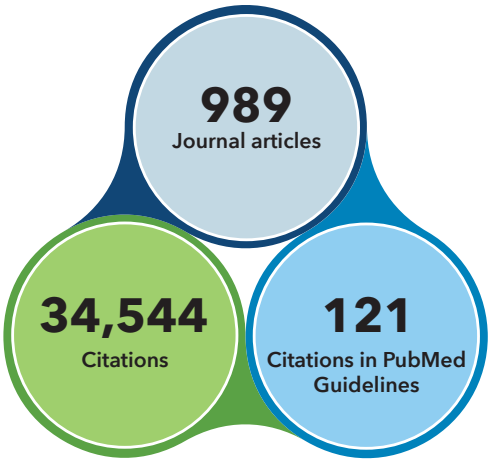
Kaiser Permanente Research Brief

Mental health

This brief summarizes the contributions of Kaiser Permanente Research since 2007 on the topic of mental health, including depression, anxiety, and other affective and stress disorders.

The Centers for Disease Control and Prevention defines mental health conditions as those characterized by alterations in thinking, feeling, mood, or behavior associated with distress or impaired functioning.[1] Anxiety disorders and depressive disorders are the first and second most common mental health conditions in the United States.[2] The CDC estimates that more than 50% of people in the United States will have a mental health condition at some point in their lifetime, and that 1 in 25 people lives with a serious mental illness such as schizophrenia, bipolar disorder, or major depression.[1] Suicide was the 12th leading cause of death in 2020, accounting for nearly 46,000 deaths in the United States.[1;3]

Kaiser Permanente publications related to mental health since 2007



Source: Kaiser Permanente Publications Library and Scite metrics, as of February 28, 2022.

Mental health is an important area of study for Kaiser Permanente Research. Scientists across the organization have used our rich and comprehensive data to advance knowledge in the areas of understanding risk, improving patient outcomes, and translating research findings into policy and practice. We have published nearly 1,000 articles related to mental health conditions since 2007; together, these articles have been cited almost 35,000 times.[4] These articles are the product of observational studies, randomized controlled trials, meta-analyses, and other studies led by Kaiser Permanente scientists. Our unique environment – a fully integrated care and coverage model in which our research scientists, clinicians, medical groups, and health plan leaders collaborate – lets us contribute generalizable knowledge about mental health, and many other research topics.

This brief summarizes a selection of the publications contained within the Kaiser Permanente Publications Library, which indexes journal articles and other publications authored by individuals affiliated with Kaiser Permanente. The work described in this brief originated from across Kaiser Permanente's 8 regions and was supported by a wide range of funding sources including internal research support as well as both governmental and nongovernmental extramural funding.

Understanding Risk

Who is at risk for developing mental health conditions?

Kaiser Permanente researchers have contributed to understanding risk factors for developing mental health conditions, including family history,[5-9] adverse life experiences (such as abuse, neglect, intimate partner violence),[10-18] and life course events (for example, childbirth, menopause).[19-21] For youth, depression risk has also been linked to parental depression.[22;23] Some severe medical conditions have also been linked to depression and suicidality (suicidal ideation, suicide plans, and suicide risk), such as eating disorders,[24] autism spectrum disorder,[25] psoriasis,[26-30] active dialysis,[31] chronic obstructive pulmonary disease (COPD),[32] and acute coronary syndrome events.[33] Recent analyses from the Mental Health Research Network also found that sleep disorders, HIV and AIDS, traumatic brain injuries, and multiple physical health problems increased the risk of suicide.[34;35] Kaiser Permanente scientists have also found higher levels of anxiety in children, greater depression and anxiety among adults, and increased use of mental health services during the COVID-19 pandemic,[36-39] though the implications of these mental health symptoms are unclear.[40] Other recent research has found increases in depression symptoms among adults during periods of economic recession.[41]

There is emerging evidence that some prenatal exposures may contribute to risk of mental health conditions for children. Our research has tentatively linked both maternal tobacco use during pregnancy[42] and maternal influenza[43] to bipolar disorder. Other studies have found associations between schizophrenia spectrum disorders in male offspring and perinatal exposure both to maternal stress[44] and to elevated maternal homocysteine (an amino acid) levels.[45]

What other health risks do people with mental health conditions face?

