

Incomes and Outcomes: Social Security Disability Benefits in First-Episode Psychosis

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Objective: Social Security Administration (SSA) disability benefits are an important source of income for people with psychoses and confer eligibility for health insurance. The authors examined the impact of coordinated specialty care on receipt of such benefits in first-episode psychosis, along with the correlates and consequences of receiving them.

Method: The Recovery After an Initial Schizophrenia Episode–Early Treatment Program (RAISE-ETP) study, a 34-site cluster-randomized trial, compared NAVIGATE, a coordinated specialty care program, to usual community care over 2 years. Receipt of SSA benefits and clinical outcomes were assessed at program entry and every 6 months for 2 years. Piecewise regression analysis was used to identify relative change in outcome trajectories after receipt of disability benefits.

Results: Among 399 RAISE-ETP participants, 36 (9%) were receiving SSA disability benefits at baseline; of the remainder,

124 (34.1%) obtained benefits during the 2-year study period. The NAVIGATE intervention improved quality of life, symptoms, and employment but did not significantly reduce the likelihood of receiving SSA disability benefits. Obtaining benefits was predicted by more severe psychotic symptoms and greater dysfunction and was followed by increased total income but fewer days of employment, reduced motivation (e.g., sense of purpose, greater anhedonia), and fewer days of intoxication.

Conclusions: A 2-year coordinated specialty care intervention did not reduce receipt of SSA disability benefits. There were some advantages for those who obtained SSA disability benefits over the 2-year treatment period, but there were also some unintended adverse consequences. Providing income supports without impeding recovery remains an important policy challenge.

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Controlled research on coordinated specialty care for people experiencing a first episode of psychosis has demonstrated improvements in both clinical and functional outcomes (1), including employment (2, 3). The recent Recovery After an Initial Schizophrenia Episode–Early Treatment Program (RAISE-ETP) study, a 34-site cluster-randomized trial funded by the National Institute of Mental Health (NIMH), found that a comprehensive program of pharmacologic and psychotherapeutic treatments provided in real-world settings could improve quality of life, reduce symptoms (4), and increase school and work involvement (5) as compared with usual community care.

While receipt of Social Security Administration (SSA) disability benefits is not itself a reliable indicator of disablement, these benefits are a major feature of the lives of many people living with schizophrenia, providing essential income support and conferring eligibility for health insurance. The RAISE-ETP study provides a unique opportunity to examine

the impact of coordinated specialty care on the entry of first-episode psychosis patients into the two major SSA disability programs: Social Security Disability Insurance (SSDI) and Supplemental Security Income (SSI). SSDI is an early retirement program for workers who have paid a portion of their earnings to Social Security. SSI, in contrast, is a program for people with low incomes who have not worked sufficiently to qualify for SSDI. They are referred to here, together, as SSA disability programs. SSDI confers eligibility for Medicare after a 2-year wait, and SSI generally confers eligibility for Medicaid.

In 2014, some 713,000 U.S. adults received SSDI or SSI for schizophrenia (6). A 1998 survey of adults in treatment for schizophrenia in Ohio and Georgia found that 51% reported income from SSDI and 44% from SSI (7), and 57.8% of patients entering the 2005 Clinical Antipsychotic Trials of Intervention Effectiveness study reported receipt of either SSDI or SSI (8). Reliance on these programs is thus widespread among people with schizophrenia.

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Although programs for first-episode psychosis have been studied in many countries in recent years, their impact on entry into disability income replacement programs has not been studied. In the 1990s, a longitudinal study of 169 patients at an “early stage of psychiatric disorder” reported that 35% later received disability benefits and that recipients had more severe symptoms, had more social isolation, and were more dependent on their families than applicants who did not receive benefits (9).

A recent study of almost 1 million 18- to 39-year-olds who were awarded SSDI between 1996 and 2007 found dramatic growth in the proportion of young awardees with psychiatric disorders, suggesting rapid early entry (10). Furthermore, the Mental Health Treatment Study, a major demonstration program of supported employment for SSDI recipients, found that only 0.2% left the program over 2 years (11). A second study showed that over a 13-year follow-up period, only 13.1% of disability recipients who were receiving supported employment for a diagnosis of schizophrenia left the disability rolls, even temporarily (12).

