Preventive Medical Services Use Among Community Mental Health Patients With Severe Mental Illness: The Influence of Gender and Insurance Coverage

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Introduction: This study examines predictors of reduced preventive health service use in patients with severe mental illness by examining psychiatric diagnoses and demographic factors.

Method: Of 387 patients approached in 4 community mental health clinics regarding their preventive health services use from January 2005 to May 2007, 234 (60.5%) were interviewed. Of those participants interviewed, 221 had a *DSM-IV-TR* diagnosis of (1) primary psychotic disorder (schizophrenia or schizoaffective disorder), (2) bipolar disorder, or (3) recurrent major depressive disorder. Psychiatric disorders and demographic factors that predicted high service utilization were analyzed using analysis of variance and χ^2 tests.

Results: In the linear predictive model, use of preventive services was not statistically different among the 3 diagnostic groups. Participants with primary psychotic disorder used a similar number of preventive services compared to those with bipolar disorder and major depression. Women used more services than men ($P < .01$), and individuals with health insurance used more than uninsured participants ($P < .001$).

Conclusion: Male gender and not having medical insurance were predictive of lower preventive health service use in this sample of patients with severe mental illness. Further research is needed to replicate these findings and to improve use of preventive health services in people with severe mental illness.

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Compared to the general population, patients with severe mental illness (SMI) have a reduced life expectancy of 25 years and tend to suffer significantly more chronic medical comorbidities.[1–3] While some of these elevated risks may be due to lifestyle factors (such as unhealthy dietary practices and tobacco use), another major reason is the decreased use of preventive medical services, especially the primary and secondary prevention of cardiovascular disease.[4–6] The use of preventive cancer screening is also consistently lower in patients with SMI compared to the general population.[7–9] Reduced use of preventive medical services by patients with mental illness has been shown to increase the use of emergency room visits and elevate health care costs.[10,11] Nevertheless, the utilization patterns of preventive health services by individuals with SMI appear to be different depending on the population studied and research methodology.[12] For example, in the National Ambulatory Health Care Survey, [13] rates of preventive service use in patients with SMI were equivalent to those without SMI. In addition, SMI patients tended to have more frequent and longer primary health care visits.[13] In studies that recruited participants from the US Department of Veteran Affairs Health System and various mental health settings, however, patients with SMI generally received less preventive health services.[14–16] Two other studies found that medical service use may be different depending on the psychiatric disorder.[17,18]

Since psychiatric conditions may influence adherence to medical treatment recommendations, this study examines the utilization patterns of preventive medical services among patients who use community mental health services and who have 1 of the following psychiatric disorders: (1) primary psychotic disorder (schizophrenia or schizoaffective disorder), (2) bipolar disorders, and (3) recurrent major depression. Because age, race/ethnicity, gender, and insurance factors may also influence preventive medical service use, this study also evaluates demographic characteristics of the patients in order to identify predictors of service utilization.

METHOD

Design and Setting

In this study, we interviewed and administered preventive health service use questionnaires to patients who were receiving outpatient psychiatric treatment and case management at 4 independent mental health clinics operated by 4 different nonprofit agencies. The Sacramento

Clinical Points

- Patients with primary psychotic disorders may be as likely to use preventive medical services as those with bipolar and major depressive disorders.
- Insurance status is an important barrier to the adequate use of preventive medical services in people with severe mental illness; therefore, it is important to ensure access to medical services for people with mental illness.
- Men with severe mental illness may use less preventive medical services compared to women. Further research to replicate and explicate this finding is needed.

County Health and Human Services, Division of Mental Health Services (Sacramento, California) contracted with these programs to provide services for uninsured, low-income, or underserved populations in Sacramento County. A total of 387 patients were approached and 234 agreed to participate in this study. This study was approved by the Institutional Review Board at the University of California at Davis (Sacramento) and the Sacramento County Health and Human Services Research Committee (Sacramento, California).

Patient Population

Adult participants older than 18 years who were able to provide informed consent to participate in this study were interviewed by a research assistant before or after their routine clinic appointment with their mental health providers. Participation was voluntary and not part of routine treatment.

