Implementation of the Texas Medication Algorithm Project Patient and Family Education Program

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Objective: This article describes the implementation and utilization of the patient and family education program (PFEP) component of the Texas Medication Algorithm Project (TMAP). The extent of participation, types of psychoeducation received, and predictors of receiving at least a minimum level of education are presented.

Method: TMAP included medication guidelines, a dedicated clinical coordinator, standardized assessments of symptoms and side effects, uniform documentation, and a PFEP. The PFEP includes phased, multimodal, disorder-specific educational materials for patients and families. Participants were adult outpatients of 1 of 7 community mental health centers in Texas that were implementing the TMAP disease management package. Patients had DSM-IV clinical diagnoses of major depressive disorder, with or without psychotic features; bipolar I disorder or schizoaffective disorder, bipolar type; or schizophrenia or schizoaffective disorder. Assessments were administered by independent research coordinators. Study data were collected between March 1998 and March 2000, and patients participated for at least 1 year.

Results: Of the 487 participants, nearly all (95.1%) had at least 1 educational encounter, but only 53.6% of participants met criteria for "minimum exposure" to individual education interventions. Furthermore, only 31.0% participated in group education, and 42.5% had a family member involved in at least 1 encounter. Participants with schizophrenia were less involved in the PFEP across multiple indicators of utilization. Diagnosis, intensity of symptoms, age, and receipt of public assistance were related to the likelihood of exposure to minimum levels of individual education.

Conclusion: Despite adequate resources and infrastructure to provide PFEP, utilization was less than anticipated. Although implementation guidelines were uniform across diagnoses, participants with schizophrenia experienced less exposure to psychoeducation. Recommendations for improving program implementation and modification of materials are discussed.

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Copies of educational materials can be found at the TMAP/Texas Implementation of Medication Algorithms Web site (http://www.dshs.state.tx.us/mhprograms/TMAPtoc.shtm).

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There is growing consensus that psychoeducation and other psychosocial treatments and services are essential to maximize the impact of pharmacologic treatment of chronic and severe mental disorders. Psychoeducation is recognized as part of an evidence-based treatment package in major psychiatric disorders.[1–3] In patients with severe psychiatric disorders, educational programs typically involve teaching the patient and/or family members about their disorder and treatment options as well as how to recognize and manage signs of relapse. Psychoeducation also frequently focuses on development of the clinician/patient alliance, since a positive alliance may favorably impact attitudes toward and adherence to prescribed treatments. Across serious psychiatric disorders, there is evidence that psychoeducation is helpful to improve patient adherence, reduce risk for recurrence, increase periods of wellness, and improve psychosocial and functional outcomes.[4–18] Despite the growing emphasis on the importance of providing patient and family education and including psychoeducational interventions in psychiatric disease management programs, little is known about the degree to which psychoeducational programs are implemented within real clinical settings.

The purpose of this report is to examine the actual implementation of a patient and family education program (PFEP) developed as a component of the Texas Medication Algorithm Project[19] (TMAP), a disease management program for people with serious mental disorders. More specifically, this report will address the following questions pertaining to implementation of the program:

1. How much psychoeducation did the study participants and their families receive?
2. Who provided the education and in what context?
3. Which of the educational program materials were used with the program participants?
4. Did participants receive adequate exposure to the program interventions?
5. Were program materials used differently with patients with differing demographic and clinical characteristics?

METHOD

TMAP evaluated the clinical and economic impact of a disease management program for individuals with major depressive disorder, bipolar disorder, or schizophrenia in community mental health clinics.[19] This multifaceted program included medication guidelines, a dedicated clinical coordinator (CC), and regular assessment of symptoms and side effects at each clinical visit with standardized measures, uniform documentation, and a PFEP. The overall goal of the TMAP disease management program was to increase the effectiveness of medication treatment, as measured by reduction in symptoms, improvement in functioning, and improvement in the quality of clinical decision making and practices. In addition to symptoms and functioning, study outcomes included measures of quality of life and utilization and costs of the treatments and services received. The TMAP study was conducted in accordance with International Guidelines for Good Clinical Practice and the Declaration of Helsinki and was approved by institutional review boards at University of Texas Southwestern Medical Center and University of Texas at Austin. Patients provided written informed consent prior to participation in the study.

Primary clinical outcomes of the TMAP treatment approach are published elsewhere, as are details on overall study methodology.[19–22] The current article focuses exclusively on the implementation and utilization of the patient and family education component of TMAP.

The TMAP PFEP

The TMAP philosophy incorporated the viewpoint that patients should be active participants in planning and decision making pertaining to their treatment. A specific PFEP was developed to enhance patient and family participation in all aspects of treatment, including adherence to recommended treatment regimens. Consumer representatives participated in the development of the treatment algorithms (in consensus panels) and took a lead role in development of the PFEP. Detailed descriptions of the program development process and materials can be found in Toprac et al.,[23] and the program materials and manual are available on the TMAP Web site (http://www.dshs.state.tx.us/mhprograms/TMAPtoc.shtm).