A recent policy commentary (11) concluded from these and other data that supported employment is not effective in facilitating exit from SSDI or SSI and that future rehabilitation efforts should focus on the goal of *preventing* the need for first-episode psychosis clients to enroll in disability programs. The RAISE-ETP study provides a unique opportunity to evaluate the feasibility of achieving this objective and offers a hitherto unavailable opportunity to examine rates and predictors of entry into SSA disability programs and their short-term clinical impact early in the course of psychotic illness.

METHOD

Detailed descriptions of the RAISE-ETP study design, including a CONSORT diagram of recruitment and disposition (4), the clinical interventions (13), and the 2-year clinical outcomes (4), have been published previously.

Study Participants and Sites

A total of 404 individuals 15–40 years of age who presented for treatment for a first episode of psychosis and had taken antipsychotic medication for at least 6 months were enrolled between July 2010 and July 2012; of these, 399 for whom baseline information regarding disability status is available were included in the present analysis. Written informed consent was obtained from adult participants and from legal guardians of participants under age 18. The institutional review boards of the coordinating center and of each site approved the study. An NIMH data and safety monitoring board provided oversight. Thirty-four community mental health treatment centers were chosen after a national invitation and selection process and were equally randomized to provide either specialized coordinated care—the NAVIGATE intervention—or usual community care.

Intervention

NAVIGATE clinical teams provided four treatment components: 1) personalized medication management (assisted by a web-based decision support system), 2) family psychoeducation, 3) individual, resilience-focused training in illness self-management, and 4) supported employment and education grounded in many of the principles of the individual placement and support model and outlined in a detailed training manual (13). Robust differences have been demonstrated showing far more extensive client-reported receipt of each of these interventions at NAVIGATE sites compared with community care sites (4). Study participants were not required to express initial interest in work or school at admission, but they received continuing encouragement to participate in supported employment and education. Specific training, monitoring, and fidelity assessments (5) showed that employment and education specialists had at least twice monthly contacts with clients at 13 of the 17 NAVIGATE sites, with a mean caseload of 10.7 clients at these sites. Using the average score across nine fidelity items, four sites were in the upper range of basic to good, 11 were in the lower range of basic to good, and two showed limited to basic fidelity. Unlike many other supported employment studies (5), RAISE-ETP included patients who were not explicitly interested in working or attending school, it relied on remote training and consultation, and most specialists worked less than half-time on the NAVIGATE team.

Assessments

Remote evaluators who were blind to treatment condition and study design conducted assessments of quality of life and symptoms every 6 months for 2 years, using secure videoconferencing.

Self-report data on sociodemographic characteristics and sources of income, including disability payments, were obtained through patient interviews every 3 months. Data on employment were gathered through monthly interviews. Additional self-report rating scale assessments were obtained every 6 months for the 2 years of the study.

Measures

Participants' sociodemographic characteristics were documented at baseline. Overall quality of life was assessed with the Quality of Life Scale (14), which includes four subscales reflecting interpersonal relationships, instrumental role functioning, intrapsychic foundations, and common objects and activities used in daily life. A recent confirmatory factor analysis of the scale (15) proposed reconceptualizing the intrapsychic foundations subscale as “motivation,” as the motivation item loaded highest on this factor. Psychiatric symptom severity was measured with the Positive and Negative Syndrome Scale (PANSS) (16) (using five subscales [17]) and the Calgary Depression Scale for Schizophrenia (18).

Additional self-report social and well-being measures included reduced versions of the Perceived Well-Being Scale

(19), the Mental Health Recovery Measure (20), the Autonomy Support Scale–Short Form (21), the Brief Evaluation of Medication Influences and Beliefs (22), the Stigma Scale (23), the global assessment item in the Quality of Life Interview (a 1–7 rating, from “delighted” to “terrible”) (24), and the “feeling thermometer” as used in the EuroQol EQ-5D, in which health is self-rated on a scale from 0 (worst possible health) to 100 (perfect health) (25).

