

Evaluating the Impact & ROI of **PEER SUPPORT** on Health and Well-being



BROUGHT TO YOU BY 
Supportiv

TO LEARN MORE: www.supportiv.com



ABOUT THE AUTHOR

Dr. Rosemary Ku, MD, MBA, MPH

Dr. Rosemary Ku is a practicing physician with dual board certifications in Internal Medicine and Preventative Medicine. She studied Molecular Biology with a Certificate in Neuroscience at Princeton University and went on to complete her MD at Columbia University’s College of Physicians and Surgeons with residency at Kaiser Permanente in San Francisco. Rosemary also earned an MBA from Columbia Business School and a Masters in Public Health in Health Policy and Management from the University of California, Berkeley. She is mission-driven to radically improve upon outdated paradigms of care and help populations achieve holistic physical and mental health.

Special thanks to clinical psychologist Dr. Alejandro Martinez, PhD of Stanford University for his review and feedback.

TABLE OF CONTENTS

Executive Summary	4
Background	5
Effectiveness Of Peer Support As A Behavioral Health Intervention	9
Role of Peer Support As An Adjunct To Medical Treatment	13
Return On Investment (ROI) Of Peer Support Programs	16
Best Practices For Implementing A Peer Support Program	19
Areas For Further Research	23
Conclusion	25
References	26



EXECUTIVE SUMMARY

The healthcare system is designed to intervene when conditions become severe and is not equipped to address the challenges of daily life struggles. Peer support has been identified as an effective intervention to fill this gap, instill greater emotional well-being, and improve health outcomes for a wide range of mental and physical health issues. By increasing social connectedness and providing both emotional and tactical support for day-to-day stressors, peer support is a low-cost, effective service that can serve as a standalone offering or complementary to disease management programs.

Peer support programs have the potential to reduce mortality, improve quality of life, and reduce healthcare costs. Internet and mobile technology usage has become ubiquitous, and digital peer networks represent the next step in the evolution of peer support. The anonymity, scalability, and on-demand convenience of online peer support can increase engagement with hard-to-reach and high-risk populations. However, obtaining health information from peers online can lead to concerns over inaccurate information, hostility, and privacy. Peer support can be implemented in a variety of ways and some peer support programs are more effective than others.

The objective of this paper is to provide a better understanding of the clinical applications and impact of peer support programs. By exploring what has worked and what hasn't, we can determine a set of best practices when implementing a peer support program to maximize benefits to participants and minimize risk of harm. Lastly, peer support will evolve with advances in social networking and key areas for future research will be discussed.

BACKGROUND

Modern healthcare systems are built around disease-specific diagnosis and intervention protocols, commonly initiated in the provider's office or hospital. However, social determinants of health (SDoH) including loneliness, food security, stress, financial stability, and community engagement are not adequately addressed.¹ Due to lack of provider training, insufficient healthcare personnel and resources, and historically low prioritization of SDoH, the healthcare industry is inadequately equipped to provide the necessary support for daily life struggles. This leads to lower quality of life, decreased productivity, excess stress, and sub-optimal health outcomes. Peer support has been identified as a powerful tool to fill this gap by leveraging meaningful social connections to improve health and well-being.



Peer support is an evidence-based intervention built upon the following social and behavioral theories: social support, experiential knowledge, helper therapy principle, social learning theory, social comparison theory, and self-determination theory.

Peer support is a “*system of giving and receiving help founded on key principles of respect, shared responsibility, and mutual agreement of what is helpful.*”² Participants are helping one another or expressing themselves in a largely unstructured manner that has no direct clinical intervention.³ Although peer support does not rely on specific clinical protocols, it is an evidence-based intervention built upon the following social and behavioral theories: social support, experiential knowledge, helper therapy principle, social learning theory, social comparison theory, and self-determination theory.⁴ These components lead to greater

empowerment by providing hope, sense of personal responsibility, and advocacy of self and community.⁵ In addition, the relationship of peers is characterized by trust, acceptance, understanding, and empathy⁶; which are components that the healthcare industry strives for but too often misses. Participants in peer support programs have noted that the wide range of support available is different and complementary to the clinical care they receive from healthcare providers.⁷

Peer support can be administered in a multitude of ways: one-to-one or group, in-person or digital, unfacilitated or led by moderators who could be professionals or peers, program-based or unstructured, synchronous or asynchronous, and public or private. Despite this diversity of program types, there are common themes for why this model works across a range of user demographics and health conditions.



Loneliness is often associated with chronic physical and mental health conditions, leading to a downward spiral with each exacerbating the other.

First, peer support provides a social forum for voluntarily expressing emotions, struggles, fears, and life challenges that is often lacking in modern life. Three in five Americans report feeling lonely⁸, which can be more dangerous than obesity and as damaging to health as smoking 15 cigarettes a day.^{9,10} Loneliness is often associated with chronic physical and mental health conditions, leading to a downward spiral

with each exacerbating the other.¹¹⁻¹³ Social isolation increases the likelihood of mortality by about 30%, but strong relationships have a protective effect and increase survival by 50%.^{14,15} Social connectedness is critical because not acknowledging or suppressing emotions is correlated with decreased life satisfaction, depression, anxiety, and greater psychological distress.¹⁶ Conversely, habitually accepting emotions and thoughts without judgement is linked to greater resilience, better psychological health, and reductions in depression and anxiety.¹⁷

Second, peer support provides opportunities for participants to assist others who are going through difficult situations. Many studies have shown that helping others regardless of receiving any support in return has great psychological benefit, which was coined the helper therapy principle by Riessman back in 1965.¹⁸ For adults, giving to others through activities such as volunteering or providing financial or emotional support improves well-being and reduces mortality.¹⁹ Even for adolescents, helping others improves mood regardless of any support received, and the benefit is greatest for those who are most depressed.²⁰

Third, there is evidence that listening to others who have experienced similar struggles even without actively communicating back can improve

psychological well-being. Users who consume information from online support groups but do not actively post report the same level of improvement in areas of empowerment including feeling better informed, having greater acceptance of their condition, improved self-esteem, and increased optimism and control.²¹ Also, the self-reflection that occurs as a response to feedback from peer supporters creates a therapeutic feedback loop.²²

Although models of peer support have been around before the advent of the internet, the rise of internet use, social media, and online social networking have dramatically changed the way people find information and communicate. Today, 80% of internet users go online for health information²³ and there are now more opportunities than ever before to connect with peers worldwide. Research has shown that online exchange of personal experiences can effectively build relationships with people that are unknown in a virtual environment.²⁴ The most common reasons why people seek health-related online peer support are to gather information about one's health, provide support to others, improve coping, and to feel included. Additional motivators include reduced stigma due to anonymity and network expansion for those with limited mobility.^{25,26} Of note, inclusiveness was the strongest predictor of perceived helpfulness of online peer support,²⁵ and a digital peer network can foster a sense of community just as, if not more, effectively than in-person interactions.