The TMAP PFEP retains the same structure and overall procedures across the 3 disorders, but educational materials are disorder specific. Generally, delivery of the program elements is phased such that simple, basic information about the disorder and its treatment is introduced at initial clinic visits, while more in-depth information and self-management ideas are presented at later visits. The materials intentionally incorporate repetition of key concepts and are multimodal, including written, pictorial, and oral presentation, as well as videotaped and interpersonal experiential formats. Another distinguishing characteristic of the TMAP PFEP is that mental health consumers are involved as peer educators.

The TMAP PFEP is not a freestanding program; rather, it is designed to be integrated into regular medication clinic services. Thus, the education is provided on a face-to-face basis during regular clinic visits (with the exception of the group education component of the program). A variety of standardized educational materials are available to all patients. The program manual emphasizes that all components of the program be made available to each patient and provides specific recommendations for general implementation of the program. However, the guidelines encourage flexibility in use of the materials to individualize program offerings to the specific needs of each patient and family. Program providers partner with their patients to determine what, when, and how particular program elements are experienced. Additionally, consistent with the growing literature regarding the importance of family involvement in patient education,[24,25] providers are instructed to include family members in education when present, encourage patients to invite their families to participate when they are not, or obtain patient consent to contact the family directly.

Seven types of educational materials were developed or selected for the program. Five of the types are intended for use with individual patients (and/or family members) and 2 are designed to be used with groups. The individual education materials include the following: (1) 1-page (front and back) disorder fact sheets for each disorder that emphasize the brain dysfunction and depict the disorder's key symptoms; (2) medication treatment information, including medication-specific information sheets and handouts on the potential benefits of medications for psychotic, manic, depressive, and anxiety symptoms; (3) symptom and side effect monitoring sheets (disorder-specific tools for self-monitoring one's symptoms and side effects); (4) basic disorder information (relatively simple written materials about each of the 3 disorders and their treatment); and (5) in-depth materials (written materials that provide more in-depth information about the disorders and their treatment). The group education materials include (6) videotapes and discussion materials to educate and facilitate group discussion about personal experiences with the disorder and treatment and (7) consumer-to-consumer discussion materials, an innovative set of consumer-developed cartoons and associated discussion questions about issues related to mental illness and treatment.

Program Providers and Training

The TMAP CCs were assigned primary responsibility for implementing the PFEP as one of their multiple functions in assisting the study psychiatrists in the implementation of the TMAP disease management package. Study psychiatrists (and 1 nurse practitioner, collectively referred to as "physicians" in the discussion that follows) were expected to participate as well, particularly in the areas of medication information, side effects, and supporting educational messages. Physicians received a half-hour orientation to the PFEP during initial study start-up training, including specification of their role in its implementation. The CCs participated in a separate half day (4 hours) of PFEP training. As part of this training session, the CCs received instructions for documenting time spent on PFEP delivery to each patient (and family). Consumers who were not study participants were selected by study site personnel to assist with program delivery (in particular, to facilitate or co-facilitate educational groups). These peer educators received 1 day of onsite training to fulfill their specified role. In addition to the initial training, the physicians, CCs, and consumer educators received ongoing supervision and assistance in program implementation during the course of the study by TMAP investigators and staff and members of the PFEP development committee.

Study Participants

The study participants were adults 18 years of age or older with a DSM-IV clinical diagnosis of major depressive disorder, with or without psychotic features (MDD); bipolar I disorder or schizoaffective disorder, bipolar type (referred to collectively as BD); or schizophrenia or schizoaffective disorder (referred to collectively as SCZ). All participants were outpatients at 1 of 7 community mental health centers in Texas that were implementing the TMAP disease management package. Psychoeducation was offered only to those in the algorithm group of the TMAP study; thus, this report does not include a comparison group of patients who did not receive the algorithm disease management package. Patients were entered into the TMAP algorithm treatment group if, in the judgment of their physician, they required a core syndrome medication initiation or change. Study exclusion criteria were minimal, resulting in a sample that included many patients with severe illness and disability. Further details about the sample are provided elsewhere.[20–22]

Procedures and Measures

A complete description of the procedures and measures employed in the TMAP study can be found in Rush et al.[19] and Kashner et al.[26] As this article focuses on implementation and utilization of the PFEP, only procedures and measures that pertain to the topic are described below.

Demographic and clinical baseline data. Baseline data were collected through interviews conducted by independent research coordinators at each study site. Baseline data included demographic information about the participants, clinical history, and psychiatric symptoms. Measures of psychiatric symptomatology included the 24-item version of the Brief Psychiatric Rating Scale (BPRS-24)[27–28] for all 3 disorder groups; the 30-item Inventory of Depressive Symptomatology, Clinician-Rated[29] for the MDD and BD groups; and other disorder-specific symptom rating scales.