Statistical Methods

Since some participants were receiving benefits at the time of study entry, logistic regression with random effects for site was first conducted to compare the characteristics, including treatment assignment, of clients who received benefits at entry and those who did not, with clustering of clients within sites.

Subsequent analyses involved only participants who were not receiving disability benefits at study entry. The analyses evaluated the association of treatment assignment and baseline characteristics with time to first receipt of SSA disability benefits in a survival analysis using proportional hazard models with a random effect for site. Multivariate analyses that included measures that were significantly associated with receipt of SSA disability benefits on bivariate analysis were used to identify characteristics that were independently associated with receipt of SSA benefits.

Finally, piecewise regression analysis was used to compare the trajectory of change in outcome measures from before to after receipt of disability benefits between beneficiaries and nonbeneficiaries (26). The median time to receipt of disability income during the study was 9 months, so trajectory changes among participants who did not receive benefits were compared before and after 9 months of program involvement. These comparisons were repeated in a set of sensitivity analyses that used 6 months and 12 months as the temporal break for pre-post trajectory comparisons with participants who did not receive disability benefits during the study. Data from the analysis of baseline predictors of receipt of disability were used to construct a propensity score (27) representing the likelihood of receiving benefits at any time during the study, based on baseline differences. Piecewise analyses included this propensity score as a covariate to adjust for baseline differences between participants who received disability benefits and those who did not. In a sensitivity analysis, we also examined the piecewise regression with a time-dependent propensity score.

RESULTS

The mean age of the sample was 23.1 years ($SD=5.1$). Most participants lived with their families (70.7%); 20.5% attended school, and 15.0% were employed. The median duration of untreated psychosis was 74 weeks.

Of 399 participants with complete baseline disability data, 36 (9.0%) were receiving SSA disability benefits (evenly divided between SSI and SSDI). SSA beneficiaries were older and had lower levels of education, more hospitalizations,

more severe negative symptoms, and higher total incomes than others (Table 1). Multivariate analysis showed that beneficiaries were older on average ($p=0.004$) and had more severe negative symptoms ($p=0.02$).

Among those not receiving benefits at baseline, 124/363 (34.1%) obtained benefits during the next 2 years, after a median of 9 months, resulting in a total of 160/399 (40.1%) SSA beneficiaries after 2 years.

There were no significant differences between NAVIGATE and usual community care in the proportion receiving SSA disability benefits at baseline or at any time during follow-up assessments over the 2-year study.

Significant baseline predictors of newly receiving benefits included less education, not being employed or going to school, less likelihood of receiving of private health insurance, longer duration of untreated psychosis, older age, lower score on the objects and activities subscale of the Quality of Life Scale, and higher positive symptom ratings on the PANSS (Table 2). Multivariate analysis of time to receipt of SSA disability benefits identified significant independent baseline predictors, including taking antipsychotic medication, longer than median duration of untreated psychosis (i.e., >74 weeks), less than high school education, not being employed or attending school, less likelihood of receiving of private health insurance, and higher positive symptom scores (Table 3).

Piecewise regression analysis among the 363 patients not receiving benefits at baseline addressed the impact of receiving new disability benefits on outcome trajectories (as compared with nonrecipients) and showed highly significant effects indicating increased total income, fewer days of employment, and fewer days of use of alcohol to intoxication (Table 4). Although there was no significant effect on the Quality of Life Scale total score, a significant negative effect was observed on the motivation subscale ($p=0.046$), and a negative effect just short of significance was observed on the instrumental role functioning subscale ($p=0.053$). Examination of individual items within the motivation subscale showed significantly reduced sense of purpose and motivation, greater anhedonia, and poorer time utilization (Table 4).

In contrast, there were no significant effects of receiving benefits on symptom measures on the PANSS or the Calgary Depression Scale for Schizophrenia or on self-report measures of autonomy, attitudes toward medications, recovery, stigma, subjective well-being, or quality of life.