Utilizing the internet or mobile technology to facilitate peer support has many advantages over in-person interactions including anonymity, access to much a larger network, and on-demand access from any location.

Utilizing the internet or mobile technology to facilitate peer support has many advantages over in-person interactions including anonymity, access to much a larger network, and on-demand access from any location. These features of online peer support can be leveraged to increase engagement of high-risk individuals. People with stigmatized illnesses are more likely to use the internet for health information and seek care based on their findings.²⁷ A platform that provides confidential emotional support

with synchronous and asynchronous communication has even played a significant role in suicide prevention.²⁸ Given the larger network that can

be accessed digitally, online support can be more tailored to meet unique needs and circumstances that in-person options may not provide.²⁹ Further, online peer support can overcome barriers of scheduling and arranging transportation, which are often cited as reasons for why people stop attending in-person peer support meetings.³⁰



The sense of belonging and access to a social network for both emotional support and tactical resources can help address some of the most debilitating and costly chronic mental and physical health conditions today.

Many innovations in digital health still rely on getting advice from one's doctor but the core problem is that many people do not enjoy going to the doctor.³¹ Patient-provider relationships are built around specific diseases. For instance, patients will see a cardiologist for congestive heart failure and a dermatologist for acne. People generally don't want to be identified or defined by their disease(s), and this condition-centric approach impedes holistic care. Life stressors such as relationship problems, work stress, financial pressures,

and caregiving are not disease-specific. Having the same condition is not a prerequisite for receiving or offering support on these topics. The sense of belonging and access to a social network for both emotional support and tactical resources can help address some of the most debilitating and costly chronic mental and physical health conditions today.

EFFECTIVENESS OF PEER SUPPORT AS A BEHAVIORAL HEALTH INTERVENTION

Mental illness affects nearly one in five adults in the United States and half of the adolescent population has experienced a mental health condition at some point in their lives.³² Limited access to care, non-adherence, and treatment failure are common barriers to recovery.³³⁻³⁵ Over half of people with mental illness do not receive medical care for their condition. Of those who attempt to get the care they need, one out of five are not successful due to lack of adequate insurance, access to providers, access to the appropriate treatment type, and financial limitations.³⁶ Even when they do receive care, dropping out of treatment is common, which leads to worsening of symptoms and high-cost utilization in hospitals and emergency rooms.³⁷



Peer support is particularly important in mental health programs as it allows people to overcome the social isolation caused not only by their illness, which can make in-person interactions difficult, but also by the isolation caused by stigma and discrimination.

Peer support was introduced to mental health treatment in the 1990s and has been found to increase hope and the ability to make positive changes in one's life, improve self-care, create a sense of community and belonging, and increase life satisfaction.⁶ Further, peer support has been shown to reduce symptoms of mental illness and substance abuse over time and subsequently reduce hospitalizations and overutilization of healthcare services.³⁸ Peer support is particularly important in mental health programs as it allows people to overcome the social isolation caused not only by their illness, which can make in-person interactions difficult, but also by

the isolation caused by stigma and discrimination.³⁸ Participants exchange advice on how to negotiate daily life struggles beyond those directly related to disease management and learn that it is possible to go from being controlled by one's illness to taking control over the illness itself.⁶ Moreover,

peer support directly contributes to the protective factors for mental well-being by enhancing control, increasing resilience and community assets, and facilitating participation and promoting inclusion.³⁹



In a meta-analysis of randomized control trials (RCTs) that compared peer support to usual care for depression, peer support was significantly more effective for reducing depression scores. Further, peer support was as effective as group cognitive behavioral therapy (CBT).

Peer support, even by itself, can be a powerful treatment for mental illness. In a meta-analysis of randomized control trials (RCTs) that compared peer support to usual care for depression, peer support was significantly more effective for reducing depression scores. Further, peer support was as effective as group cognitive behavioral therapy (CBT). The authors noted that the magnitude of improvement seen from peer support in this study were similar to those of psychotherapy and antidepressant medications.⁴⁰ This finding indicates that peer support could be a clinically effective

standalone treatment for depression, on par or possibly more effective than the traditional standard of care.

Peer support has been shown to be clinically effective for a range of mental health conditions. For those with severe mental illness including psychosis, schizophrenia or bipolar disorders, peer support increased hope, recovery, and empowerment.^{41,42} Similar benefits have been found for people with post-traumatic stress disorder.⁴³ Peer support also reduces the risk of postpartum depression and has been recommended as a key prevention strategy.⁴⁴⁻⁴⁶ The effectiveness of peer support for a variety of mental health conditions is expected due to the huge amount of symptom overlap among diagnoses. Based on the latest research on the value of the Diagnostic and Statistical Manual (DSM), experts found that focusing on a specific diagnosis minimizes the impact of life trauma and individual experiences on mental health, and may not be helpful in directing appropriate treatment.⁴⁷ Peer support does not have to be disease-specific to address these underlying causes and effects of mental illness on everyday life.

As a result of these benefits, peer support has been identified as one of the 10 Fundamental Components of Recovery by the Substance Abuse and Mental Health Services Administration.⁴⁸

SAMHSA states, “Mutual support and mutual aid groups, including the sharing of experiential knowledge and skills, as well as social learning, play an invaluable role in recovery. Peers encourage and engage other peers and provide each other with a vital sense of belonging, supportive relationships, valued roles, and community. Through helping others and giving back to the community, one helps one’s self. Peer-operated supports and services provide important resources to assist people along their journeys of recovery and wellness.”

Furthermore, peer support services are now widely reimbursable as part of recovery support services for both mental health and substance use disorders.⁴⁹

Given the social isolation and, at times, low willingness to seek care with mental illness, online peer networks have been identified as a new strategy to engage this high-risk population. Surveys have demonstrated a high level of acceptance and interest in using mobile technology to enhance the delivery of peer support services.⁵⁰ Digital interactions may even be preferred over in-person meetings because they offer more control in that users can choose their level of engagement and be less triggered by social anxiety.⁵¹ The anonymity can also help with social bonding for those who have trouble with face-to-face social interactions.⁵²



In a study of online support group users for depression, 95% reported that participation improved their symptoms.