Educational activity data. The study CCs were responsible for recording data pertaining to utilization of the PFEP materials on the TMAP patient education activity log. Each educational encounter with a study patient or family member was recorded on a separate line of this log. If multiple study participants were involved in an educational group activity, the activity was logged separately for each participant. Each log entry (line) contained the following data elements: (1) patient number, (2) site/clinic number, (3) date of the activity, (4) provider of the activity (codes for CC, physician, and/or consumer educator), (5) recipient(s) of the activity (codes for patient alone, family alone, patient and family, patient group, patient and family group), (6) time in minutes (spent by the designated recipient in the educational activity), and (7) materials used (codes indicating which of the 7 program materials were used during the educational activity). These variables were used to create the various educational process variables described in the results section.

Composite variables. Two composite variables were created to categorize patients into groups of those who had received the basic PFEP elements, for both individual and group education. Patients were grouped into those who had received "at least minimum exposure to individual education" if they were exposed to all of the

Table 1. Demographic and Clinical Characteristics of Study Participants in the TMAP Patient and Family Education Program

	All Patients		MDD Module		SCZ Module		BD Module	
Characteristic	N	Value	N	Value	N	Value	N	Value
Sex (female), %	487	64.1	181	80.7	165	38.8	141	72.3
Race, %	487		181		165		141	
White		49.1		59.1		29.7		58.9
African American		16.8		15.5		18.2		17.0
Hispanic		33.3		23.8		51.5		24.1
Other		0.8		1.7		0.6		0.0
Employed (full or part-time), %	482	19.5	178	18.5	165	14.5	139	26.6
Receiving public assistance, %	487	47.2	181	32.0	165	62.4	141	48.9
Age, mean (SD), y	486	40.2 (11.1)	180	41.3 (11.6)	165	40.6 (10.8)	141	38.3 (10.6)
Education, mean (SD), y	486	11.3 (2.9)	180	11.2 (2.8)	165	10.7 (3.0)	141	12.2 (2.7)
BPRS-24 score, mean (SD)	486	49.9 (12.6)	180	49.4 (10.2)	165	48.9 (13.3)	141	51.8 (14.4)
IDS-C-30 score, mean (SD)[a]	322	37.2 (15.2)	181	42.6 (13.6)			141	30.3 (14.5)
Length of illness, mean (SD), y	479	12.8 (10.9)	175	12.1 (11.1)	165	15.8 (10.8)	139	9.9 (9.9)

[a] The IDS-C-30 was used in the MDD and BD groups only.

Abbreviations: BD = bipolar I or schizoaffective disorder, bipolar type; BPRS-24 = 24-item Brief Psychiatric Rating Scale; IDS-C-30 = 30-item Inventory of Depressive Symptomatology, Clinician-Rated; MDD = major depressive disorder; SCZ = schizophrenia or schizoaffective disorder; TMAP = Texas Medication Algorithm Project.

following materials over the course of the study: disorder fact sheets, medication treatment information, symptom and side effect monitoring sheets, and either basic or in-depth disorder information. In order to meet criteria for this group, these materials were used in at least 1 encounter with the patient, and the total time spent with these materials was required to be 60 minutes or greater. Patients were grouped into those who had received "at least minimum exposure to group education" if they had at least 1 group educational encounter that utilized the videotape and discussion materials or the consumer-to-consumer discussion materials. The total time spent in group encounters utilizing 1 or both of these materials was required to be 60 minutes or more.

Study Time Frame

Study data were collected between March 1998 and March 2000, with the expectation that participants be involved in treatment and study data collection for at least 1 year and up to 2 years. The analyses include all educational utilization data available for the length of each patient's participation.

Statistical Methods

In situations in which extreme values significantly affect interpretation of the mean, medians were presented in addition to means because the median is the better measure of central tendency. Disorder groups were compared by χ^2 test for categorical outcomes and by the nonparametric Kruskal-Wallace test for continuous variables.

Logistic regression was used to predict whether or not participants received at least minimum exposure to individual and group education. Patients from all 3 disorder groups were included in the 2 sets of analyses, but due to missing data, only 470 patients (out of the total 487) were available. Covariates included disorder group, patient age, sex, years of education, length of illness, receiving public assistance of any type, employment status, and baseline symptom intensity (BPRS-24). The interaction between disorder and each covariate was checked in preliminary analyses and retained in the model when significant ($p < .05$). All covariates were included in the 2 models regardless of their significance in preliminary analyses.

RESULTS

Description of Study Sample

A total of 487 individuals composed the study sample, with 181 (37.2%) from the MDD group, 141 (28.9%) from the BD group, and 165 (33.9%) from the SCZ group. Table 1 includes demographic and clinical data describing the study participants overall and by diagnostic group.

The study sample was representative of patients served in public mental health settings in that baseline psychiatric symptoms were in the moderate to severe levels of intensity (BPRS-24 mean score = 50), participants had long histories of mental illness (mean = 12.8 years), and large proportions of the sample were unemployed (80.5%) and receiving income, medical or other public assistance benefits (47.2%). Also, the study sample reflected the ethnic and racial diversity of Texas, with approximately half of the sample (50.9%) representing non-white or non-Anglo minority groups (16.8% African American, 33.3% Hispanic, and 0.8% other).

How Much Education Did Program Participants and Their Families Receive?