To determine whether the relative decline in motivation was mediated by reduced employment, piecewise regression was repeated, controlling for the number of self-reported days of employment during the month before assessment. With this covariate in the model, neither instrumental function nor motivation was significantly reduced after receipt of disability benefits, nor were items concerning degree of motivation and poorer time utilization. However, greater anhedonia ($p<0.03$) and reduced sense of purpose ($p<0.02$) remained significant.

A sensitivity analysis using a time-dependent propensity score produced roughly the same results but with larger

TABLE 1. Comparison of Clients Receiving SSA Disability and Not Receiving SSA Disability at Baseline Assessment

Measure	Receiving Disability Benefits (N=36)		Not Receiving Disability Benefits (N=363)		Odds Ratio	95% CI	p
	N	%	N	%			
Assigned to NAVIGATE intervention	18	50	200	55	0.75	0.34, 1.63	0.46
Male	23	64	266	73	0.66	0.32, 1.37	0.26
Race							0.95
White	21	58	196	54	1.00		
African American	12	33	137	38	0.88	0.41, 1.91	
Other	3	8	30	8	0.97	0.27, 0.35	
Hispanic ethnicity	6	17	66	18	0.86	0.33, 2.25	0.76
Current residence							0.57
Independent living	9	25	63	17	1.00		
Supported or structured	2	6	12	3	1.32	0.24, 7.15	
Family, parents, grandparents, sibling	25	69	257	71	0.71	0.31, 1.62	
Homeless, shelter, or other	0	0	31	9	—		
Education							0.05
Some college or higher	5	14	119	33	0.16	0.04, 0.69	
Completed high school	16	46	115	32	0.54	0.16, 1.87	
Some high school	10	29	113	31	0.34	0.09, 1.25	
Less than high school	4	11	16	4	1.00		
Currently in school	5	14	76	21	0.60	0.22, 1.62	0.32
Currently working	2	6	56	15	0.32	0.07, 1.39	0.13
Duration of untreated psychosis (>74 weeks)	21	58	178	49	1.47	0.73, 2.99	0.28
Number of prior hospitalizations							0.03
0	8	22	81	22	1.00		
1	11	31	168	46	0.67	0.26, 1.77	
2	5	14	63	17	0.84	0.26, 2.74	
3 or more	12	33	51	14	2.49	0.94, 6.63	
Current antipsychotic prescription	31	86	303	84	1.28	0.47, 3.47	0.63
	Mean	SD	Mean	SD	Odds Ratio	95% CI	p
Age (years)	25.08	5.63	22.97	4.96	1.08	1.02, 1.15	0.01
Quality of Life Scale							
Total score	49.56	18.54	53.04	18.76	0.99	0.97, 1.01	0.23
Interpersonal relations subscale	18.06	8.75	19.96	8.71	0.97	0.93, 1.01	0.19
Instrumental role subscale	5.25	5.77	5.58	6.59	0.99	0.94, 1.04	0.66
Intrapsychic foundations subscale	19.58	6.99	21.01	6.96	0.97	0.92, 1.02	0.20
Common objects and activities subscale	6.67	2.31	6.48	2.30	1.04	0.89, 1.21	0.63
Positive and Negative Syndrome Scale							
Total score	78.31	13.43	76.43	15.25	1.01	0.99, 1.03	0.44
Positive subscale	12.89	3.22	12.21	3.89	1.01	0.99, 1.03	0.26
Negative subscale	18.33	5.71	16.51	5.08	1.05	0.96, 1.16	0.05
Disorganized subscale	8.00	2.76	7.77	2.77	1.04	0.92, 1.18	0.55
Excited behavior subscale	6.78	2.44	6.75	2.79	1.00	0.89, 1.14	0.96
Depressed subscale	7.53	3.51	8.10	3.28	0.95	0.85, 1.05	0.32
Calgary Depression Scale	3.39	3.22	4.76	4.32	0.92	0.83, 1.01	0.07
Subjective attitudes/well-being scales							
Autonomy/support scale	5.68	1.16	5.53	1.22	1.12	0.83, 1.51	0.46
Medication effectiveness beliefs	4.66	0.75	4.45	1.04	1.14	0.81, 1.62	0.44
Mental health recovery	4.70	0.91	4.92	1.26	0.87	0.66, 1.15	0.34
Stigma scale (subjective)	3.97	1.02	3.98	1.21	0.98	0.73, 1.31	0.88
Well-being scale	3.90	0.56	3.88	0.53	0.84	0.54, 1.29	0.42
Current state of health (0–100)	60.23	21.88	62.64	23.59	1.00	0.98, 1.01	0.65
Quality of life as a whole (0–7)	4.11	1.66	4.38	1.39	0.88	0.69, 1.13	0.31
Substance use (past 30 days)							
Number of days of alcohol intoxication	0.31	1.67	0.53	2.39	0.93	0.74, 1.19	0.57
Number of days of illegal drug use	4.86	9.30	2.98	7.28	1.03	0.99, 1.07	0.17