Patients who were unable to provide informed consent, were on conservatorship, or unable to complete the interview due to cognitive deficits or disorganization were excluded from the study, as were those who did not have a primary psychotic disorder (schizophrenia or schizoaffective disorder, bipolar disorder, or recurrent major depressive disorder).

Of 387 patients approached from January 2005 to May 2007, 234 (60.5%) participants were interviewed, 5 provided incomplete information, and 8 were excluded because of their primary psychiatric diagnosis. Thus, the final sample included for data analyses contained 221 participants.

Data Collection

The participants were administered a 10-section questionnaire that inquired about demographic information, health insurance status, and recent use of preventive health services. The interviews lasted 10–20 minutes. The clinic administrators and medical directors for each site also agreed to the study protocol and allocated office space to conduct the interviews. Demographic variables included age, gender, ethnicity (white, African American, Asian, Hispanic/Latino, American Indian/Alaska native, mixed ancestry, and other), marital status, and education level (< 12 years, high school or general education development, some college, and college graduate).

Preventive health services included the following tests or procedures: mammogram, Papanicolaou (Pap) test, prostate specific antigen (PSA) test, digital rectal exam, fecal occult blood test, flexible sigmoidoscopy or colonoscopy, cholesterol test, influenza immunization, hypertension awareness and treatment, diabetes awareness and treatment, and oral health care. Self-report of medical service use has been examined in patients with SMI and found to be generally reliable.[19,20] All questions had a "don't know/unsure" response to provide participants with the option to not provide this information. The most recent primary multiaxial diagnostic information based on the *DSM-IV-TR* was extracted from the health records. Other descriptions of the study procedure were previously published.[9]

Preventive Service Utilization

The US Preventive Services Task Force guidelines on age-appropriate preventive health services were reviewed to determine the eligibility of each service based on gender and age.[21] Women older than age 29 years were asked questions about the mammogram and Pap test. Men older than age 39 years were asked about the PSA test and digital rectal examination for prostate cancer. All participants older than age 49 years were asked about colorectal cancer screening via blood stool test and/or flexsigmoidoscopy or colonoscopy. All participants were asked about cholesterol testing, influenza immunization, hypertension awareness and treatment, diabetes awareness and treatment, and oral health care. Participants with diabetes or high blood pressure were further asked about various treatment parameters.

Since strict adherence to guidelines is difficult to achieve even in the general population, a health service utilization score was developed using modified time frames on the basis of criteria used by other investigators to examine the most recent use of services. For example, for mammogram screening in women, we categorized a woman who had received a mammogram within 2 years as having sufficient service utilization. The test for each screening service and

Table 1. Demographic Characteristics by Psychiatric Disorder

Characteristic	Psychotic Disorder (n = 78)	Bipolar Disorder (n = 92)	Major Depressive Disorder (recurrent) (n = 51)
Age, mean (SD), y	43.2 (10.3)	43.5 (10.6)	42.8 (9.4)
Gender, n (%)[a]			
Male	57 (73)	30 (33)	17 (33)
Female	21 (27)	62 (67)	34 (67)
Race, n (%)[b]			
White	40 (51)	60 (67)	31 (61)
Black	17 (22)	8 (9)	8 (16)
Hispanic/Latino	10 (13)	9 (10)	5 (10)
Other	11 (14)	13 (14)	7 (14)
Insured, n (%)[c]	68 (88)	74 (80)	37 (79)
Education, n (%)[d]			
< High school	20 (26)	23 (25)	11 (22)
General education development/high school	30 (39)	29 (32)	17 (33)
> High school	27 (35)	40 (43)	23 (45)

[a]$P < .001$; percent of men with psychotic disorders.
[b]Two observations are missing.
[c]Five observations are missing.
[d]One observation is missing.

its modified time frame are as follows: mammogram within 2 years, clinical breast examination within 1 year, PSA test or digital rectal examination within 1 year, sigmoidoscopy or colonoscopy within 5 years or a blood stool test within 1 year, cholesterol test within 5 years, diabetes screening with blood test within 1 year, influenza vaccine within 1 year, and dental visit within 5 years. For patients with known hypertension, we considered active treatment with medication as having good service use. For patients with known diabetes, we considered having a physician visit or hemoglobin A_{1c} test 3 times in 1 year as having good adherence. An aggregate preventive service score (in percentage) was calculated for each individual by dividing the number of services the person had received by the number of services that the individual was eligible for within the time frames.