Table 2 includes data describing the percent of participants who received at least 1 educational encounter of any type, as well as the percent who received at least 1

Table 2. Frequency and Amount of Patient and Family Education Received by Participants in TMAP[a]

Variable	MDD (N = 181)	BD (N = 141)	SCZ (N = 165)	Test	All (N = 487)
% of patients who received any educational materials	97.8 (N = 177)	96.4 (N = 136)	90.9 (N = 150)	$\chi^2 = 9.5$, df = 2, p = .0087	95.1 (N = 463)
No. of encounters, mean (SD)[b]	10.0 (7.0) (median = 9)	8.8 (5.5) (median = 8)	5.4 (3.7) (median = 5)	$\chi^2 = 51.1$, df = 2, p < .0001	8.2 (6.0) (median = 7)
Total time spent in education, mean (SD), min[b]	245.6 (240.5) (median = 175)	161.1 (127.5) (median = 124)	119.8 (99.9) (median = 90)	$\chi^2 = 30.6$, df = 2, p < .0001	180.0 (181.4) (median = 120)
% of patients who received any individual encounters[c]	95.6 (N = 173)	96.4 (N = 136)	88.5 (N = 146)	$\chi^2 = 10.0$, df = 2, p = .0066	93.4 (N = 455)
No. of individual encounters, mean (SD)[b]	8.7 (6.4) (median = 7)	8.3 (5.5) (median = 7)	5.1 (3.8) (median = 5)	$\chi^2 = 37.8$, df = 2, p < .0001	7.4 (5.6) (median = 6)
Total individual encounter time, mean (SD), min[b]	140.2 (122.5) (median = 105)	118.4 (94.2) (median = 95)	95.4 (89.5) (median = 60)	$\chi^2 = 15.0$, df = 2, p = .0006	119.3 (106.0) (median = 85)
% of patients who received any group encounters[d]	47.0 (N = 85)	24.8 (N = 35)	18.8 (N = 31)	$\chi^2 = 35.6$, df = 2, p < .0001	31.0 (N = 151)
No. of group encounters, mean (SD)[b]	3.3 (3.2) (median = 2)	2.0 (1.0) (median = 2)	1.7 (1.0) (median = 1)	$\chi^2 = 7.5$, df = 2, p = .0240	2.7 (2.6) (median = 2)
Total group encounter time, mean (SD), min[b]	224.8 (210.2) (median = 160)	163.7 (81.9) (median = 150)	123.5 (82.5) (median = 95)	$\chi^2 = 5.4$, df = 2, p = .0658	189.8 (171.4) (median = 150)
% of patients who received any family encounters[e]	28.2 (N = 51)	48.9 (N = 69)	52.7 (N = 87)	$\chi^2 = 24.6$, df = 2, p < .0001	42.5% (N = 207)
No. of family encounters, mean (SD)[b]	1.7 (1.6) (median = 1)	2.2 (1.8) (median = 1)	2.9 (2.8) (median = 2)	$\chi^2 = 10.4$, df = 2, p = .0057	2.4 (2.3) (median = 1)
Total family encounter time, mean (SD), min[b]	46.4 (42.7) (median = 30)	77.9 (67.3) (median = 60)	69.8 (68.3) (median = 47)	$\chi^2 = 6.4$, df = 2, p = .0417	66.7 (63.5) (median = 45)

[a] Differences among disorder groups tested by χ^2 tests for percents and Kruskal-Wallace test for means/medians (due to skewed distributions).
[b] Among patients with at least 1 encounter.
[c] Recipient is patient only or patient and family.
[d] Recipient is patient group or patient and family group.
[e] Recipient is family only, patient and family only, or patient and family group.
Abbreviations: BD = bipolar I or schizoaffective disorder, bipolar type; MDD = major depressive disorder; SCZ = schizophrenia or schizoaffective disorder; TMAP = Texas Medication Algorithm Project.

education encounter as an individual, the percent who received at least 1 education encounter within a group, and the percent whose family/significant others were involved in at least 1 educational encounter. The table also presents the total amount of education received (number of encounters and total time) and total amounts of individual, group, and family education received.

Nearly all the study patients (95.1%) participated in at least 1 educational encounter. This was true for all 3 disorder groups, though patients with SCZ were less likely than those with MDD or BD to have received some education. The median number of educational encounters was 9 and 8 for patients with MDD and BD, respectively, compared with a median of 5 for those with SCZ ($\chi^2 = 51.1$, df = 2, $p < .0001$). Overall, the median total time spent in educational encounters was 120 minutes. When examining total time by disorder group, those with SCZ, once again, received the least education (median = 90 minutes). Those in the BD group received a median of 124 minutes of education, and those in the MDD group still more, at a median of 175 minutes. The amount of total time spent in educational encounters was significantly different across groups ($p < .0001$).

The data pertaining to individual educational encounters, in which education was delivered to the patient alone or to the patient along with family member(s), again indicate that most study participants (93.4%) did receive individual education (MDD = 95.6%, BD = 96.4%, and SCZ = 88.5%). The median time spent in individual educational encounters for the whole study group was 85 minutes. The same between-disorder group trends found for all educational encounters were also evident in the subset of individual educational encounters, with those in the SCZ group experiencing fewer encounters and less total time than the other disorder groups.