TABLE 2. Characteristics of Clients Receiving SSA Disability and Not Receiving SSA Disability in the 2 Years Following Baseline Assessment

Measure	Received Disability Benefits (N=124)		Did Not Receive Disability Benefits (N=239)		Hazard Ratio	95% CI	p
	N	%	N	%			
Assigned to NAVIGATE intervention	75	60.5	125	52.3	0.86	0.60, 1.24	0.41
Male	95	76.6	171	71.6	1.13	0.74, 1.75	0.57
Race							0.20
White	68	54.8	128	53.6	1.00		
African American	50	40.3	87	36.4	1.17	0.81, 1.69	
Other	6	4.8	24	10	0.55	0.24, 1.27	
Hispanic ethnicity	23	18.6	43	18	1.06	0.67, 1.67	0.81
Current residence							0.60
Independent living	25	20.2	38	15.9	1.00		
Supported or structured	4	3.2	8	3.4	0.95	0.32, 2.77	
Family, parents, grandparents, sibling	80	64.5	177	74.1	0.84	0.51, 1.39	
Homeless, shelter, or other	15	12.1	16	6.7	1.22	0.63, 2.38	
Education							0.01
Some college or higher	36	29	83	34.7	0.34	0.18, 0.66	
Completed high school	43	34.7	72	30.1	0.48	0.25, 0.93	
Some high school	33	26.6	80	33.5	0.39	0.20, 0.75	
Less than high school	12	9.7	4	1.7	1.00		
Currently in school	15	12.1	61	25.5	0.48	0.28, 0.84	0.01
Currently working	10	8.1	46	19.3	0.41	0.22, 0.79	0.01
Duration of untreated psychosis (>74 weeks)	71	57.3	107	44.8	1.61	1.11, 2.34	0.01
Number of prior hospitalizations							0.10
0	27	21.8	54	22.6	1.00		
1	54	43.6	114	47.7	1.05	0.65, 1.68	
2	22	17.7	41	17.2	1.05	0.59, 1.86	
3 or more	0	16.9	30	12.6	1.90	1.07, 3.40	
Current antipsychotic prescription	113	91.1	190	79.5	1.84	0.98, 3.43	0.06
	Mean	SD	Mean	SD	Hazard Ratio	95% CI	p
Age (years)	23.95	5.32	22.46	4.7	1.04	1.00, 1.07	0.05
Quality of Life Scale							
Total score	48.8	17.55	55.25	19.03	0.99	0.98, 1.00	0.06
Interpersonal relations subscale	18.63	7.88	20.66	9.04	0.98	0.96, 1.01	0.13
Instrumental role subscale	4.03	5.73	6.39	6.87	0.98	0.94, 1.02	0.30
Intrapsychic foundations subscale	19.89	6.89	21.6	6.94	0.98	0.96, 1.01	0.14
Common objects and activities subscale	6.25	2.11	6.6	2.38	0.93	0.86, 1.00	0.04
Positive and Negative Syndrome Scale							
Total score	79.81	14.35	74.67	15.43	1.02	1.00, 1.03	0.01
Positive subscale	13.23	3.74	11.68	3.87	1.07	1.02, 1.12	0.01
Negative subscale	17.17	4.96	16.16	5.12	1.03	1.00, 1.07	0.08
Disorganized subscale	8.08	2.7	7.6	2.8	1.02	0.96, 1.09	0.49
Excited behavior subscale	6.8	2.74	6.73	2.82	1.01	0.95, 1.08	0.72
Depressed subscale	8.25	3.17	8.02	3.34	1.02	0.97, 1.08	0.49
Calgary Depression Scale	4.94	4.28	4.66	4.34	1.03	0.99, 1.07	0.21
Subjective attitudes/well-being scales							
Autonomy/support scale	5.64	1.08	5.47	1.29	1.10	0.95, 1.29	0.20
Medication effectiveness beliefs	4.74	0.99	5	1.01	0.83	0.69, 1.00	0.05
Mental health recovery	4.91	1.38	4.93	1.2	0.99	0.86, 1.14	0.89
Stigma scale (subjective)	3.98	1.18	3.98	1.23	0.97	0.83, 1.14	0.74
Well-being scale	3.93	0.88	4.02	0.77	0.86	0.69, 1.07	0.17
Current state of health (0–100)	60.26	23.94	63.87	23.37	1.00	0.99, 1.00	0.32
Quality of life as a whole (0–7)	4.31	1.39	4.41	1.39	0.96	0.84, 1.09	0.52
Substance use (past 30 days)							
Number of days of alcohol intoxication	0.59	2.93	0.5	2.06	0.99	0.93, 1.06	0.85
Number of days of illegal drug use	3.1	7.52	2.92	7.17	1.00	0.97, 1.02	0.73