In a study of online support group users for depression, 95% reported that participation improved their symptoms. The users were mostly women (79%) with a median age of 40. Over half said that the online group prompted them to ask their provider a question, and over one-quarter of them reported a medication change as a result of advice received online. At six months, 73%

were still participating and the majority of users continued with in-person depression treatment throughout the duration of the study. Frequent users

with depression were five times more likely to experience resolution of their depression compared to less frequent users.⁵³

Peer support is also a key component of recovery from substance abuse disorders. Alcoholics Anonymous (AA) is perhaps the most widely recognized peer support program for addiction. However, the religious nature of the 12-step approach can be a barrier to engagement and less structured peer support programs have been shown to be beneficial to people with substance use disorders.⁵⁴ In several large reviews of the benefits of peer support and substance use disorders, peer support appears to decrease substance use, increase treatment engagement and satisfaction, decrease human immunodeficiency virus (HIV)/ Hepatitis C high risk behaviors, decrease cravings, increase self-efficacy, increase abstinence, reduce hospital readmissions, promote greater adherence to post-discharge care plans, reduce relapse, and decrease return to homelessness.⁵⁴⁻⁵⁷ Peer support has also been shown to reduce cigarette use and increased abstinence from smoking.^{58,59}

Despite the high prevalence of mental illness in adolescents, their needs are often not adequately addressed.⁶⁰ Youth are less likely to seek care overall but additional barriers to mental healthcare include concerns over confidentiality and lack of knowledge or access to services. When they do seek care, it is generally from the people they trust such as friends and family.⁶¹ Online peer support is a compelling strategy to overcome these barriers and reduce stigma as the majority of youth already use digital tools to connect with other people.⁶² Among 18-24 year olds with mental illness, 94% reported participating in online social networks. Those with mental illness were more likely than those without to seek online social networks to increase connectivity, make friends, and access resources on independent living skills and overcoming social isolation.⁶³

ROLE OF PEER SUPPORT AS AN ADJUNCT TO MEDICAL TREATMENT

Today in the US, 60% of adults have at least one chronic condition and over 40% have two or more.⁶⁴ Controlling these conditions is a top priority to reduce healthcare costs, morbidity, and mortality. Peer support has been identified as an important strategy to improve the quality and efficiency of healthcare and should be considered by healthcare providers, health systems, patient-centered medical homes, and commercial and government payers.^{65,66} Further, the internet has been recognized as a potential resource to engage high risk individuals with chronic conditions, especially those who are difficult to access with in-person intervention. People with chronic diseases are more likely to have used an online peer group compared to those who are healthy, and over half of online support group users with chronic conditions have never used in-person support. Among those with chronic conditions, online support is most commonly used by people with depression, anxiety, stroke, diabetes, cancer, and arthritis.⁶⁷

Diabetes affects over 30 million people in the US, is the seventh leading cause of death, and costs over \$300 billion dollars each year.^{68,69} Online peer support for diabetes has increased dramatically over time, and Facebook has become a popular forum where people can share personal health information, receive health guidance, and receive emotional support. In



These findings demonstrate the support of online social networks such as Facebook, but also show how they can provide misleading information or take advantage of vulnerable users seeking health improvement.

a qualitative analysis of posts on diabetes-related Facebook groups, Greene et al⁷⁰ found that nearly one-third of the posts had the intention of providing emotional support to others. About two-thirds of posts provided unsolicited information with over one-quarter of the posts including some form of promotional advertising. Inaccurate information was typically associated with ads. These findings demonstrate the support of online social networks such as Facebook, but also show how they can provide misleading information or take advantage of vulnerable users seeking health improvement.

Peer support can also lead to quantitative improvements in diabetes management. In an RCT of people with type 2 diabetes who were randomized to either a reciprocal peer support program or nurse care management, those who participated in peer support had an average decrease in A1c of 0.3%. The group that received the nurse care management actually had an increase in A1c of the same magnitude, and the difference between groups of 0.6% was statistically significant.⁷¹ A secondary analysis of this research found that outcomes were greater for those who had more diabetes distress at baseline, suggesting that peer support was more effective for those who needed it the most.⁷²

In a large meta-analysis of RCTs, peer support participation led to a statistically significant A1c reduction of 0.5%. This improvement was slightly higher for Hispanics and minority populations.⁷³ This is a clinically significant reduction and on par with what can be observed through medication management or intensive lifestyle change. Peer support has also been shown to reduce blood pressure, improve self-efficacy and quality of life, and reduce distress in people with diabetes.⁷³⁻⁷⁵ Diabetes distress is associated with increased mortality, poor disease management, and work absenteeism.^{76,77}

Peer support has been shown to improve outcomes in a variety of other chronic conditions. In studies of online peer support groups for breast cancer, usage has consistently been associated with improvement of depression, reduction of cancer-related trauma, and psychological well-being.⁷⁸⁻⁸⁰ For people with HIV, greater participation in online support groups was associated with greater empowerment and optimism, decreased loneliness and depression, and improved medication adherence.^{81,82} Benefits of peer support have also been observed for infertility,⁸³ hearing loss,⁸⁴ and chronic pain.⁸⁵

Mental illness is a common comorbid condition to other chronic diseases. Those with mental health conditions are at higher risk of obesity, kidney disease, hepatitis, and HIV. This elevated risk is thought to be mediated by lifestyle behaviors, medication side effects, socioeconomic risk factors, less use of preventive health services, limited access to high quality medical care, and decreased ability to manage chronic conditions.⁸⁶ Compared to those who receive usual care, those in a disease management program



Compared to those who receive usual care, those in a disease management program with peer support showed improved mental health recovery scores and greater patient activation.

with peer support showed improved mental health recovery scores and greater patient activation in as little as three months.⁸⁷ Patient activation is a measure of ability to self-manage illnesses and healthcare visits and is associated with improved lifestyle behaviors, medication adherence, and lower risk of hospitalization and emergency room utilization in those with chronic conditions.⁸⁸⁻⁹⁰

In addition, peer networks can be impactful for caregiver support. Nearly 70 million people in the US are caregivers and spend on average 20 hours per week tending to the needs of their loved ones. The time and emotional toll associated with caregiving can lead to marital conflict, missed days at work or reduced productivity, exiting the workforce, and financial strain.⁹¹ Peer support can help caregivers cope with the daily stressors and leverage the lived experience of others, especially for caregivers of people with mental illness and dementia.^{92,93} Predictors of greater online support group use were caregivers with the most caregiving demands, neurological or psychiatric conditions in the person requiring care, and caregiver age over 50.⁹⁴ These programs are generally viewed favorably and contribute to greater emotional well-being, improved quality of life, reduced distress and symptoms of trauma, and greater confidence with healthcare decision-making and care plan adherence.⁹⁴

RETURN ON INVESTMENT (ROI) OF PEER SUPPORT PROGRAMS



Social isolation is a driver of excess healthcare utilization, and it has been posited that those who are lonely seek out medical care to satisfy their need for social connection.