Participation in educational groups, which was highly recommended but optional, was much less likely to occur than participation in the individual education components of the PFEP. Less than a third (31%) of the total sample participated in educational groups (MDD = 47.0%, BD = 24.8%, SCZ = 18.8%). Differences in participation in group education were observed across disorder groups (with the BD and SCZ disorder groups less likely to participate than those with MDD; $p < .0001$). For those who did participate in educational groups, the median number of group encounters was 2 and the median total group

Table 3. Percent of Participants in the TMAP Patient and Family Education Program Who Received Different Educational Materials by Disorder Group

Material	MDD (N = 181)	BD (N = 141)	SCZ (N = 165)	Test	All (N = 487)
Disorder fact sheets, %	89.5	90.1	87.9	$\chi^2 = 0.4$, df = 2, p = .8102	89.1
Treatment information, %	92.3	91.5	86.7	$\chi^2 = 3.4$, df = 2, p = .1782	90.1
Symptom and side effect monitoring sheets, %	89.5	94.3	83.0	$\chi^2 = 9.9$, df = 2, p = .0072	88.7
Basic disorder information, %	75.7	73.8	66.1	$\chi^2 = 4.3$, df = 2, p = .1159	71.9
In-depth disorder information, %	46.4	66.7	23.6	$\chi^2 = 57.4$, df = 2, p < .0001	44.6
Videotape, %	26.5	27.0	19.4	$\chi^2 = 3.2$, df = 2, p = .2032	24.2
Consumer-to-consumer information, %	50.8	19.9	22.4	$\chi^2 = 45.8$, df = 2, p < .0001	32.2

Abbreviations: BD = bipolar I or schizoaffective disorder, bipolar type; MDD = major depressive disorder; SCZ = schizophrenia or schizoaffective disorder; TMAP = Texas Medication Algorithm Project.

education time was 2½ hours (150 minutes). The median number of group encounters was 1 for the SCZ group and 2 for both the BD and MDD groups (p < .05). The amount of time spent in group encounters did not differ significantly across groups.

Despite emphasis on the importance of including family or other important social supports in the educational process, less than half of the study participants (42.5%) had family members or significant others who were involved in at least 1 educational encounter. Patients with SCZ and BD (52.7% and 48.9%, respectively) were more likely to have family who participated in the educational program than were those with MDD (28.2%) ($\chi^2 = 24.6$, df = 2, p < .0001). The mean number of family encounters for participants whose families were involved in at least 1 encounter was 2.4 (median = 1) and the median total family educational time was 45 minutes.

Who Provided the Education and in What Context?

The majority of the educational encounters occurred on the same day as a clinic visit (79% overall, MDD = 76.5%, BD = 84.3%, and SCZ = 76.7%). However, the study participants had many more clinic visits (median = 16) than educational encounters (median = 7). Thus, the majority of days with a scheduled clinic visit (72.7%) did not include educational encounters. In total, the SCZ group had a similar number of clinic visits compared with the MDD group (3008 vs. 2990 visits, respectively); however, far fewer of their visit days included educational encounters (20.8% vs. 45.4%, respectively). The BD group had fewer total clinic visits (2034) than the other 2 groups, but almost half (49.5%) of those visit days included education.

Across disorder groups, more than three quarters (81.8%) of the educational encounters were conducted by the CC. Physicians conducted 4.5% of encounters alone and another 5.5% in conjunction with the CC. Peer facilitators conducted 6.5% of the encounters. In terms of mean time spent in each educational encounter, CCs spent a mean of 17.6 minutes (median = 15 minutes) providing education per encounter. When physicians provided education, they spent a mean of 9.3 minutes (median = 5 minutes). However, when physicians and CCs provided education together, the mean time per encounter rose to 23.5 minutes (median = 20 minutes). Peer facilitators were exclusively involved in group activities, and thus, their mean encounter time was 68.3 minutes (median = 60 minutes).

Which of the Educational Program Materials Were Used by the Program Participants?

As described in the method section, the TMAP PFEP included 7 types of materials that were designed for use with individual patients (and/or family members) or in group settings. Table 3 shows the percent and number of patients with whom the different types of educational materials were used (by disorder group and overall). The disorder fact sheets, medication treatment information, and symptom and side effect monitoring sheets were used with the vast majority of study participants (89.1%, 90.1%, and 88.7%, respectively). There were group differences in the likelihood of use of the symptom and side effect monitoring sheets, with those in the SCZ group least likely to have exposure to this set of materials (83% for SCZ vs. 89.5% for MDD and 94.3% for BD, p = .0072).

As materials increased in complexity, overall use declined. While 71.9% of the study participants received the basic disorder information pamphlets/articles, only 44.6% received the in-depth disorder information booklets/articles. There were large differences between the disorder groups with regard to exposure to the in-depth materials that were not observed with the basic disorder information, with the BD module using them heavily (66.7%) compared with the MDD (46.4%) and SCZ (23.6%) groups. Some of this difference can be attributed to the fact that the BD module leadership and staff preferred the in-depth material over the basic disorder information for those patients with adequate reading ability.