TABLE 3. Multivariate Model of Time to Receipt of SSA Disability Benefits With Backward Selection

Independent Variable	Parameter Estimate	SE	χ^2	p	Hazard Ratio	95% CI
Duration of untreated psychosis (>74 weeks)	0.34	0.20	2.91	0.018	1.57	1.08, 2.28
Education (reference=less than high school)						
College or higher	-0.81	0.38	4.67	0.010	0.42	0.22, 0.81
Completed high school	-0.60	0.36	2.76	0.089	0.57	0.30, 1.09
Some high school	-0.93	0.37	6.45	0.007	0.40	0.21, 0.78
Currently in school	-0.58	0.34	3.01	0.021	0.52	0.30, 0.90
Currently working	-0.96	0.38	6.24	0.016	0.45	0.23, 0.86
Current antipsychotic prescription	0.75	0.35	4.45	0.030	2.01	1.07, 3.77
Positive symptoms ^a	0.05	0.03	3.95	0.021	1.06	1.01, 1.11

^a From the positive symptom subscale of the Positive and Negative Syndrome Scale.

p values on the Quality of Life Scale subscales and some of the individual items.

DISCUSSION

To our knowledge, this study is the first to examine the impact of coordinated specialty care on receipt of SSA disability benefits following entry into community care for first-episode psychosis. A total of 40.1% of all participants were receiving SSA disability benefits by the end of the 2-year follow-up period. Although NAVIGATE improved psychosocial functioning and symptoms (4), it did not significantly reduce entry into SSA disability. Consistent with SSA disability policy, new beneficiaries had worse employment histories, lower levels of education, and more severe positive symptoms than other participants. But with average total earnings of less than \$200/month among those without benefits at the time of program entry (5) and 51% lacking any health insurance, SSA benefits addressed critical needs for income support and eligibility for health insurance. The urgency of these economic needs may thus have superseded the effect of modestly greater improvements in clinical outcomes, leading to high rates of entry into the SSA disability program and no significant treatment group differences.

In view of recent policy interest in preventing the need for entry into SSA disability programs (11), it is notable that although NAVIGATE led to improved Quality of Life Scale scores, reduced symptoms, and greater increases in employment compared with usual care (4, 5), the magnitude of these effects was evidently not sufficient to obviate the need for entry into SSA disability programs. Most NAVIGATE patients were not working after 2 years (5), and those who were earned an average of only \$900 per month, about half the average income of typical SSA beneficiaries 29–40 years of age (10). Thus, most patients, regardless of treatment assignment, still needed income supports and health insurance coverage after 2 years of treatment. As noted previously (5), employment outcomes may have been less robust in RAISE-ETP than in some other studies of supported employment, possibly because interest in working or going to