People with mental health conditions experience a range of health risks, including medication-related risks. Our research has demonstrated that people with bipolar disorders or schizophrenia

Reinforcing risks between select physical and mental health conditions

have greater odds of having medical comorbidities (2 or more co-occurring chronic conditions) and higher rates of cardiovascular mortality than people without these serious mental illnesses.[46-48] People with serious mental illnesses also experience greater risk of obesity and diabetes, both independently and because of the side effects of medications.[49;50] Recent Kaiser Permanente research has also found that patients with depression and unmet needs for mental health care use psychoactive medications, including opioids, more heavily than patients without mental health symptoms.[51-53] Other work has found that patients with major depression or bipolar disorder (though not patients diagnosed with schizophrenia) are more likely to be diagnosed with chronic non-cancer pain and to be prescribed opioid medications.[54]

There is also some evidence of a link between depression or anxiety and worse outcomes for some chronic conditions, including diabetes,[55-58] COPD,[59-61] and others.[62;63] These associations may reflect the impact of these mental health conditions on patients' abilities to complete self-management activities, such as taking medications as prescribed.[55;62]

Kaiser Permanente researchers have documented risks for fetuses exposed to some mental health medications in utero.[64,65] Understanding the risks of medication use during pregnancy has become increasingly important because the number of pregnancies exposed to some classes of mental health medications has been growing over time.[66]

Particularly among youth, there has been substantial controversy about the appropriateness and safety of some mental health medications.[67] There is evidence of a small increase in suicidality risk associated with certain medications,[68] although a large study involving Kaiser Permanente scientists found that reduced prescribing of antidepressants was associated with increased suicidal behavior among adolescents and young adults.[67] These findings have led to changes in the prescribing of these drugs to youth,[69] and have also prompted studies comparing effectiveness of different treatment pathways for youth who are not responsive to their initial prescribed treatment.[70]

Kaiser Permanente research scientists have also authored studies evaluating the risks of suicide and non-suicidal self-injury[71-75] and assessing screening methods for suicidality.[76] There is evidence of elevated suicide risk for adolescents following their initial diagnosis with a psychotic disorder,[77-79] as well as for adults with psychotic disorders and histories of suicidal ideation.[80] Our researchers have also demonstrated that patients with prior suicide attempts,[81] adolescents with treatment-resistant depression,[71] patients with chronic pain,[82] people treated for bipolar disorder,[73] patients with substance use disorders[83,84] or heavy alcohol use,[85] and elderly people experiencing depression[86] – among others – are at high risk for self-injury outcomes. Recent research has employed artificial intelligence methods to develop more accurate tools for monitoring depression treatment,[87;88] and to identify people at high risk for suicide attempts or death by suicide.[84,89-91] Our scientists have also explored genetic factors associated with risk for suicidal behavior.[92]

A meta-analysis found that participants in a prevention-oriented psychoeducational intervention using the "Coping With Depression" course had 38% LOWER RISK of developing a depressive disorder than controls.[96]

Improving Patient Outcomes

What strategies are effective in preventing mental health conditions?

Although opportunities for primary prevention of mental health conditions are limited, Kaiser Permanente researchers have assessed some prevention strategies for high-risk populations.

For example, recent studies demonstrated a decrease in newly-occurring depression among at-risk adolescents who participated in group cognitive behavioral therapy.[23;93-95] Researchers have also completed a meta-analysis of studies focused on the "Coping With Depression" psychoeducational intervention, which they found was effective as a preventive strategy to reduce the risk of major depression.[96] The link between environmental exposures (such as adverse childhood experiences or perinatal exposures) and mental health outcomes may offer an opportunity to prevent mental health conditions.[97] An ongoing randomized trial will evaluate "Guiding Good Choices," a parenting program aimed at preventing depression in adolescents.[98]

How does early identification of mental health conditions affect outcomes?

Screening for mental health conditions is essential to timely diagnosis. Our researchers have assessed the evidence for screening in studies focused on specific populations and conditions, including child and adolescent depression,[68;99] adult depression,[100] perinatal and postpartum depression,[19;101;102] suicidality,[76] and others.