The 2 sets of group education materials, the videotapes and discussion materials and the consumer-to-consumer discussion materials, were used with a much smaller proportion of the study participants (24.2% and 32.2%, respectively) than were the materials designed to be used on an individual basis. Use of the video/discussion mate-

Table 4. Frequency of Receipt of at Least Minimum Exposure to Individual and Group Education by Disorder Group and Overall Among Participants in the TMAP Patient and Family Education Program

Variable	MDD (N = 181)	BD (N = 141)	SCZ (N = 165)	Test	All (N = 487)
Received at least minimum exposure to individual education, %[a]	57.5	68.1	37.0	$\chi^2 = 31.3$, df = 2, p < .0001	53.6
Received at least minimum exposure to group education, %[b]	45.3	19.9	16.4	$\chi^2 = 42.5$, df = 2, p < .0001	28.1
Received at least minimum exposure to individual and group education, %	29.8	14.9	4.8	$\chi^2 = 38.8$, df = 2, p < .0001	17.0

[a] Patient must receive disorder fact sheets, treatment information, symptom and side effect monitoring sheets, and either basic disorder information or in-depth disorder information at some point during the study. The recipient of these materials must be either patient only or patient and family. The total time of these encounters during the study must be 60 minutes or more.

[b] Patient must receive videotape or consumer-to-consumer information at some point during the study. The recipient must be patient group or patient and family group. The total time of these encounters during the study must be 60 minutes or more.

Abbreviations: BD = bipolar I or schizoaffective disorder, bipolar type; MDD = major depressive disorder; SCZ = schizophrenia or schizoaffective disorder; TMAP = Texas Medication Algorithm Project.

rials varied slightly by disorder group; use ranged from 19.4% in the SCZ group to 27.0% in the BD group. In contrast, use of the consumer-to-consumer discussion materials was much more frequent within the MDD group (50.8%) than within the SCZ and BD groups (22.4% and 19.9%, respectively).

Did Participants Receive at Least Minimum Exposure to the Program Components?

As shown in Table 4, 53.6% of the study participants met criteria for having received at least minimum exposure to individual education interventions, and 28.1% received at least minimum exposure to group interventions. Those in the SCZ disorder group were considerably less likely to meet criteria for minimum exposure to individual education than those in the other 2 disorder groups ($\chi^2 = 31.3$, df = 2, p < .0001). Those in the MDD group were significantly more likely to have at least minimum exposure to group education than were those in the BD and SCZ groups ($\chi^2 = 42.5$, df = 2, p < .0001). A small proportion of the study group (17.0%) were exposed to at least minimally adequate levels of both individual and group education, with those in the MDD group almost twice as likely as the BD group and more than 6 times as likely as the SCZ group to meet both criteria ($\chi^2 = 38.8$, df = 2, p < .0001).

Did Demographic and Clinical Characteristics of Patients Relate to Use of the Educational Materials?

Logistic regression was used to predict whether or not participants received at least minimum exposure to individual and group education based on their clinical and demographic characteristics. Disorder group was significantly related to the likelihood of receiving at least minimum exposure to individual education. Membership in the BD group increased the likelihood of having minimum exposure to individual education; patients in the MDD group were 60% less likely (odds ratio [OR] = 0.4; 95% CI = 0.2 to 0.7; p = .002) and those in the SCZ group were 80% less likely (OR = 0.2; 95% CI = 0.1 to 0.4; p < .0001) to have received minimum exposure to individual education than those with BD.

Intensity of symptoms, as measured by the BPRS-24, was significantly associated with exposure to individual education for the BD and MDD groups, but not the SCZ group. Interestingly, the nature of the effect varied by disorder group. For those patients with BD, every 10-point increase in baseline BPRS-24 total score was associated with a 40% decrease in the odds of being at least minimally exposed to individual education (OR = 0.6; 95% CI = 0.5 to 0.8; p < .001). For those with MDD, being more symptomatic at baseline was associated with a greater likelihood of exposure to individual education. In the MDD group, each 10-point increase in BPRS-24 baseline total score was associated with a 40% increase in the odds of receiving minimum exposure to individual education (OR = 1.4; 95% CI = 1.0 to 2.0; p = .04).

There was also an association between receiving public assistance of any kind and the likelihood of being at least minimally exposed to individual education. Those patients receiving public assistance were 30% less likely to be exposed to an acceptable level of individual education (OR = 0.7; 95% CI = 0.4 to 1.0; p = .05).

There was a curvilinear relationship of age to the likelihood of receiving at least minimum exposure to individual education. The likelihood of receiving adequate individual education peaked for patients around the age of 40 years. For younger patients, increases in age improved the likelihood of having been at least minimally exposed to individual education. However, increases in age past 40 years were associated with declines in the likelihood of receiving minimally adequate individual education. Years of education, sex, length of illness, and employment status were not significantly related to the likelihood of receiving at least minimum exposure to individual education.