school was not an entry requirement; because training and implementation of supported employment and education in this real-world study were conducted remotely; or because most employment specialists worked less than half-time on the NAVIGATE team. The highly successful Mental Health Treatment Study of supported employment for SSDI recipients, which, unlike RAISE-ETP, included desire for work as an entry criterion, and which achieved very high levels of fidelity to the individual placement and support model, did show increases in employment earnings, from \$791 per month to \$1,131 per month, although participants were still well below the poverty level (28) and only 0.2% were able to earn their way out of their reliance on SSA disability (11, 29). Recent studies have shown that low income in the general population is associated with greater mortality and poorer health (30), and the modest income supplements and health benefits provided by SSA disability programs may be important contributors to survival for young people with first-episode psychosis. Even though programs with a specialized focus on rehabilitation clearly generate significant improvements in employment (31, 32), economic self-sufficiency is rarely attained (33).

In addition to the evaluation of the impact of NAVIGATE on receipt of SSA benefits, the longitudinal nature of this study allowed additional analysis of changes in outcome trajectory among SSA disability beneficiaries from both treatment groups in comparison with clients who did not receive SSA benefits. Among the 34.1% of participants who were newly awarded SSA disability benefits over the treatment period, receipt of benefits was followed by increased total income. But these participants had fewer days of employment and poorer motivation (e.g., reduced sense of purpose and curiosity), unintended consequences of the disability program. However, there were also fewer days of using alcohol to intoxication and there were no significant effects on symptoms or self-report measures of well-being or subjective quality of life. Receipt of SSA disability income thus appears to provide needed income and health insurance, but is also associated with some evidence of unintended adverse psychological and functional consequences.

TABLE 4. Difference in Outcome Trajectories Between Clients After Receiving SSA Disability Benefits and Others Not Receiving SSA Disability Benefits, Controlling for Prior Trajectory Set at 9 Months for Comparison Subjects

Outcome Measure	Estimate of Change in Outcome per Month After SSA Disability	SE	p
Days of work	−0.079	0.016	<0.0001
Days of school	−0.017	0.017	0.337
Days of work and school	−0.052	0.011	<0.0001
Total monthly income (\$)	15.627	4.455	0.0005
Days of alcohol intoxication (past 30 days)	−0.066	0.023	0.005
Days of illegal drug use (past 30 days)	−0.001	0.018	0.947
Quality of Life Scale			
Total score	−0.066	0.160	0.679
Interpersonal relations subscale	0.029	0.071	0.687
Instrumental role subscale, excluding item 12	−0.094	0.048	0.053
Intrapsychic foundations subscale	−0.111	0.056	0.046
Common objects and activities subscale	0.019	0.016	0.228
Instrumental role subscale items (with item numbers)			
9. Extent of occupational role functioning	−0.037	0.018	0.036
10. Level of accomplishment	−0.027	0.016	0.092
11. Degree of underemployment	−0.039	0.018	0.033
12. Satisfaction of occupational role functioning	−0.020	0.019	0.303
Intrapsychic foundation subscale items (with item numbers)			
13. Sense of purpose	−0.032	0.012	0.010
14. Degree of motivation	−0.033	0.013	0.010
15. Curiosity	−0.005	0.013	0.678
16. Anhedonia	−0.035	0.013	0.007
17. Time utilization	−0.036	0.014	0.013
20. Capacity for empathy	−0.001	0.010	0.891
21. Capacity for engagement and emotional interaction with interviewer	0.007	0.010	0.514
Positive and Negative Syndrome Scale			
Total score	−0.048	0.118	0.684
Positive subscale	−0.011	0.029	0.702
Negative subscale	0.011	0.045	0.801
Disorganized subscale	0.019	0.020	0.331
Excited behavior subscale	−0.023	0.022	0.309
Depressed subscale	−0.022	0.024	0.362
Calgary Depression Scale, total score	−0.027	0.029	0.360
Subjective attitudes/well-being scales			
Autonomy support scale	−0.014	0.010	0.158
Medication effectiveness beliefs	0.010	0.009	0.293
Mental health recovery	−0.003	0.009	0.700
Stigma scale	0.006	0.010	0.530
Well-being scale	−0.005	0.006	0.405
Current state of health (0–100)	0.130	0.164	0.430
Quality of life as a whole (1–7)	0.008	0.010	0.440