Loneliness is associated with worse self-reported physical and mental health, increased utilization of primary care, increased utilization of emergency rooms and urgent care, and increased hospitalizations.

Social isolation is not just an individual issue but a major public health concern with significant economic consequences.⁹⁵ In a large systematic review, loneliness was associated with worse outcomes for numerous chronic physical conditions including chronic back pain, chronic obstructive pulmonary disease (COPD), depression, stroke, cardiovascular disease, diabetes, heart failure, cognitive decline, and obesity.¹¹ However, irrespective of health status, social isolation is a driver of excess healthcare utilization, and it has been posited that those who are lonely seek out medical care to satisfy their need for social connection.^{96,97} Loneliness is associated with worse self-reported physical and mental health, increased utilization of primary care, increased utilization of emergency rooms and urgent care, and increased hospitalizations.⁹⁸ In Dallas, TX a study of emergency room visits found that over 5,000 visits were attributed to only 80 patients and the top

reason for overutilization was “lack of relationships and support structure.”⁹⁹ Furthermore, among older adults, those who are socially isolated cost \$1,608 more annually than those who are socially connected, due to expenditures for inpatient care and skilled nursing facilities.¹⁰⁰

By increasing social connectivity, peer support could be an integral low cost intervention¹⁰¹ to help contain healthcare spend. Peer support programs have the potential to reduce length of hospital stay of chronic physical conditions such as diabetes.¹⁰² Similarly, Optum’s peer support services have demonstrated a 32% reduction in hospitalizations over five

years and a 32% reduction in 30-day admissions. They have also used peer support to help with transitions from hospital discharge back to the community and subsequently observed over 60% reduction in inpatient days.¹⁰³

The potential cost savings are particularly compelling for behavioral health issues. In an RCT of patients with severe mental illness who had been hospitalized at least three times in the past 18 months, patients were randomized to usual care or usual care plus a peer mentor. The group with the peer mentor had fewer hospitalizations and hospital days were nearly half of the control group (10 vs. 19 days).¹⁰⁴ This finding is consistent with other research that has shown reductions in readmissions and increases in likelihood of crisis stabilization with peer support.^{105,106} In addition to savings in acute care for mental illness, peer support could also save over \$5,000 per person annually in day treatment costs¹⁰⁷ and reduce overall behavioral health costs by nearly 50% (from \$9,999 to \$5,292 per person).¹⁰³

Much of the cost associated with mental illness and other chronic conditions come from lost productivity, including absenteeism and presenteeism.¹⁰⁸⁻¹¹⁰ Cigna reports that loneliness decreases productivity through lower quality work, decreased employee engagement, and lower retention. Their research also found that lonely employees are twice as likely to miss work due to illness and five times more likely to miss work due to stress.^{8,111} Aside from the direct economic benefits of reducing high-cost healthcare utilization,



Peer support has the potential to generate cost-savings by reducing overutilization, decreasing hospital readmissions, reducing inpatient days, improving self-management of chronic physical and behavioral health conditions, and increasing productivity.

peer support programs may reduce indirect costs and improve productivity. Peer support has been shown to reduce absenteeism related to alcohol dependence,¹¹² improve management of chronic health conditions⁷³ so that fewer days of work are missed, and can support caregivers so they can maintain productivity.^{91,92,94}

Peer support has the potential to generate cost-savings by reducing overutilization, decreasing hospital readmissions, reducing inpatient

days, improving self-management of chronic physical and behavioral health conditions, and increasing productivity. Longer term studies are necessary to fully understand these economic benefits. Moreover, the return on investment (ROI) of specifically digital peer networks needs to be researched. Given the widespread use of online and mobile technology, low implementation costs, and low requirement for personnel resources; digital peer support may become the dominant and most cost-effective modality of this intervention.

BEST PRACTICES FOR IMPLEMENTING A PEER SUPPORT PROGRAM

Given the broad range of how peer support programs can be administered, it can be daunting to plan how to implement a program. Further, internally developing a peer support solution can be challenging with barriers to trust and limited personnel resources including those for training and supervision.¹¹³ Outsourcing peer support services is time and cost-efficient and can drive greater engagement. By examining what has worked and what hasn't from the available research, we can determine a set of best practices to consider while implementing a peer support program.

When designing a peer support program, one of the first steps is to determine how the program will be delivered. The choice between a digital or in-person program is directed mostly by the culture and logistical requirements of an organization. In populations where people are most comfortable with face-to-face interactions or are uncomfortable with mobile technology, in-person may be the first option, but transportation and time conflicts are commonly cited reasons for discontinuing participation in peer support programs.³⁰ Digital resources have been especially effective in rural communities and those with limited mobility.^{25,114} Further, in-person interactions do not provide anonymity and might not be available during times of greatest need. Anonymity can be especially important if users are discussing mental health or stigmatized issues.²⁷ For populations that are dispersed geographically or have a high level of comfort with digital communication and telemedicine, the convenience of an on-demand peer network might be more appealing and drive greater engagement. In-person and digital peer support options are not mutually exclusive and can be complementary when offered together.¹¹⁵

The growth of internet use and digital social networks has allowed people to find more information and connect more easily worldwide. Approximately 7% of Google's searches are related to health, equating to more than 1 billion searches daily.¹¹⁶ However, online health resources are generally not regulated for safety or accuracy.¹¹⁷ Social media use for

healthcare information can lead to shorter and suboptimal relationships between patients and providers.¹¹⁸ While free of cost, advising a population to seek support online without direction can lead to worse outcomes. Online communication with people who are personally unfamiliar carries risk of disrespectful or hostile behavior, inaccurate information, and distribution of medical advice from people who are not qualified.^{4,119} This can lead to worse emotional health, self-doubt, and potentially dangerous health outcomes. Thought leaders have recognized that online communication tools can be highly valuable for facilitating peer support but raise concerns that users might share and adopt negative behaviors in addition to positive ones.^{51,65}



Incorporating moderators into a peer support program ensures positive interactions and maximizes the benefits of participation.