As with individual education, disorder group was a significant predictor of receipt of minimally adequate group education. Patients with MDD were 3 times more likely to receive at least minimum exposure to group education than those with BD (OR = 3.0; 95% CI = 1.8 to 5.2; p < .0001). Years of education also significantly interacted with disorder group in predicting the likelihood of receiving minimum exposure to group education. For patients with SCZ, each additional year of formal education was associated with a 30% increase in the likelihood of being at least minimally exposed to group education (OR = 1.3; 95% CI = 1.1 to 1.5; p = .0009). For the MDD and BD groups, years of formal education was not a significant predictor of receipt of group education.

There was a significant main effect for employment status, in that patients who were employed (full- or part-time for pay) had about one half the odds of receiving minimally acceptable group education than those who were unemployed (OR = 0.5; 95% CI = 0.2 to 0.9; p = .0158). There was also a significant age effect across all disorder groups; each 10-year increase in age increased the odds of receiving minimum exposure to group education by 30% (OR = 1.3; 95% CI = 1.0 to 1.6; p = .0336). There was no relationship between baseline symptoms, sex, length of illness, or being a recipient of public assistance with the likelihood of receiving minimum exposure to group education.

DISCUSSION

TMAP included a comprehensive patient and family education program as part of an overall disease management approach to the treatment of serious psychiatric illness. It was intended that all participants in the 3 disorder modules of TMAP (SCZ, BD, and MDD) be involved in the educational program. The vast majority (95%) of participants in the TMAP disease management program did receive some psychoeducation (at least 1 encounter of unspecified length). As required in program guidelines, almost everyone (93%) received at least some individual education that covered basic information about the diagnosed disorder (89%) and medication treatment (90%). Also consistent with program recommendations, the results indicated that most participants were introduced to the educational materials gradually, over time (median of 7 encounters), rather than in a single session.

Despite these positive indicators of program implementation, many participants in TMAP did not receive minimally acceptable exposure to the program components. While the definition of minimum exposure to individual education was liberal, requiring only that the patient be exposed to essential materials for a total time equal to or greater than 60 minutes, only half of the participants met the criteria. Considering that TMAP was a research demonstration project that included a special focus on education, relatively rich staffing levels, and other accommodations, the percent of participants who were at least minimally exposed to individual education was lower than expected. Additionally, the degree of involvement of the treating physicians in the educational process was also less than expected (i.e., the physician alone was the provider in only 4.5% of encounters and the CC and physician together in another 5.5%).

Given the relationship of educational encounters to overall clinical contacts, it appears that lower than expected rates of education cannot be attributed to generally low rates of contact, but rather, selective implementation of educational components. CCs typically introduced educational topics during the assessment period of the clinic visit, which immediately preceded the physician appointments. There may have been limited time during those visits for education, or patients or CCs may have been unable or unwilling to return for further educational interventions after seeing the physician. Additionally, patients completed extensive rating scales and assessments with the CC at each visit and may have been frustrated by additional time focused on educational topics. The TMAP experience highlights a potential problem for any system attempting to implement education into usual clinical care interactions. Despite a relatively small caseload and explicit instructions to implement the PFEP to the fullest, when faced with limited clinical contact time, delivery of patient and family education was less of a priority than other tasks. If only half of the participants in TMAP received minimally acceptable levels of individual education, even lower levels of implementation might be expected in typical clinical settings. Adherence to program guidelines might be increased if program implementation expectations were made more explicit in a "fidelity" measure and if fidelity was regularly monitored as a means of reinforcing the importance of appropriate education in disease management.

Participants were considerably less likely to be involved in the group education components of TMAP than in the individual education components. This was true when implementation was assessed simply (i.e., received any group education at all; 31%) and when the stricter, minimum exposure, group education criterion was used (i.e., attended at least 1 group session utilizing the appropriate education materials for at least 60 minutes; 28%). This may be due to the fact that involvement of participants in group education was highly recommended but not required. Also, participation in the groups necessitated additional trips to the clinic, which may have proved difficult for consumers due to transportation issues, time conflicts (especially if employed), child care responsibilities, or other conflicts. The TMAP educational groups were designed to be facilitated by trained peers or by CCs teamed with the peer facilitators. Some sites had difficulty identifying 1 or more individuals to perform the peer facilitator role, and others experienced problems with the regularity or continuity of the peer facilitator's involvement in the program. Participants in the MDD group may have been more likely to be involved in groups because 1 or more of the CCs who worked with that module conducted the groups themselves when they were unable to identify a successful peer facilitator candidate.

Implementation of group programs like the one offered in TMAP would likely be improved if implementation guidelines were more explicit regarding the ways in which clinic staff could support the role and work of the peer facilitators, and if clinical staff discussed the value of peer-facilitated group education with their patients. In addition, group attendance in peer-facilitated educational groups might be increased by having continuous sessions, scheduling sessions at more convenient times and locations for consumers, and offering assistance with transportation.