Statistical Analysis

Statistical analyses were conducted using SAS Version 9.2[22] and included descriptive statistics for all categorical (frequencies and percentages) and continuous (means and standard deviations) variables. Group differences were assessed using 2-sample *t* tests or analysis of variance (ANOVA) on the continuous variables and χ^2 tests on the categorical variables.

The aggregate health utilization score was first analyzed with an ANOVA model with diagnosis group as a factor. Adjustments for age, race/ethnicity, gender, insurance status, and education were considered by adding corresponding variables in the model and testing them. Terms that did not add significantly to the model were removed. A variable was considered to be a significant predictor in the model if its significance level exceeded .05.

RESULTS

Baseline Demographics

Table 1 displays the baseline characteristics of the participants from community mental health clinics among the 3 major psychiatric diagnoses. The average participant was in his/her early forties. Gender composition differed significantly across the 3 diagnostic groups; participants with psychotic disorder were more likely to be men than those with bipolar disorder and major depressive disorder ($P < .001$). The racial/ethnic distribution, insurance status, and education level were similar across the 3 groups.

Preventive Health Service Utilization by Psychiatric Disorder

Table 2 summarizes the use of preventive health services stratified by the 3 primary psychiatric disorders. Participants with psychotic disorder (schizophrenia or schizoaffective disorder) used a similar number of preventive services compared to those with bipolar disorder and major depressive disorder. The overall (nonsignificant) trend was that participants with psychotic disorders had slightly higher levels of utilization for mammogram, clinical breast examination, colorectal cancer screening, influenza vaccination, medications for hypertension, and diabetes screening compared to groups with bipolar disorder and major depressive disorder. Participants with bipolar disorder and major depressive disorder used an equivalent level of services within the specified time frames. Overall, the proportion of participants who had diabetes screening within the last year was over 30%, and those who had cholesterol testing within 5 years was more than 60%.

Preventive Health Service Utilization by Psychiatric Disorder and Gender

To explore gender differences in use of preventive services, Table 3 shows the corresponding preventive medical service utilization rates in the 3 diagnostic groups for services available to both men and women. Overall, women had a higher level of service utilization compared to men. This trend was true for all 3 diagnostic groups. In participants with psychotic disorder, women used higher levels of preventive services for cholesterol test, influenza vaccine, medications for hypertension, and diabetes screening. Women and men with schizophrenia reported similar rates of colorectal cancer screening and diabetes care. However, in participants with bipolar disorder and major depressive disorder, women reported more colorectal cancer screening than men. The small sample size did not permit statistical analysis for any individual service among the subgroups.

Table 2. Preventive Health Service Utilization by Psychiatric Disorder[a]

Preventive Health Service	Psychotic (n = 78)	Bipolar Disorder (n = 92)	Major Depressive Disorder (n = 51)
Mammogram < 2 y[b]	10/15 (67)	20/42 (48)	9/18 (50)
Clinical breast exam < 1 y[c]	10/21 (48)	25/62 (40)	14/34 (41)
Pap test < 3 y[c]	14/21 (67)	44/62 (71)	21/33 (62)
Prostate specific antigen test/digital rectal exam < 1 y[d]	6/34 (18)	3/22 (14)	3/14 (23)
Colonoscopy/sigmoidoscopy < 5 y or blood stool test < 1 y[e]	5/24 (21)	4/27 (15)	2/14 (14)
Blood cholesterol test < 5 y	50/78 (64)	57/92 (62)	34/51 (67)
Influenza vaccine < 1 y	25/78 (32)	16/92 (17)	11/51 (22)
High blood pressure medication if hypertensive[f]	21/32 (66)	12/30 (40)	8/18 (44)
Diabetes screening test < 1 y	29/78 (37)	31/92 (34)	17/51 (33)
Diabetes: doctor visit or hemoglobin A_{1c} test 3 times < 1 y[g]	8/12 (67)	9/10 (90)	5/8 (63)
Dental visit within 5 y	53/78 (68)	73/92 (79)	39/51 (76)