Incorporating moderators into a peer support program ensures positive interactions and maximizes the benefits of participation. In an RCT of individuals with schizophrenia spectrum or affective disorders, participation in internet support groups did not show improved well-being. In fact, those who participated more in the online support groups reported higher levels of psychological distress.¹¹⁹ However, the internet-based support groups were not

moderated, possibly limiting the effectiveness of the online experience.^{80,120} Although there is no clear evidence that virtual communities cause harm,¹²¹ using moderators to facilitate discussion in peer groups is an effective strategy to minimize this risk.²² Moderators must be rigorously selected, trained, and supervised. To ensure continued high quality of care and development of their skills, they should have regular opportunities for feedback and continuing education. Protocols for remediation and disciplinary action for poor performance need to be in place to protect the safety of participants.

Maintaining high engagement is another key factor in program success. In a study on in-person support group participation for those with mental illness, the authors found improvement in self-esteem and quality of life but minimal improvement in mental health symptoms. However, over the course of 18 months, the frequency of communicating with group members declined from 1-2 times per month to 1-2 times per year.³⁰ This low level of



Higher levels of engagement in online support groups such as posting or responding to messages is related to better outcomes, and more frequent users of online peer support groups tend to have greater reduction in depressive symptoms.

engagement likely contributed to the modest outcomes. Several studies have shown that peer support is more effective for users who are highly engaged. Greater participation in peer support was associated with greater recovery and quality of life.¹²² Higher levels of engagement in online support groups such as posting or responding to messages is related to better outcomes,²² and more frequent users of online peer support groups tend to have greater reduction in depressive symptoms.¹²³

Thoughtful user experience and product design can help drive engagement with a diverse population, especially for those

who tend to engage less with health systems such as older men.¹²⁴ Also, providing 24/7 on-demand availability can help attract participants who need a solution outside of normal business hours or prefer the convenience of accessing the peer group whenever there is a desire to connect with others. In addition, finding a solution with adequate scalability is important for providing a diversity of health and life experiences that peers can draw upon to help one another. Furthermore, a secure and independent third-party that does not share individual data with the health plan or employer can drive engagement by reducing privacy concerns. For employers, this separation of personal health information also ensures legal compliance.

Peer support is not one-size fits all, and an individual's needs can vary day to day. Therefore, having access to a range of resources including education and self-help resources, opportunities to actively communicate in the peer support network, and care escalation during times of crisis ensure that a platform can be relevant to a large portion of the population at any given time. The technology of a digital peer support platform creates an opportunity for seamless care escalation if a user shows signs of acute distress and needs immediate attention. This could be done through integration with a 24/7 nurse hotline, telemedicine services, or the user's healthcare provider. Moderators could be trained to facilitate these hand-offs or suggest other services offered by the participant's health plan or employer.



Having access to a range of resources including education and self-help resources, opportunities to actively communicate in the peer support network, and care escalation during times of crisis ensure that a platform can be relevant to a large portion of the population at any given time.

Digital communication also allows for the application of natural language processing (NLP) and artificial intelligence (AI) to automatically infer mental or physical health needs.²² This technology would be instrumental for early identification and intervention of health conditions before they worsen, management of crisis situations, or even close gaps in care. Moreover, once a participant is comfortable expressing emotions and struggles on a given platform, the same platform could be used to engage him or her in higher levels of care or additional health resources when necessary. By already establishing trust and empathy, the barriers to entry to other forms of healthcare are likely lowered.

Below is a summary of the best practices to consider when implementing a peer support program:

1. Determine whether an in-person and/or digital peer support solution is the best fit for your population based on their needs, preferences, and culture. Facilitate peer support with vetted and trained moderators who are closely supervised for adherence to ethical standards.
2. Maximize engagement with thoughtful user experience design, 24/7 accessibility, and scalability.
3. Adhere to strict privacy and security standards.
4. Include resources for education, self-help, peer interaction, and care escalation.

AREAS FOR FURTHER RESEARCH

As peer support programs gain popularity, there are several areas for further study to better understand the impact of this intervention. One of the largest gaps in research is rigorously comparing different types of peer support. There is a paucity of high quality RCTs¹²³ and large systematic reviews typically include studies across a variety of peer support formats that are limited by suboptimal research designs and small sample sizes.^{41,123,125,126} The study of multi-component interventions makes it difficult to isolate the effect of peer support¹²¹ and more research on peer support through mobile applications is needed.¹²⁷ There is no definitive understanding of what format of peer support is the most effective overall, or for specific populations.

Another area that needs greater exploration is the impact of consumer-generated support groups. Experimental peer support platforms (e.g. private bulletin board for study participants) have delivered only modest benefits but do not produce the same social environment as self-initiated groups.^{120,128}

Further research needs to move beyond focusing on programs where peers are providers of service, which is the typical model for payer reimbursement.⁴⁹ Experts on the psychology of peer support highlight the importance of mutuality and reciprocity and have argued against the service model because it does not fully replicate community relationships.⁵ Mutuality suggests that the roles of helper and helpee are fluid and lead to exchanges of both vulnerability and support, creating a sense of true belonging rather than mere integration. This dynamic is difficult to create experimentally and is not captured when a peer moves into a more formal “mentor” role in a service model. Moving from a helpee to a helper can instill a sense of confidence but can also lead to an abuse of power. A hierarchical approach to peer support could sabotage self-directed goal setting behavior if goals are imposed rather than freely self-generated.

The majority of research on the benefits of peer support is conducted for less than a year.^{41,123,125,126} Use of online peer support is associated with lower levels of depression even in those without depression or other

illnesses, suggesting that usage might be protective for mental health.¹²³ Collecting more longitudinal data on health outcomes, incidence of disease development, and health maintenance behaviors could offer insights on whether peer support contributes to disease prevention. This longitudinal data can also provide greater understanding of the user and program variables most correlated with better health outcomes, lower healthcare spend, improved emotional health, and greater productivity. These findings could ultimately be used to design more precision peer support interventions.



A digital peer support platform could serve as a triage point to get people to the right level of care at the right time.

Patient activation was found to be a major benefit of peer support.¹²⁵ Therefore, it is possible that a digital peer support platform could serve as a triage point to get people to the right level of care at the right time. It would be interesting to study whether this type of program could impact utilization of other healthcare services or employee benefits such as telemedicine or employee assistance programs (EAPs).

Lastly, much research was conducted over a decade ago, but internet and social media usage has increased dramatically over that time. Researchers have recommended that studies for review be limited to those conducted after 2012 in order for the findings to be relevant to the current healthcare and technology landscape.¹²⁹ Technological advances now allow for scalability not previously seen in community-based settings, and the additional positive impact of hyper-targeted matching among peers for unity of shared experience is unknown. It's imperative that we study the latest technology in real-life use cases to understand how digital peer support networks impact overall health and cost of care.

