



Health Disparities in Quality Indicators of Healthcare Among Adults with Mental Illness

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PREFACE

Quality Enhancement Research Initiative's (QUERI) Evidence-based Synthesis Program (ESP) was established to provide timely and accurate syntheses of targeted healthcare topics of particular importance to Veterans Affairs (VA) clinicians, managers and policymakers as they work to improve the health and healthcare of Veterans. The ESP disseminates these reports throughout the VA, and some evidence syntheses inform the clinical guidelines of large professional organizations.

QUERI provides funding for four ESP Centers and each Center has an active university affiliation. The ESP Centers generate evidence syntheses on important clinical practice topics, and these reports help:

- develop clinical policies informed by evidence;
- guide the implementation of effective services to improve patient outcomes and to support VA clinical practice guidelines and performance measures; and
- set the direction for future research to address gaps in clinical knowledge.

In 2009, the ESP Coordinating Center was created to expand the capacity of HSR&D Central Office and the four ESP sites by developing and maintaining program processes. In addition, the Center established a Steering Committee comprised of QUERI field-based investigators, VA Patient Care Services, Office of Quality and Performance, and Veterans Integrated Service Networks (VISN) Clinical Management Officers. The Steering Committee provides program oversight, guides strategic planning, coordinates dissemination activities, and develops collaborations with VA leadership to identify new ESP topics of importance to Veterans and the VA healthcare system.

Comments on this evidence report are welcome and can be sent to Nicole Floyd, ESP Coordinating Center Program Manager, at Nicole.Floyd@va.gov.

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EXECUTIVE SUMMARY

INTRODUCTION

The burden of mental illness among Veterans is substantial, and medical illnesses such as diabetes and cardiovascular disease affect a disproportionate number of people with mental illness. For example, more than 90% of people with serious mental illness (SMI) (*eg*, schizophrenia, bipolar disorder) have co-occurring chronic medical conditions such as hypertension, cardiovascular disease, hyperlipidemia, or diabetes. These chronic medical conditions, when co-occurring with mental illness, are more detrimental to overall health than in the general population, and people with comorbid mental illness and chronic medical conditions have higher hospitalization rates and healthcare costs than those with comparable chronic medical conditions alone. Disparities in health between people with and without mental illness are likely due to a combination of factors such as the effect of mental illness on an individual's capacity to maintain health, the adverse effects of medications used to treat mental illness, individual-level modifiable risk factors (*eg*, smoking, physical inactivity), and lower quality of healthcare.

Healthcare systems are complex organizations, and assessing quality within these organizations is challenging. One approach to evaluating quality of care within healthcare systems is the use of tracer conditions as quality indicators. This approach focuses on targeted prevalent conditions for which strong evidence and agreement concerning appropriate processes of care (*eg*, annual foot exams for patients with diabetes) and goals of therapy (*eg*, blood pressure <140/90) exist; making it possible to uncover deficits in complex healthcare systems. Chronic medical illnesses such as diabetes, heart disease, and hypertension are highly prevalent among VA patients: an estimated 72% have one or more chronic medical illnesses (compared to 40% to 50% of other U.S. adults), and over half have at least 2 such conditions. Thus, diabetes, hypertension, and ischemic heart disease may serve as ideal tracer conditions to assess quality in the Veterans Affairs (VA) healthcare system as a whole. In similar fashion, receipt of selected recommended preventive screenings and services provides an opportunity to examine system-level quality of care among certain subpopulations.

In order to guide future research and policy decisions for the VA, the VA Office of Health Equity partnered with the Evidence-based Synthesis Program (ESP) to conduct a systematic review of health disparities in quality indicators of healthcare among adults with mental illness. We evaluated comparative studies that assessed a broad range of preventive care and chronic disease management quality indicators to assess if, and to what extent, disparities in healthcare exist for individuals with mental illness.

METHODS

We conducted a primary review of the literature by systematically searching, reviewing, and analyzing the scientific evidence. We followed a standard protocol for all steps of this review. The final key questions (KQs) were:

KQ 1: Among adult patients, are there health disparities for those with mental illness compared to those without mental illness in the following areas:

- a. Receipt of appropriate preventive care services and indicated screening (*eg*, cancer screening, immunizations)?
- b. Management of chronic conditions (*eg*, quality indicators for diabetes care)?

KQ 2: For those with mental illness compared to those without mental illness, do any observed health disparities in preventive care, indicated screening, or chronic disease management vary based on race/ethnicity, Veteran status, geographic location, sex, or sexual orientation?