[a]The number of participants who used each service divided by the total number of participants eligible for each service is specified as a percentage in the parenthesis.
[b]Women aged ≥ 40 years (n = 78).
[c]Women (n = 117).
[d]Men aged ≥ 40 years (n = 69).
[e]Aged ≥ 50 years (n = 65).
[f]Participants with high blood pressure (n = 65).
[g]Participants with diabetes (n = 30).

Table 3. Preventive Health Service Utilization by Psychiatric Disorder and Gender[a]

	Psychotic Disorder (n = 78)		Bipolar Disorder (n = 92)		Major Depressive Disorder (n = 51)	
Preventive Health Service	Female (n = 21)	Male (n = 57)	Female (n = 62)	Male (n = 30)	Female (n = 34)	Male (n = 17)
Colonoscopy/sigmoidoscopy < 5 y or blood stool test < 1 y[b]	2/10 (20)	3/14 (21)	3/16 (19)	1/11 (9)	2/8 (25)	0/6 (0)
Blood cholesterol test < 5 y	17/21 (81)	33/57 (58)	40/62 (65)	17/30 (57)	24/34 (71)	10/17 (59)
Influenza vaccine < 1 y	10/21 (48)	15/57 (26)	11/62 (18)	5/30 (17)	9/34 (26)	1/17 (12)
Hypertension medication[c]	14/19 (74)	7/13 (54)	6/20 (30)	6/10 (60)	6/12 (50)	2/6 (33)
Diabetes screening test < 1 y	9/21 (43)	20/57 (35)	22/62 (35)	9/30 (30)	12/34 (35)	5/17 (29)
Diabetes: doctor visit or hemoglobin A_{1c} 3 times < 1 y[d]	3/5 (60)	5/7 (71)	7/8 (88)	2/2 (100)	5/7 (71)	0/1 (0)
Dental visit < 5 y	10/21 (48)	43/57 (75)	53/62 (85)	20/30 (67)	25/34 (74)	14/17 (82)

[a]The number of participants who used each service divided by the total number of participants eligible for each service is specified as a percentage in the parenthesis.
[b]Aged ≥ 49 years (n = 65).
[c]Participants with hypertension (n = 80).
[d]Participants with diabetes (n = 30).

Predictors of Preventive Health Service Utilization

Table 4 summarizes the mean ± SD health utilization rates stratified by the 3 diagnostic groups and by gender and insurance status. A linear predictive model was constructed to examine factors that may be associated with higher service use. In this model, use of preventive services was not statistically different among the 3 diagnostic groups (estimated difference between bipolar disorder and psychotic disorder: −3.60, $P = .37$, and between major depressive disorder and psychotic disorder: −2.83, $P = .55$). Women used significantly more services than men (estimated difference = 9.54, $P < .01$), and individuals with health insurance used significantly more services than the uninsured participants (estimated difference = 17.48, $P < .001$). No other demographic characteristic significantly predicted health service utilization.

Table 4. Summary Measures and Linear Model Predicting Health Service Utilization[a]

Variable	Mean (SD)	Estimated Difference[b] (standard error)	*P* Value
Diagnosis			
Psychotic disorder	46.99 (25.66)	NA	
Bipolar disorder (vs psychotic disorder)	45.93 (24.81)	−3.60 (4.00)	.37
Major depressive disorder (vs psychotic disorder)	46.77 (24.53)	−2.83 (4.70)	.55
Gender			
Male	41.26 (24.61)	NA	
Female (vs male)	51.15 (24.41)	9.54 (3.59)	< .01
Insurance status			
Uninsured	30.39 (22.81)	NA	
Insured (vs uninsured)	49.78 (24.08)	17.48 (4.36)	< .001

[a]Terms for age, education, and race were included in the model and tested, but none of them were significant (at $\alpha = 0.05$) and therefore were not retained in the model.
[b]Estimated difference using the coefficients from the linear regression model.
Abbreviation: NA = not applicable.