The negative association of disability benefits and employment has been well documented in previous studies and is likely to reflect four processes: 1) an income effect (receipt of public support income reduces the economic incentive or need for employment), 2) the effect of a disabling impairment (patients who receive disability

are less capable of working because of poor health), 3) the SSA eligibility rules requiring that beneficiaries not earn more than a minimal level, and 4) apprehension about working, for fear of losing needed income and insurance benefits (34, 35).

The Quality of Life Scale subscale ratings available on patients in this study are the first to evaluate psychological processes that parallel lower employment after receiving SSA disability benefits and suggest reduced overall motivation, as reflected by decreases in sense of purpose and degree of motivation and increases in anhedonia and poor time utilization. Our statistical analysis found support for the notion that reduced days of working partially mediated the relationship between disability and reduced intrapsychic functioning rather than the reverse. Thus, it seems that not working because of economic disincentives contributes to demoralization.

It is notable that symptom severity and self-report measures of incentives and motivation, particularly the Stigma Scale, were not affected by receipt of disability income.

It was unexpected that new SSA beneficiaries showed a tendency toward fewer days of alcohol intoxication after being awarded benefits, since several previous studies have found receipt of a disability benefit check at the beginning of each month to be associated with increased substance use (36, 37). While treatment stud-

ies have failed to confirm a relationship between public support benefits and substance use (38), none to our knowledge have found a reduction in substance use. One study of homeless veterans, however, found reduced substance use after receipt of a housing subsidy coupled with case management (39). It is possible that SSA disability payments reduce economic stress

and that with less economic stress and more social support, recipients had less impulse or need to drink.

A final issue raised by the findings presented here is whether changes in SSA disability policies can enhance employment opportunities while preserving access to income and health insurance supports. Many programs have been initiated by the SSA to provide incentives for disability beneficiaries to return to work, most recently the Ticket to Work program, but evidence of their effectiveness is weak (40). Recent efforts at rehabilitation have also shown limited success in assisting beneficiaries to return to work to a degree that would allow them to discontinue SSA disability benefits (11, 41).

Several methodological limitations require comment. Since receipt of SSA disability is not a simple indicator of disablement and is potentially influenced by many clinical and economic factors, understanding why there was no difference between treatment groups and why award rates increased 34% in 2 years would require additional information on the process and motivation for disability applications. Unfortunately, no information is available on why applications for SSA disability were initiated and whether they were initiated by patients themselves, by their families, or by clinical programs seeking reimbursement for health services. In states that have adopted the Medicaid provisions of the Affordable Care Act (ACA), it is now possible for low-income adults to receive health insurance without applying for SSDI or SSI, although RAISE-ETP was conducted before the ACA was implemented. Understanding the process of obtaining SSA disability is an important objective for future research.

Second, the sample was based on sites that were especially interested in implementing a program for first-episode psychosis and thus may not be representative of community services nationally, which may attenuate the apparent effectiveness of NAVIGATE. In addition, as noted previously, the RAISE-ETP target population included patients who did not express initial interest in working or going to school, and implementation of supported employment may have been less robust than in some other studies.

Third, data presented here on the changes in outcome trajectory after receiving SSA benefits are not based on random assignment to receive benefits, and therefore causal inferences from these quasi-experimental analyses are not conclusive. In addition, multiple outcomes were examined without downward adjustment of *p* values. These analyses are descriptive and should not be regarded as hypothesis testing.

In summary, in this study we found that an effective coordinated specialty care intervention did not significantly reduce the 40% proportion of first-episode psychosis patients who had obtained SSA disability benefits by the end of the first 2 years of treatment, and that receipt of benefits increased income but unintentionally may be an obstacle to gainful employment and other aspects of recovery. There is a substantial need for new approaches to income supports that ensure access to needed health care insurance while minimizing possible adverse effects on the motivation for employment and recovery.

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