A Kaiser Permanente clinical trial compared the effectiveness of 3 early intervention staffing models for adolescents reporting substance use and depression symptoms, and found that offering a behavioral clinician within primary care settings was the most effective model for controlling the progression of depression symptoms.[103] Early recognition of mental health

conditions is also important because of the risk of self-harm for patients with mood disorders.

Research including Kaiser Permanente and other integrated health organizations has demonstrated that most patients were seen in at least one health care setting in the year before suicide, but half did not receive a mental health diagnosis.[104] Simple questionnaires may identify people at high risk for suicide.[105;106] Kaiser Permanente researchers have collaborated with clinical leaders to implement systematic screening for suicide risk,[107] and have undertaken new efforts to explore and improve members' experience of screening.[108-110]

What are the key factors in effective treatment of people with mental health conditions?

Access to and engagement in treatment – An essential factor in treating mental health conditions is to engage individuals in treatment.[111] Many patients who might benefit from treatment do not receive it.

A recent Kaiser Permanente study assessed treatment initiation patterns for adults with depression. Researchers found low rates of treatment entry among patients for whom it was recommended (35.7% of newly diagnosed patients overall), with disparities among racial and ethnic groups.[112] Some of those disparities may reflect patients' treatment preferences, but some may reflect differing treatments provided by clinicians.[113] One study conducted by Kaiser Permanente scientists found that costs were a common barrier to use of mental health medications, while physician recommendations were helpful for increasing medication adherence.[114] Other work conducted by our scientists has suggested that use of marijuana may negatively impact engagement with psychiatric care in patients with depression,[115;116] and that patients living in rural areas experience greater challenges in access to mental health services.[117]

For adolescents, system-level barriers to accessing care have been described by our researchers, and include provider payment models, clinical linkages across disciplines, and confidentiality policies limiting information-sharing between disciplines.[118] Even among patients who seek treatment, outcomes are not consistent. For example, in one study of response to depression treatment in primary care, only 47% of patients experienced a large improvement in their symptoms after 6 months.[119]

Only 36% of patients newly diagnosed with depression initiated treatment within 90 days.[112]

47% of patients with depression receiving treatment in primary care experienced improvement in their depression symptoms after 6 months.[119]

Standard telephone, video-conferencing, and web-based **interventions are effective** for treating a range of mental health conditions.[123]

Stigma associated with mental health treatment can be a barrier to entry for some populations.[120;121] Recent research suggests that health information technologies may extend access to mental health care in many ways, including by offering treatment methods that patients may find more acceptable.[122;123] A qualitative study focused on youth with schizophrenia, schizoaffective disorder, bipolar disorder, or affective psychosis suggested several recommended themes for better engaging patients in treatment.[124]

Person-centered treatment with psychotherapy and medications – Many psychotherapeutic approaches are widely proven to be valuable – either alone or in combination with medications – for treating an array of specific populations and

Internet-delivered care management can help improve outcomes for patients with recurrent or chronic depression[134]

Patients randomized to 12-month treatment for recurrent or chronic depression		
Usual care and e-care (N=51)		**Usual care alone** (N=52)
Depression-free at 24 months		
42%		**30%**
Satisfaction with psychiatric care [5=most]		
4.42	**p=0.003**	**4.19**
Learned new coping skills [5=most]		
4.26	**p<0.001**	**3.72**
Gained confidence in coping ability [5=most]		
3.82	**p=0.06**	**3.52**

conditions.[125-130] In recent years, this has included web- and smartphone-based programs that show great promise.[122;131-137] Kaiser Permanente studies have also contributed to our understanding of the many complexities of medication treatment including combining medications, switching medications, and adjusting dosages.[70;138-141]

Ensuring that treatment is person-centered is an important issue for mental health care. Disparities in mental health treatment have been documented by our researchers.[112;142-145] However, it is not always clear whether these differences reflect variation in patient preferences for treatment; more research is needed in this area.

A recent Kaiser Permanente study that sought to better characterize patients' recovery objectives concluded that patients' goals are varied and change over time, and that services must be flexible to accommodate each patient's current priorities.[146] Recognizing progress in treatment through feedback-informed care – in which patient-reported symptoms are tracked over time and used to inform treatment decisions – is an example of partnering with patients to make shared decisions.