Data Sources and Searches

We developed our search strategy in consultation with 2 experienced search librarians. We conducted a primary search of MEDLINE® (via PubMed®), The Cochrane Library, Embase®, and PsycINFO® from 1994 to February 2014. We restricted the search to articles published from 1994 forward due to the limited use of performance measures prior to the mid-1990s. We used a combination of Medical Subject Heading (MeSH) keywords such as “Mental Disorders,” “Depressive Disorder,” “Diabetes Mellitus,” and “Colorectal Neoplasms,” and selected free-text terms (*eg*, psychotic disorders, eye exams, and vaccinations), to search titles and abstracts. We supplemented the electronic searches with a manual search of the reference lists of systematic and nonsystematic reviews, as well as a set of key primary articles.

Study Selection

Using prespecified inclusion and exclusion criteria, 2 trained investigators assessed titles and abstracts for relevance to the KQs. Full-text articles identified as potentially relevant were further examined by 2 investigators; disagreements were resolved through consensus. We included U.S.-based studies that provided comparative estimates for key healthcare quality indicators in insured adults with versus without the following mental health conditions: schizophrenia, schizoaffective disorder, bipolar disorder, major depression (and other depressive disorders), and posttraumatic stress disorder (PTSD).

Data Abstraction and Quality Assessment

Data from included articles were abstracted into standardized forms by a trained investigator and confirmed by a second investigator. Data elements abstracted included descriptors of populations, setting, measurement features, and outcomes. When data were incomplete or missing, we contacted authors to request the data. As these were observational studies, we used the Newcastle-Ottawa Scale (NOS) to rate study-level quality. The NOS rates a study on 3 broad perspectives: (1) the selection of the study groups; (2) the comparability of the groups based on analysis or design elements; and (3) the ascertainment of either the exposure or outcome of interest for case-control or cohort studies, respectively. Studies could get a total of 4 points for selection, 2 for comparability, and 3 for assessment of the outcome or exposure for a total of 9 points per study. While not explicitly stated in the NOS rating guidance, we used the following score ranges to qualitatively categorize the overall quality of the included observational studies: 0 to 4=poor quality; 5 to 7=fair quality; 8 to 9=high quality.

Data Synthesis and Analysis

When possible, we conducted quantitative synthesis (*ie*, meta-analysis). We determined the feasibility of meta-analysis based on the volume of relevant literature, requiring at least 3 studies to conduct quantitative synthesis; conceptual homogeneity of the studies (*eg*, whether the assembled mental health diagnoses were similar); and completeness of the reporting of results. We anticipated heterogeneity of effects and hypothesized that VA healthcare user status, sex, race/ethnicity, geographic location, and sexual orientation might be associated with variation in the estimates. We planned subgroup analyses to explore potential sources of heterogeneity by these moderators; however, we did not have sufficient studies to conduct these analyses. When meta-analysis was feasible, we combined outcomes using odds ratios (ORs). Because of the relatively small number of studies, we used a random-effects model with the Knapp and Hartung method to adjust the standard errors of the estimated coefficients. We evaluated statistical heterogeneity by visual inspection and Cochran's Q and I² statistics. We used the metafor package of the R statistical software.

When quantitative synthesis was not possible, we summarized findings qualitatively by documenting and identifying patterns in the interventions across conditions and outcome categories. We analyzed potential reasons for inconsistency in effects by identifying differences in study population, intervention, comparator, and outcome definitions. We gave more weight to the evidence from higher quality studies and focused on key differences between studies conducted inside and outside the VA healthcare system.

RESULTS

Results of Literature Search

Our search identified 3,964 potentially eligible citations, and 310 full-text articles were retrieved for further evaluation. After applying eligibility criteria, we included 26 articles describing 23 unique studies for data abstraction. These studies addressed cancer screening (n=7), receipt of immunizations (n=3), screening for tobacco use and referral for treatment (n=2), management of type 2 diabetes mellitus (n=14), management of hypertension (n=2), and management of ischemic heart disease (n=1). We restricted our search to studies conducted from 1994 forward, but we did not identify any relevant studies published before 2002 (publication date range: 2002 to 2012). Most of the included studies used cross-sectional (n=11) or retrospective cohort (n=10) designs. Half of studies (n=12) were conducted within the VA healthcare system. The majority described composite groups of subjects with a broad range of mental health disorders versus those without mental health disorders separately (n=17). In total, we identified 8 studies that addressed KQ 1a, 16 for KQ 1b, and only 2 for KQ 2.

