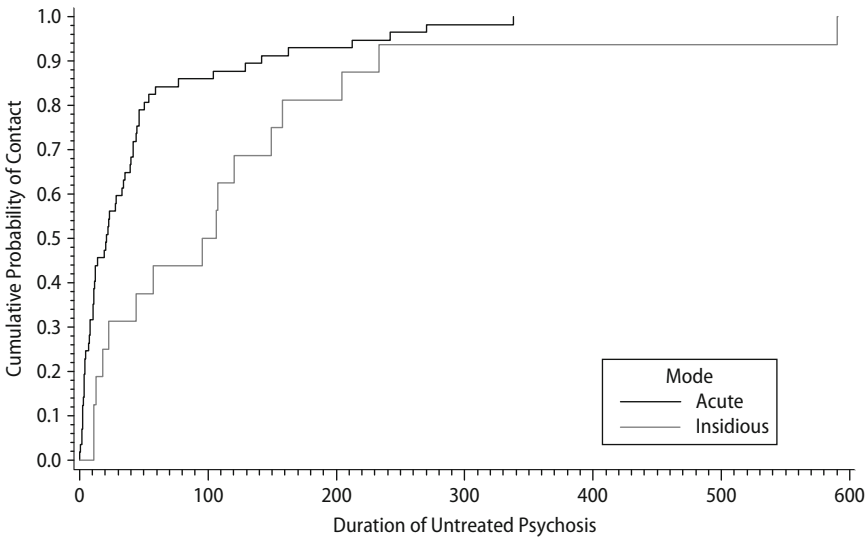

Fig. 1 Kaplan-Meier survival curves comparing DUP in patients with acute *versus* insidious mode of onset

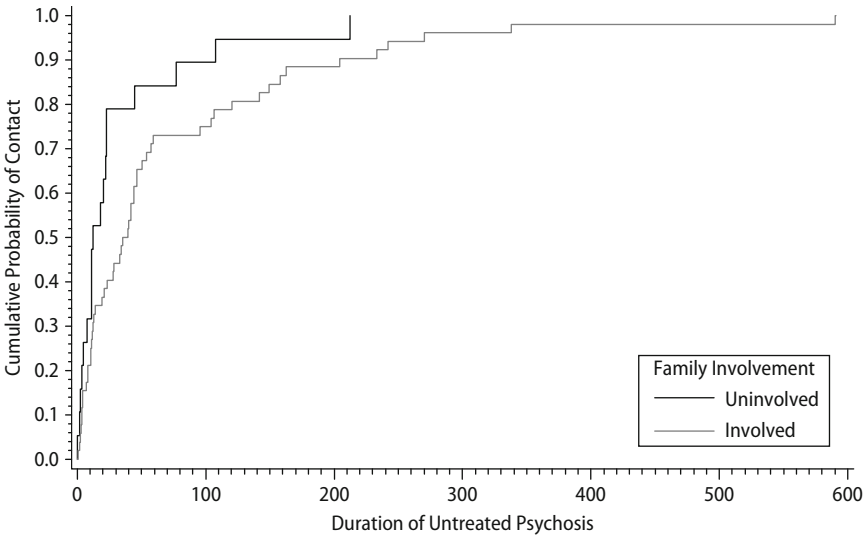

Fig. 2 Kaplan-Meier survival curves comparing DUP in patients with a family member involved in initiation of hospitalization *versus* those without

other sociodemographic variables indicative of social isolation (e.g., living alone, being single) and DUP.

The third and perhaps most interesting key finding of this analysis is that for patients with family members who were involved in treatment initiation, the time from the onset of psychosis to initial hospitalization was on average *longer* (median DUP of 37 weeks) than in those without a family member involved in treatment initiation (median of 12 weeks). Morgan and colleagues [13] found that for those whose family was involved in seeking help, the median DUP was 5 weeks compared with a median of 12 weeks for those who did not have family involved. Although further research is clearly warranted, one potential explanation for the seemingly counterintuitive finding in the present study is that patients brought to psychiatric services by family members may have been initially "protected" and kept within the home by the family due to socioculturally influenced beliefs about mental illnesses. Such patients may also have had a higher level of negative than positive symptomatology, which may be associated with longer DUP. On the other hand, patients who were alienated from family—not socially withdrawn and isolated within the family home—may have been more likely to be brought in by police officers or emergency medical services initiated by others (perhaps for more overt positive psychotic symptoms occurring outside of the home), thus resulting in a shorter duration of treatment delay. The fact that the present finding was *opposite* the ÆSOP finding may be related in part to the possibility that family involvement (and families' coping responses, such as protecting ill loved ones within the home) may differ according to the social context, especially with regard to stigma, beliefs about mental illnesses and their treatments, the cost of psychiatric care, and the nature of the health care system. These issues warrant further cross-cultural research.