Overall health and wellness – The management of co-occurring health conditions and maintenance of general wellness is also essential to the care of people with mental health conditions. This includes addressing harmful health behaviors, such as smoking or problematic alcohol use, through screening and intervention programs.[147-152]

Our researchers have found some evidence of more complete use of recommended preventive services and better cardiometabolic risk-factor control among individuals with serious mental illnesses than in the general population,[153;154] possibly reflecting strong connectivity to care, and we have conducted studies of delivery system factors that can increase preventive care engagement among these patients.[155;156] Other work has offered encouraging results about the feasibility of engaging people with serious mental illnesses in self-management programs. Several Kaiser Permanente studies have described the development and testing of health promotion programs adapted specifically for people with serious mental illnesses, and found that the programs can successfully lead to weight loss and decreased cardiovascular risk.[49;157;158]

Translating Research Into Policy and Practice

Kaiser Permanente is a learning health care organization that works to systematically use research to inform and improve practice both within Kaiser Permanente and beyond. Kaiser Permanente researchers help lead the Mental Health Research Network, which is funded by the National Institute of Mental Health to improve mental health care by connecting research, practice, and policy.[159;160] The MHRN includes participating research centers from 14 health care systems, including 7 of Kaiser Permanente's regional entities.

MHRN has collaborated with health systems to

understand the relationship between suicidal ideation, depression, and subsequent suicide attempts.[72;105;161] Its collaborative response to evidence of persistent suicide risk for patients reporting thoughts of suicide on the standard screening tool (the PHQ-9) is an example of the impact possible from partnerships between researchers and health care organizations.[72;80;107] MHRN members put in place both practice changes and complementary research plans to address the previously unrecognized sustained suicide risk in this population.[107] The Joint Commission issued a recommendation that all patients be screened for suicidal ideation, based in part on the MHRN findings.[162]

Research, clinical, and operational partners within Kaiser Permanente have tested a range of interventions to identify and treat mental health conditions or improve outcomes for people with mental health conditions. These have included guideline-concordant cognitive behavioral therapy,[163] web- and smartphone-based psychotherapy methods,[134;164] telemonitoring of depression,[165;166] use of our electronic health record system to monitor depression treatment outcomes,[167] universal perinatal depression screening,[101] screening for depression among patients with cancer,[168] brief behavioral therapy,[169-171] reducing high-risk medication regimens,[69;70;172;173] web-based resources for suicide prevention,[174] use of telehealth technologies to enhance pediatric mental health referrals,[175] and using models of integrated care and collaborative care.[176-181] Work related to the launch, spread, and scale of the collaborative care model exemplifies Kaiser Permanente's ability to link research and clinical operations.[178;181-187] Implementation and evaluation of suicide screening and prevention programs is an ongoing focus in our organization.[106;188-190] Research conducted by our scientists has identified racial disparities in the accuracy of

Feedback-informed care: patients and therapists use patient-reported symptom information to track progress and improve outcomes

suicide-risk prediction models, suggesting a need to improve screening practices in minority patient populations.[191] During the early stages of the COVID-19 pandemic, the rapid shift to virtual care delivery allowed Kaiser Permanente to expand screening and detection of suicidal ideation.[192]

Our research contributes not only to changes in policy and practice within Kaiser Permanente, but has also advanced national understanding of mental health and wellness. Since 2007, Kaiser Permanente's research articles on mental health have been cited 121 times within recent statements and clinical practice guidelines. Our scientists also participated in a recent Banbury Forum on digital mental health treatment.[193]

In addition, our scientists have directly authored several practice guidelines and systematic reviews, including screening for and treatment of depression during pregnancy and the postnatal period,[19;194;195] screening for suicidality in primary care,[76] and screening for depression in primary care[100] and after acute coronary syndrome events.[196] We have also contributed to reviews and practice guidelines for adolescent depression screening and treatment in primary care,[68;197;198] as well as a recent statement on ketamine pharmacotherapy from the American Psychiatric Association.[199]

Kaiser Permanente's 185 research scientists and 1,530 support staff members are based at 9 research centers. There are currently 2,355 studies underway, including clinical trials. Since 2007, our research scientists have published more than 20,000 articles in peer reviewed journals. Kaiser Permanente currently serves 12.5 million members in 8 states and the District of Columbia.

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