Summary of Results for Key Questions

Overall, we found weak signals to support disparities in quality of care; however, results were inconsistent, and beyond diabetes care, the existing literature was sparse. Below we summarize the major findings, organized by KQ and targeted preventive service or chronic disease. We highlight key differences in findings between studies conducted inside the VA with VA users and those conducted outside the VA in community healthcare settings or with population-level datasets.

Key Question 1a: Disparities by Mental Health Status for Receipt of Appropriate Preventive Care Services, Indicated Screenings, and Management of Chronic Conditions

Cancer Screening

We identified one prospective cohort, 3 retrospective cohort, and 3 cross-sectional studies that addressed cancer screening among individuals with mental illness compared to those without mental illness. Most studies (n=4) addressed all 3 types of cancer screening. Total NOS scores ranged from 5 to 7, suggesting that most studies were of fair quality. While we had sufficiently homogeneous studies to conduct meta-analyses for studies addressing disparities in breast, cervical, or colorectal cancer screening among those with depressive disorders compared to those without depression, cervical cancer screening was the only area where the meta-analysis displayed low to moderate heterogeneity. Meta-analysis of 3 studies demonstrated that women with a diagnosis of depression were less likely to have cervical cancer screenings (OR 0.87; 95% confidence interval [CI], 0.77 to 0.98; $I^2=6.3\%$).

Existing evidence suggests small to moderate disparities in cancer screening for people with mental illness. Nearly all studies displayed a similar pattern of a negative association between having a mental health diagnosis and receipt of cancer screenings; however, several comparisons were not statically significant. The studies conducted that assessed the odds of breast, cervical, and colorectal cancer screening among VA users with and without mental illness displayed a similar pattern of negative associations. Results, however, were inconsistent. Two studies with VA users addressed all 3 cancers of interest among individuals with broadly defined mental illness compared to those without mental illness, and one assessed disparities in colorectal cancer screening only. The first VA study used national data on 113,495 VA users and reported significantly lower odds of mammography, Pap smears, and colorectal cancer screening among Veterans with mental illness. Yet, a second smaller VA study using only state-level data on 606 Veterans in the New Mexico VA healthcare system database reported no significant difference for mammography, Pap smears, or colorectal cancer screening among Veterans with mental illness. The last VA study provided estimates for receipt of colorectal cancer screening for those with PTSD, psychotic disorders, depression, or any mental health diagnosis. There was a significant and negative association between mental health diagnosis and receipt of colorectal cancer screening for all groups except those with PTSD.

Immunizations

We identified 3 cross-sectional studies that compared vaccination use of those with mental illness and those without. All 3 studies addressed influenza vaccination, while 2 also addressed pneumococcal vaccination. Total NOS scores ranged from 5 to 7, suggesting that most studies were of fair quality. Limited evidence exists to support small to moderate disparities in vaccination; however, results are inconsistent, and the existing U.S.-based literature is small. The 2 studies of older adult and high risk sub-populations found evidence to support disparities in receipt of influenza vaccinations, while another study found no significant differences in self-reported receipt of influenza vaccinations among a general population of adults. Of the 2 studies that assessed ever receiving pneumococcal vaccinations, one medical chart-based study among VA users reported that patients with a psychiatric diagnosis had a lower probability of receiving a pneumococcal vaccine than patients without a psychiatric diagnosis. In contrast, another

study conducted outside the VA reported that those with depression were no less likely to report receiving a pneumococcal vaccine than those without depression, but this study did not control for the presence of other mental illnesses in the comparator group.

Screening and Referral for Tobacco Use

Overall, there is limited comparative evidence to describe disparities in tobacco use processes of care indicators between those with mental illness and those without mental illness. We identified only 2 comparative studies that assessed screening for tobacco use and referral for smoking cessation treatment; no identified study directly reported on prescriptions for smoking cessation pharmacotherapy. Both studies received total NOS scores of 5, suggesting studies of fair quality. Both identified studies were conducted with VA users. The available evidence suggests that those with mental illness are more likely to be screened for tobacco use and referred for counseling than those without mental illness. This result is based on a single cross-sectional study. One cross-sectional study suggests that smokers with PTSD and depressive disorders are more likely to receive a physician's recommendation for smoking cessation medications than those without mental illness; smokers with PTSD were also more likely to report that a physician had discussed quitting methods with them. Smokers with schizophrenia report that they may be less likely to receive advice to quit from physicians compared to smokers without a mental health diagnosis; however, no significant differences were found for having a physician discuss quitting methods or having a physician recommend medication for smoking cessation. No differences were found between smokers with a diagnosis of bipolar disorder and those without a mental health diagnosis for receipt of smoking cessation services.