Interestingly, a preliminary analysis using data from the family members of the current study revealed that total scores of the *Family Strengths* scale [18], and the *accord* subscale in particular, were inversely correlated with the duration of untreated illness (which includes the prodrome and DUP) and DUP [8]. As such, at least among those patients who were accompanied by a family member for the research assessment, better family functioning was associated with a shorter DUP. This expected negative correlation should not be interpreted as a discrepancy with the present (seemingly counterintuitive) finding given that family strengths and other continuous family functioning variables are very different from the simple dichotomization used in the present study—a family member was or was not involved in actively seeking help. Further research on family-level predictors of DUP should not be limited to a dichotomized variable indicating whether or not family was involved in help-seeking, but should include continuous measures of family cohesion, coping, and other family functioning variables.

It should be noted that for the dichotomized variable of family involvement, temporality cannot be assessed. That is, unlike mode of onset (which clearly precedes initiation of treatment for psychosis), the family's commitment to initiating psychiatric care may have either preceded DUP, or evolved after an extended DUP. Thus, for this simple family-involvement variable, causality cannot be determined. As such, it cannot be assumed that family involvement in treatment initiation is a determinant of shorter or longer DUP—it may be a consequence of DUP. Future research should attempt to tease apart the family's functioning prior to the onset of psychotic symptoms in the index patient, how evolving psychotic symptoms influenced family functioning and the family's coping resources, and how treatment-seeking deci-

sions are influenced by coping and family functioning both prior to and after the development of psychotic symptoms.

The important differences between the ÆSOP study conducted in the UK and this ACES analysis should be recognized. First, whereas ÆSOP included inpatients or outpatients, aged 16–65 years, with first episodes of affective or nonaffective psychosis from two cities; the current sample included only hospitalized participants, aged 18–40 years, with nonaffective psychotic disorders from a single setting. Second, in part due to these more restrictive inclusion criteria, the current sample size was only 73, whereas the ÆSOP analysis included data from 495 participants. Third, DUP was defined slightly differently in the two studies—in the one from ÆSOP, DUP was considered to be the period from the onset of psychosis to first contact with statutory mental health services, whereas in ACES, DUP spanned the period of time from the onset of psychosis to first hospitalization, which was also the first initiation of adequate treatment. Consequently, the median DUP in the ÆSOP study was 9 weeks (mean = 58 weeks), and the median DUP in the current study was 23 weeks (mean = 63). Operationalization of the onset of psychosis was also somewhat different, which is not surprising given the variability in operationalizations of onset and endpoint of DUP across research settings [2]. Aside from the differences between the ÆSOP and ACES sample, another limitation of this study is the relatively homogeneous nature of the sample (urban, socially disadvantaged, predominantly African American inpatients), which limits generalizability of the results to dissimilar populations. Nonetheless, in light of the prominent dearth of research on clinical and social determinants of DUP, especially in the US, the present study provides a foundation for further empirical investigation.

Ultimately, discovery of malleable predictors of DUP may be critical for the development of community-based efforts aimed at reducing median DUP, thereby improving outcomes for individuals with first-episode nonaffective psychosis. Obviously, a large number of potential determinants must be examined, including factors related to the illness (such as mode of onset, the presence of negative symptoms, impaired insight), characteristics of the individual (including gender, employment status, substance use), family-level variables not limited to family involvement in help-seeking (such as family cohesion and other family functioning variables), system-level factors (e.g., accessibility of services, health insurance), and societal issues (such as stigma associated with psychiatric illnesses and their treatments). As researchers continue to pursue secondary prevention orientations for schizophrenia [4], elucidation of risk factors for extended periods of treatment delays will be of great importance.

Acknowledgments This research was supported by a grant from the National Institute of Mental Health (K23 MH067589). We wish to thank the ACES Project team members who participated in data collection, including Michelle Esterberg, Tandrea Carter, Erin Bergner, Lauren Franz, Tarianna Stewart, Kevin Tessner, and Hanan Trotman.

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