CONCLUSION

The ways in which social networks are created and leveraged for health are shifting dramatically with digital technology. Peer support, especially through digital peer networks, can be powerful for reducing social isolation, increasing emotional and physical well-being, and improving outcomes for a variety of health conditions in diverse populations. Understanding the implications of these new tools and disseminating clinically effective solutions for increasing social connectivity can greatly benefit public health. When properly implemented, peer support programs offer a clinically effective and low-cost strategy to engage difficult-to-reach and high-risk populations. Online and mobile platforms can provide high-quality peer support that integrates seamlessly with healthcare ecosystems, allowing for holistic care that addresses all the determinants of health at scale.

REFERENCES

1. May 10 EHP, 2018. Beyond Health Care: The Role of Social Determinants in Promoting Health and Health Equity. Henry J Kais Fam Found. May 2018. <https://www.kff.org/disparities-policy/issue-brief/beyond-health-care-the-role-of-social-determinants-in-promoting-health-and-health-equity/>. Accessed January 21, 2020.
2. Mead S, Hilton D, Curtis L. Peer support: a theoretical perspective. *Psychiatr Rehabil J*. 2001;25(2):134-141. doi:10.1037/h0095032
3. Barak A, Grohol JM. Current and Future Trends in Internet-Supported Mental Health Interventions. *J Technol Hum Serv*. 2011;29(3):155-196. doi:10.1080/15228835.2011.616939
4. Fortuna KL, Venegas M, Umucu E, Mois G, Walker R, Brooks JM. The Future of Peer Support in Digital Psychiatry: Promise, Progress, and Opportunities. *Curr Treat Options Psychiatry*. 2019;6(3):221-231. doi:10.1007/s40501-019-00179-7
5. Mead S, Msw, Macneil C. Peer Support: What Makes It Unique? *Int J Psychosoc Rehab*. 2004;10.
6. Davidson L, Bellamy C, Guy K, Miller R. Peer support among persons with severe mental illnesses: a review of evidence and experience. *World Psychiatry*. 2012;11(2):123-128.
7. Gilbert K, Dodson S, Gill M, McKenzie R. Online Communities Are Valued by People With Type 1 Diabetes for Peer Support: How Well Do Health Professionals Understand This? *Diabetes Spectr*. 2012;25(3):180-191. doi:10.2337/diaspect.25.3.180
8. Loneliness and the Workplace: 2020 US Report. Cigna; 2020. <https://www.cigna.com/static/www-cigna-com/docs/about-us/newsroom/studies-and-reports/combating-loneliness/cigna-2020-loneliness-report.pdf>. Accessed February 3, 2020.
9. The “Loneliness Epidemic.” Health Resources and Services Administration. <https://www.hrsa.gov/enews/past-issues/2019/january-17/loneliness-epidemic>. Published January 10, 2019. Accessed January 27, 2020.
10. Holt-Lunstad J. The Potential Public Health Relevance of Social Isolation and Loneliness: Prevalence, Epidemiology, and Risk Factors. *Public Policy Aging Rep*. 2017;27(4):127-130. doi:10.1093/ppar/prx030

11. Pettitte T, Mallow J, Barnes E, Petrone A, Barr T, Theeke L. A Systematic Review of Loneliness and Common Chronic Physical Conditions in Adults. *Open Psychol J.* 2015;8(Suppl 2):113-132. doi:10.2174/1874350101508010113
12. Mushtaq R, Shoib S, Shah T, Mushtaq S. Relationship Between Loneliness, Psychiatric Disorders and Physical Health ? A Review on the Psychological Aspects of Loneliness. *J Clin Diagn Res JCDR.* 2014;8(9):WE01-WE04. doi:10.7860/JCDR/2014/10077.4828
13. Kool MB, Geenen R. Loneliness in patients with rheumatic diseases: the significance of invalidation and lack of social support. *J Psychol.* 2012;146(1-2):229-241. doi:10.1080/00223980.2011.606434
14. Holt-Lunstad J, Smith TB, Layton JB. Social relationships and mortality risk: a meta-analytic review. *PLoS Med.* 2010;7(7):e1000316. doi:10.1371/journal.pmed.1000316
15. Holt-Lunstad J, Smith TB, Baker M, Harris T, Stephenson D. Loneliness and social isolation as risk factors for mortality: a meta-analytic review. *Perspect Psychol Sci J Assoc Psychol Sci.* 2015;10(2):227-237. doi:10.1177/1745691614568352
16. Kashdan T, Barrios V, Forsyth J, Steger M. Experiential avoidance as a generalized psychological vulnerability: Comparisons with coping and emotion regulation strategies. *Behav Res Ther.* 2006;44:1301-1320. doi:10.1016/j.brat.2005.10.003
17. Ford B, Lam P, John O, Mauss I. The Psychological Health Benefits of Accepting Negative Emotions and Thoughts: Laboratory, Diary, and Longitudinal Evidence. *J Pers Soc Psychol.* 2017;115. doi:10.1037/pspp0000157
18. Riessman F. The 'helper-therapy' principle. *Soc Work.* 1965;10(2):27-32.
19. Brown SL, Nesse RM, Vinokur AD, Smith DM. Providing social support may be more beneficial than receiving it: results from a prospective study of mortality. *Psychol Sci.* 2003;14(4):320-327. doi:10.1111/1467-9280.14461
20. Schacter HL, Margolin G. When it feels good to give: Depressive symptoms, daily prosocial behavior, and adolescent mood. *Emotion.* 2019;19(5):923-927. doi:10.1037/emo0000494
21. van Uden-Kraan CF, Drossaert CHC, Taal E, Seydel ER, van de Laar MAFJ. Self-reported differences in empowerment between lurkers and posters in online patient support groups. *J Med Internet Res.* 2008;10(2):e18. doi:10.2196/jmir.992