Key Question 1b: Disparities by Mental Health Status in Management of Chronic Conditions

Diabetes Care

We identified 14 studies (1 prospective cohort, 6 retrospective cohort, 7 cross-sectional) that met inclusion criteria and compared diabetes process of care outcomes (*eg*, glycated hemoglobin [HbA1c] testing, low-density lipoprotein cholesterol [LDL-C] at goal) among those with and without mental illness. All studies were of fair ($n=11$) to high ($n=3$) quality (NOS scores ≥ 5). Seven studies were conducted exclusively with patients who seek care in the VA healthcare system. Most studies addressed multiple quality indicators of diabetes. While several studies addressed depressive disorders, SMI, or composite groups of diabetic patients with mental illness, only one study assessed the specific impact of PTSD on diabetes quality of care indicators. Half of the studies were of moderate to high quality (NOS scores ≥ 7); however, most ($n=10$) did not adequately control for key potential confounders. We had sufficiently homogeneous studies to conduct 8 meta-analyses; however, all but one pooled analysis displayed high heterogeneity ($I^2 \geq 75\%$).

For most outcomes, results were inconsistent and suggested small to modest disparities in diabetes care for people with mental illness. We observed some qualitative differences in care patterns for studies conducted inside the VA healthcare system versus outside the VA healthcare system. For composite indicators of diabetes care, the one study conducted outside the VA reported a statistically significant and negative association, while 2 studies conducted with VA users reported mixed results for patients diagnosed with mental illnesses. There was a positive trend of more HbA1c monitoring for VA users with SMI compared to VA users without SMI,

but results were inconsistent in the non-VA studies. The trend was reversed for diabetic eye exams. The one VA study that assessed receipt of eye exams among diabetic VA users with SMI compared to those without mental illness reported that patients with SMI were statistically significantly less likely to received eye exams than VA users without mental illness. In contrast, the 2 studies that assessed receipt of eye exams outside the VA found that diabetic patients with SMI were more likely to receive eye exams than those without mental illness diagnoses, but only one estimate was statistically significant. Patterns for receipt of diabetic foot exams were similar inside and outside the VA; patients with mental illnesses were less likely to received foot exams compared to those without mental illness, but estimates were statistically significant only for those patients seeking care inside the VA. Three VA studies assessed the adequacy of LDL-C control among patients with SMI and found no significant differences between VA users with and without SMI. Yet, the one study that provided comparative estimates outside the VA reported significant and negative effects of SMI on achieving adequate LDL-C control. Patterns for receipt of diabetic foot exams were similar inside and outside the VA; patients with mental illness were less likely to receive foot exams compared to those without mental illness, but estimates were statistically significant only for those patients seeking care inside the VA.

Hypertension Care

There is limited comparative evidence to describe disparities in hypertension process of care indicators between those with mental illness and those without mental illness. We identified only 2 studies (1 retrospective cohort, 1 cross-sectional) that met inclusion criteria that compared the adequacy of blood pressure control for hypertensive persons among those with mental illness and those without mental illness. Quality ratings were 7 points and 6 points, suggesting fair quality studies. Both studies were conducted with VA healthcare users. These studies examined a set threshold (*ie*, blood pressure <140/90) to determine adequacy of blood pressure control. No statistically significant differences in adequacy of blood pressure control between individuals with and without mental illness diagnoses were reported in either study.

Ischemic Heart Disease Care

We identified only one study the met inclusion criteria and compared receipt of care post myocardial infarction between individuals with and without SMI. The included study received a total of 7 points on the NOS, suggesting fair quality. This study of a Medicaid population in one eastern state (Maryland) from 1994-2004 found no differences in receipt of appropriate pharmacotherapy or rate of invasive intervention procedures post myocardial infarction between individuals with and without SMI.

Key Question 2: Interaction Effect of Mental Health Status by Race/Ethnicity, Veteran Status, Geographic Location, Sex, or Sexual Orientation

We identified only one study that assessed the interaction of mental health status and key subgroups of interest (race/ethnicity and geographic setting) for process of care indicators for diabetes and hypertension. No significant differences were noted for either subgroup. Therefore, we conclude that there are limited data on the interaction effects of mental health status by key moderators. There were no analyses for the subgroups of interest in the eligible studies for cancer screening, immunizations, tobacco screening and referral, and ischemic heart disease. No identified studies compared groups by sex or even assessed sexual orientation.