As noted earlier in this article, the program structure and guidelines were the same for the 3 disorder groups, although the educational materials varied by disorder. While CCs were assigned to work with only 1 disorder group and within 1 clinic, all had the same job description with the same delineated role in educational program delivery, all received the same training and supervision in program implementation, and all had similar caseloads. Despite the planned uniformity of implementation, almost all analyses conducted indicated consistent differences between the disorder groups with regard to their program experiences. When simple nonparametric tests were used to examine differences in receipt of educational interventions across the disorder groups, the disorder groups differed significantly on almost every measure of participation. In most cases, this was due to less involvement for those in the SCZ group. Patients in the SCZ group experienced fewer educational encounters, less education time, and less comprehensive education than participants in the other 2 disorder groups. The 1 notable exception was that family members of participants with schizophrenia were more likely to be involved in education than those in the other disorder groups (and those in the BD group were more likely to have family involved than those in the MDD group). The importance of disorder was confirmed in the logistic regression analyses in which several additional patient characteristics were included as possible predictors. When adjusting for these other demographic and clinical baseline variables, disorder group stood out as the strongest predictor of receipt of both minimally acceptable individual and group education. While we cannot identify whether this difference is due to patient characteristics or clinician attitudes and behavior, at least 1 study suggests that patients with schizophrenia are less interested in education than those with affective disorders.[30]

It is important to note that variability in implementation can be a function of provider behavior, setting, and patient characteristics. While we are inclined to attribute differences in implementation to provider behavior, eliciting the cooperation and participation of patients with serious mental disorders (and for that matter, patients with any chronic illness) can be challenging. For example, in a study that included group education to improve knowledge about schizophrenia, only 28% of those invited participated.[18] Unfortunately, given the limitations of our study methods and data, we are unable to determine whether differences between disorder groups can be attributed to provider implementation differences, clinic differences, or patient preferences and ability or motivation to participate.

Interestingly, it does not appear that baseline symptom intensity predicted exposure to individual education for those patients with SCZ. In contrast, it was a significant predictive factor for those with MDD and BD. For patients with BD, those with more symptoms at baseline were less likely to receive minimum exposure to individual education. Conversely, MDD patients who were sicker at baseline were more likely to receive the minimal individual education program components. It may be that the CCs judged that very ill patients with bipolar disorder were unable to benefit from exposure to the material at program entry and then neglected to reintroduce them to education at a later point in time. Very ill patients with MDD may have had fewer psychotic symptoms and cognitive dysfunctions, thus CCs may have been more inclined to initiate educational encounters.

With regard to group education, years of formal education was an important factor associated with receipt of group education for participants with SCZ, but not for those with BD or MDD. These results may well be related to the cognitive deficits and lack of awareness or denial of illness frequently associated with schizophrenia that are also likely to impede or discourage attempts to educate patients about their illness and treatment. These factors, along with the greater likelihood of disability associated with schizophrenia, may also explain the higher degree of involvement of family members in the educational process (as the greater likelihood of disability associated with BD might explain the higher frequency of involvement of their family members compared with those with MDD).

Age was associated with receiving at least minimum exposure to both individual and group education. While the age effect was somewhat different for the 2 program components, in both cases older individuals (past 40 years) were less likely to be adequately exposed to education. Older individuals may be less inclined to participate in education because, having been ill longer, they believe they already know the material. Also, providers might be less likely to offer educational opportunities to older individuals, especially those who have had the same diagnosis for a long time, because they assume or know that they have already been exposed to the information or experiences. Less involvement of older individuals may also be an indicator of hopelessness regarding recovery on the part of the patient and/or provider.

Finally, the logistic regression analyses also revealed that those patients receiving public assistance were less likely to receive minimum exposure to individual education. It is possible that these patients and families, operating under strained resources, were less able to attend clinic visits or to spend additional time devoted to education.

These findings suggest a need to alter some of the program guidelines to address key differences between the disorders relevant to educational needs and abilities. In particular, the TMAP PFEP may need to include more guidance regarding approaches to psychoeducation for individuals with significant cognitive impairments, as well as for those who are unaware of or in denial of their symptoms and functioning difficulties. The program guidelines and training might also emphasize a recovery orientation for all patients, regardless of age or level of disability and directly address means of countering hopelessness on the part of the patient, family, and/or provider.

Other findings suggest a need to look beyond improvement of the guidelines and materials themselves to explore solutions to improving implementation. Importantly, TMAP provided rich resources and infrastructure to support the implementation of education, yet the percent of participants who received minimally adequate exposure to the program interventions was less than anticipated. It is necessary to examine system variables other than staffing levels alone to determine what might be impeding implementation of psychoeducation in public mental health settings. Providing dedicated staff was not sufficient to significantly alter the typical "way of doing business" that existed in these settings. Staff attitudes, consensus around program components, patient and family attitudes and preferences, the role of leadership, flexible and creative scheduling, transportation limitations, perceived and actual costs, and quality management procedures (or lack thereof) are some of the system factors worthy of examination.[31] Mental health service systems that seriously intend to emphasize the receipt of illness education as part of a comprehensive disease management package will need to pay greater attention to patient, provider, and system variables that may impede successful implementation.

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