22. Calvo R, Milne D, Hussain S, Christensen H. Natural language processing in mental health applications using non-clinical texts. *Nat Lang Eng*. January 2017:1-37. doi:10.1017/S1351324916000383
23. Fox S. Health Topics: 80% of Internet Users Look for Health Information Online. <https://www.issuelab.org/resource/health-topics-80-of-internet-users-look-for-health-information-online.html>. Accessed February 14, 2020.
24. Pan W, Feng B, Skye Wingate V. What You Say Is What You Get: How Self-Disclosure in Support Seeking Affects Language Use in Support Provision in Online Support Forums. *J Lang Soc Psychol*. 2018;37(1):3-27. doi:10.1177/0261927X17706983
25. Tanis M. Health-Related On-Line Forums: What's the Big Attraction? *J Health Commun*. 2008;13(7):698-714. doi:10.1080/10810730802415316
26. Chung JE. Social networking in online support groups for health: how online social networking benefits patients. *J Health Commun*. 2014;19(6):639-659. doi:10.1080/10810730.2012.757396
27. Berger M, Wagner TH, Baker LC. Internet use and stigmatized illness. *Soc Sci Med* 1982. 2005;61(8):1821-1827. doi:10.1016/j.socscimed.2005.03.025
28. Barak A. Emotional support and suicide prevention through the Internet: A field project report. *Comput Hum Behav*. 2007;23:971-984. doi:10.1016/j.chb.2005.08.001
29. Rains SA, Wright KB. Social Support and Computer-Mediated Communication: A State-of-the-Art Review and Agenda for Future Research. *Ann Int Commun Assoc*. 2016;40(1):175-211. doi:10.1080/23808985.2015.11735260
30. Markowitz FE. Involvement in mental health self-help groups and recovery. *Health Sociol Rev J Health Sect Aust Sociol Assoc*. 2015;24(2):199-212. doi:10.1080/14461242.2015.1015149
31. Farr C. A big overlooked flaw with health tech: Patients hate going to the doctor. *CNBC*. <https://www.cnbc.com/2018/07/20/health-tech-flaw-patients-hate-going-to-the-doctor.html>. Published July 21, 2018. Accessed January 20, 2020.
32. NIMH » Mental Illness. <https://www.nimh.nih.gov/health/statistics/mental-illness.shtml>. Accessed January 25, 2020.
33. Stein-Shvachman I, Karpas DS, Werner P. Depression Treatment Non-adherence and its Psychosocial Predictors: Differences between Young and Older Adults? *Aging Dis*. 2013;4(6):329-336. doi:10.14336/

AD.2013.0400329

34. Rush AJ, Trivedi MH, Wisniewski SR, et al. Acute and longer-term outcomes in depressed outpatients requiring one or several treatment steps: a STAR*D report. *Am J Psychiatry*. 2006;163(11):1905-1917. doi:10.1176/ajp.2006.163.11.1905
35. Semahegn A, Torpey K, Manu A, Assefa N, Tesfaye G, Ankomah A. Psychotropic medication non-adherence and associated factors among adult patients with major psychiatric disorders: a protocol for a systematic review. *Syst Rev*. 2018;7. doi:10.1186/s13643-018-0676-y
36. 2017 State of Mental Health in America - Access to Care Data | Mental Health America. <https://www.mhanational.org/issues/2017-state-mental-health-america-access-care-data>. Accessed January 27, 2020.
37. Dixon LB, Holoshitz Y, Nossel I. Treatment engagement of individuals experiencing mental illness: review and update. *World Psychiatry Off J World Psychiatr Assoc WPA*. 2016;15(1):13-20. doi:10.1002/wps.20306
38. Knight EL. Self-Help and Serious Mental Illness. *Medscape Gen Med*. 2006;8(1):68.
39. Seebohm P, Chaudhary S, Boyce M, Elkan R, Avis M, Munn-Giddings C. The contribution of self-help/mutual aid groups to mental well-being. *Health Soc Care Community*. 2013;21(4):391-401. doi:10.1111/hsc.12021
40. Pfeiffer PN, Heisler M, Piette JD, Rogers MAM, Valenstein M. Efficacy of Peer Support Interventions for Depression: A Meta-Analysis. *Gen Hosp Psychiatry*. 2011;33(1):29-36. doi:10.1016/j.genhosppsych.2010.10.002
41. Lloyd-Evans B, Mayo-Wilson E, Harrison B, et al. A systematic review and meta-analysis of randomised controlled trials of peer support for people with severe mental illness. *BMC Psychiatry*. 2014;14(1):39. doi:10.1186/1471-244X-14-39
42. Highton-Williamson E, Priebe S, Giacco D. Online social networking in people with psychosis: A systematic review. *Int J Soc Psychiatry*. 2015;61(1):92-101. doi:10.1177/0020764014556392
43. Hundt NE, Robinson A, Arney J, Stanley MA, Cully JA. Veterans' Perspectives on Benefits and Drawbacks of Peer Support for Posttraumatic Stress Disorder. *Mil Med*. 2015;180(8):851-856. doi:10.7205/MILMED-D-14-00536
44. Kamalifard M, Yavarikia P, Babapour Kheiroddin J, Salehi Pourmehr H, Iraj Iranagh R. The Effect of Peers Support on Postpartum Depression: A Single-Blind Randomized Clinical Trial. *J Caring Sci*. 2013;2(3):237-244. doi:10.5681/jcs.2013.029

45. Dennis C-L. Postpartum depression peer support: Maternal perceptions from a randomized controlled trial. *Int J Nurs Stud*. 2010;47(5):560-568. doi:10.1016/j.ijnurstu.2009.10.015
46. Prevatt B-S, Lowder EM, Desmarais SL. Peer-support intervention for postpartum depression: Participant satisfaction and program effectiveness. *Midwifery*. 2018;64:38-47. doi:10.1016/j.midw.2018.05.009
47. Allsopp K, Read J, Corcoran R, Kinderman P. Heterogeneity in psychiatric diagnostic classification. *Psychiatry Res*. 2019;279:15-22. doi:10.1016/j.psychres.2019.07.005
48. US Department of Health and Human Services; Substance Abuse and Mental Health Services Administration. SAMHSA Issues Consensus Statement on Mental Health Recovery: (502042006-001). 2006. doi:10.1037/e502042006-001
49. Recovery Support Services for Medicaid Beneficiaries with a Substance Use Disorder. Medicaid and CHIP Payment and Access Commission; 2019. <https://www.macpac.gov/wp-content/uploads/2019/07/Recovery-Support-Services-for-Medicaid-Beneficiaries-with-a-Substance-Use-Disorder.pdf>. Accessed January 27, 2020.
50. Fortuna KL, Aschbrenner KA, Lohman MC, et al. Smartphone Ownership, Use, and Willingness to Use Smartphones to Provide Peer-Delivered Services: Results from a National Online Survey. *Psychiatr Q*. 2018;89(4):947-956. doi:10.1007/s11126-018-9592-5
51. Naslund JA, Aschbrenner KA, Marsch LA, Bartels SJ. The future of mental health care: peer-to-peer support and social media. *Epidemiol Psychiatr Sci*. 2016;25(2):113-122. doi:10.1017/S2045796015001067
52. Bauer R, Bauer M, Spiessl H, Kagerbauer T. Cyber-support: An analysis of online self-help forums (online self-help forums in bipolar disorder). *Nord J Psychiatry*. 2013;67(3):185-190. doi:10.3109/08039488.2012.700734
53. Houston TK, Cooper LA, Ford DE. Internet support groups for depression: a 1-year prospective cohort study. *Am J Psychiatry*. 2002;159(12):2062-2068. doi:10.1176/appi.ajp.159.12.2062
54. Tracy K, Wallace SP. Benefits of peer support groups in the treatment of addiction. *Subst Abuse Rehabil*. 2016;7:143-154. doi:10.2147/SAR.S81535
55. Reif S, Braude L, Lyman DR, et al. Peer Recovery Support for Individuals With Substance Use Disorders: Assessing the Evidence. *Psychiatr Serv*. 2014;65(7):853-861. doi:10.1176/appi.ps.201400047