DISCUSSION

In this study of adults with SMI in mental health centers, we found that those without insurance used fewer preventive services than those who had medical insurance. Women used more preventive services than men. There was no difference in service use by primary psychiatric disorders. Gender and insurance status predicted higher use of general preventive medical services in this community mental health sample. Other investigators have shown that women with SMI tend to use more preventive services compared to men, irrespective of the population studied.[23,24] The reason behind this finding requires further replication and exploration, likely via qualitative methods. If confirmed, future interventions to improve preventive services may need to target men with SMI.

For the general population, lower use of preventive health services may be due to the fact that men tend to have higher risk-taking health behaviors[25,26] and that they tend to use less ambulatory medical services.[27] The finding that participants with health insurance use more preventive health services is consistent with findings in other disadvantaged populations[28–30] and highlights the importance of equal access to health services in patients with SMI. Although the current group had access to free mental health services (through funds from the county's Health and Human Services), they also need access to medical services. In order to improve the uptake of preventive medical services, interventions such as case management and social services to ensure that patients with SMI have access to medical insurance are urgently needed.

This is the first study to examine preventive medical services by psychiatric diagnoses in a public county mental health program. While previous studies have examined differential use of services among patients with various psychiatric disorders in other settings, they did not find any consistent patterns.

In a homeless shelter, Folsom et al[17] found that residents with schizophrenia used less preventive medical services compared to those with depression. Salsberry et al[18] found that among Medicaid enrollees, patients with affective disorders (bipolar disorder and major depression) had higher use of Pap tests compared to those with schizophrenia, although use of mammogram and dental services was similar in the 2 groups. However, Dickerson et al[16] found that patients with affective disorders and schizophrenia did not differ significantly in their use of Pap tests, although patients with schizophrenia had lower use of dental services compared to those with affective disorder. In the Veterans Affairs Health System, Cradock-O'Leary et al[15] found that patients with schizophrenia and bipolar disorder had similarly fewer medical visits for diabetes and hypertension compared to patients without psychiatric disorders. Therefore, use of any particular preventive medical services does not seem to have any consistent pattern and may be more related to the study population and methodology.

This study is limited by the relative small sample size compared to large database studies, and, therefore, the potential differential use of services among the 3 diagnostic groups could be a type II error. However, this study is comparable and slightly larger in sample size than previous studies that collected data via personal interviews. Database studies may miss service utilization because individuals often utilize medical services from different health systems. On the other hand, personal interviews provide more in-depth information but require more intensive resources for each participant studied. The reliability of the personal interview could be subject to recall error and therefore may introduce respondent bias. Although reliability of personal interviews from patients with SMI has been examined, this study could be strengthened by validating responses in subgroups of participants by examining their medical records. This process is difficult and costly, as the mental health clinics do not have these medical records, which are only available through general medical clinics. We are in the process of conducting another study that will explore the reliability and validity of personal interviews in this population. Despite the potential limitations of the current study, the findings are largely consistent with previous studies in other populations. The present study also underscores the importance that gender and insurance status play in preventive medical service use in patients with SMI.

Understanding barriers to using preventive medical services requires further research and the findings from this study require additional replication. Although psychiatric disorders did not seem to predict service use, the severity of an individual mental illness and overall functioning will need to be considered. The finding that men with SMI use less preventive services compared to women with SMI should be examined to determine what could be done to increase men's use of preventive services. The differential medical comorbidities between men and women with SMI may also be a confounder.[31] Receipt of preventive medical services depends on many factors including health perception,[32] perceived discrimination,[33] provider characteristics,[34] and available resources. In most health care systems, especially public ones, medical and mental health services are delivered separately, and, therefore, uninsured and underinsured patients who receive public mental health services may not receive public health services. The unavailability of medical resources in community mental health services has been shown to be an important barrier to general medical services.[35] Programs that include both medical

and mental health services to improve the medical care for patients with SMI have been tested but are still largely unavailable in most public health settings.[36,37]

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