DISCUSSION

Key Findings and Strength of Evidence

We identified 26 articles describing 23 unique, eligible studies that examined whether disparities in receipt of preventive care or management of chronic medical illnesses exist for patients with mental health disorders. Strength of evidence across all outcomes was low due to study design issues, heterogeneity in pooled estimates, inconsistencies in findings, and dearth of comparative studies in many areas of interest (*ie*, hypertension, immunizations, tobacco screening and referral, and ischemic heart disease). We observed some qualitative differences in care patterns for studies conducted inside the VA healthcare system versus outside the VA healthcare system.

Overall, the current state of the evidence regarding quality indicators of healthcare among individuals with mental illness is limited, due both to relatively few studies meeting our study criteria and the inconsistency of the results of the included studies. Variables potentially affecting inconsistency of study results were the variety of different mental disorders studied, the complexity of the interventions evaluated, and the degree of required involvement by various healthcare providers and patients in completing the range of screening and treatment procedures. Our findings are generally consistent with findings of prior comparative systematic reviews on the quality of medical care for people with and without mental illness. However, the relative lack of robust evidence supporting diminished quality of care delivered to individuals with mental illness should be interpreted cautiously. The tracer conditions (diabetes, ischemic heart disease, hypertension) and preventive services (cancer screening, screening and treatment referrals for tobacco use, immunizations) chosen for this study represent a very small proportion of the overall quality of healthcare indicators. Developing best practices for the effective and sensitive care of patients with complex medical and behavioral health risks and comorbidities will require cross-disciplinary collaboration and problem-solving, as well as cultural shifts within care environments in many cases.

Applicability

We selected studies that included adults with bipolar disorder, schizophrenia, schizoaffective disorder, major depressive disorder (or depressive disorders), and PTSD. We selected these mental health conditions because they are either common in (*eg*, depressive disorders) or costly for (*eg*, schizophrenia) the VA healthcare system. It is also important to note that we only included studies that recruited insured populations (or controlled for insurance status in analyses). These eligibility requirements may have excluded some studies; however, we sought to include studies that were of greatest applicability to the VA healthcare system. Finally, of the 23 studies in this review, 12 were conducted within the VA healthcare system with Veteran users. Thus, these findings have relatively high applicability VA populations.

Research Gaps/Future Research

This comprehensive review of the literature identified several gaps in the current state of the evidence that warrant future investigation. There is limited to no comparative evidence for people with PTSD. Also, no studies described the sexual orientation of samples. Lesbian, gay, and transgender patients with mental illness may be at elevated risk of disparities in receipt of

preventive services and guideline-concordant care for chronic medical illnesses. We also found inconsistent or insufficient comparative evidence for those with and without mental illness for these interventions or outcomes: ischemic heart disease care, screening and treatment for smoking cessation, immunizations, and hypertension. In addition, only one identified study explored key moderators of effects; therefore, further research is needed on the interaction of sex, race/ethnicity, Veteran status, sexual orientation, or geography with mental illness on process of healthcare indicators.

Conclusions

In this review, we found weak signals to support disparities in selected process of care indicators for those with mental illness compared to adults without mental illness; however, results were inconsistent. Moreover, beyond diabetes care, the existing literature was sparse. All identified studies were observational designs and most were of fair quality (NOS scores of 5 to 7). For observational studies, the strength of the evidence (SOE) is set initially at “low.” Since none of the outcomes met the upgrade criteria, the SOE for all outcomes are rated low or very low. While the majority of studies displayed negative associations between mental illness and quality indicators, only one meta-analysis of disparities in receiving cervical cancer screening was statistically significant. Most meta-analysis displayed high heterogeneity in the estimates likely due to small number of studies, differences in populations (*eg*, identification of those with current vs lifetime mental illness), and assessment of outcomes (*eg*, self-report versus claims data), and study design issues (*eg*, the covariates used in adjusted analysis). We observed some qualitative differences in care patterns for studies conducted inside the VA healthcare system versus outside the VA healthcare system. Although several of the included studies were conducted in VA user populations, there are notable gaps in research that the use of VA data may be well positioned to address.

ABBREVIATIONS TABLE

CI	Confidence interval
ESP	Evidence-based synthesis program
HbA1c	Glycated hemoglobin
KQ(s)	Key question(s)
LDL-C	Low-density lipoprotein cholesterol
MeSH	Medical Subject Heading
NOS	Newcastle-Ottawa Scale
OR(s)	Odds ratio(s)
PTSD	Posttraumatic stress disorder
SMI	Serious mental illness
SOE	Strength of evidence
VA	Veteran Affairs