56. Bassuk EL, Hanson J, Greene RN, Richard M, Laudet A. Peer-Delivered Recovery Support Services for Addictions in the United States: A Systematic Review. *J Subst Abuse Treat*. 2016;63:1-9. doi:10.1016/j.jsat.2016.01.003
57. Boisvert RA, Martin LM, Grosek M, Clarie AJ. Effectiveness of a peer-support community in addiction recovery: participation as intervention. *Occup Ther Int*. 2008;15(4):205-220. doi:10.1002/oti.257
58. Ford P, Clifford A, Gussy K, Gartner C. A systematic review of peer-support programs for smoking cessation in disadvantaged groups. *Int J Environ Res Public Health*. 2013;10(11):5507-5522. doi:10.3390/ijerph10115507
59. Dickerson FB, Savage CLG, Schweinfurth LAB, et al. The Use of Peer Mentors to Enhance a Smoking Cessation Intervention for Persons with Serious Mental Illnesses. *Psychiatr Rehabil J*. 2016;39(1):5-13. doi:10.1037/prj0000161
60. Patel V, Flisher AJ, Hetrick S, McGorry P. Mental health of young people: a global public-health challenge. *The Lancet*. 2007;369(9569):1302-1313. doi:10.1016/S0140-6736(07)60368-7
61. Booth ML, Bernard D, Quine S, et al. Access to health care among Australian adolescents young people's perspectives and their sociodemographic distribution. *J Adolesc Health Off Publ Soc Adolesc Med*. 2004;34(1):97-103. doi:10.1016/j.jadohealth.2003.06.011
62. Burns JM, Davenport TA, Durkin LA, Luscombe GM, Hickie IB. The internet as a setting for mental health service utilisation by young people. *Med J Aust*. 2010;192(S11):S22-26.
63. Gowen K, Deschaine M, Gruttadara D, Markey D. Young adults with mental health conditions and social networking websites: seeking tools to build community. *Psychiatr Rehabil J*. 2012;35(3):245-250. doi:10.2975/35.3.2012.245.250
64. Buttorff C, Ruder T, Bauman M. Multiple Chronic Conditions in the United States: <https://www.rand.org/pubs/tools/TL221.html>. Published 2017. Accessed January 27, 2020.
65. Jain S, Goyal R, Fox S, Shrank WH. Bowling Alone, Healing Together: The Role of Social Capital in Delivery Reform. *AJMC*. <https://www.ajmc.com/journals/issue/2012/2012-6-vol18-n6/bowling-alone-healing-together-the-role-of-social-capital-in-delivery-reform>. Accessed January 21, 2020.

66. Daaleman TP, Fisher EB. Enriching Patient-Centered Medical Homes Through Peer Support. *Ann Fam Med*. 2015;13(Suppl 1):S73-S78. doi:10.1370/afm.1761
67. Owen J, Boxley L, Goldstein M, Lee J, Breen N, Rowland J. Use of Health Related Online Support Groups: Population Data from the California Health Interview Survey Complementary and Alternative Medicine Study. *J Comput Commun*. 2010;15:427-446. doi:10.1111/j.1083-6101.2010.01501.x
68. The Cost of Diabetes | ADA. <https://www.diabetes.org/resources/statistics/cost-diabetes>. Accessed January 27, 2020.
69. Deaths and Cost | Data & Statistics | Diabetes | CDC. <https://www.cdc.gov/diabetes/data/statistics-report/deaths-cost.html>. Published February 20, 2019. Accessed January 27, 2020.
70. Greene JA, Choudhry NK, Kilabuk E, Shrank WH. Online social networking by patients with diabetes: a qualitative evaluation of communication with Facebook. *J Gen Intern Med*. 2011;26(3):287-292. doi:10.1007/s11606-010-1526-3
71. Heisler M, Vijan S, Makki F, Piette JD. Diabetes control with reciprocal peer support versus nurse care management: a randomized trial. *Ann Intern Med*. 2010;153(8):507-515. doi:10.7326/0003-4819-153-8-201010190-00007
72. Kaselitz E, Shah M, Choi H, Heisler M. Peer characteristics associated with improved glycemic control in a randomized controlled trial of a reciprocal peer support program for diabetes. *Chronic Illn*. 2019;15(2):149-156. doi:10.1177/1742395317753884
73. Patil SJ, Ruppert T, Koopman RJ, et al. Peer Support Interventions for Adults With Diabetes: A Meta-Analysis of Hemoglobin A1c Outcomes. *Ann Fam Med*. 2016;14(6):540-551. doi:10.1370/afm.1982
74. Kong L-N, Hu P, Yang L, Cui D. The effectiveness of peer support on self-efficacy and quality of life in adults with type 2 diabetes: A systematic review and meta-analysis. *J Adv Nurs*. 2019;75(4):711-722. doi:10.1111/jan.13870
75. Ju C, Shi R, Yao L, et al. Effect of peer support on diabetes distress: a cluster randomized controlled trial. *Diabet Med J Br Diabet Assoc*. 2018;35(6):770-775. doi:10.1111/dme.13625
76. Owens-Gary MD, Zhang X, Jawanda S, Bullard KM, Allweiss P, Smith BD. The Importance of Addressing Depression and Diabetes Distress in Adults with Type 2 Diabetes. *J Gen Intern Med*. 2019;34(2):320-324. doi:10.1007/s11606-018-4705-2

77. Polonsky WH, Fisher L, Earles J, et al. Assessing psychosocial distress in diabetes: development of the diabetes distress scale. *Diabetes Care*. 2005;28(3):626-631. doi:10.2337/diacare.28.3.626
78. Lieberman MA, Goldstein BA. Self-help on-line: an outcome evaluation of breast cancer bulletin boards. *J Health Psychol*. 2005;10(6):855-862. doi:10.1177/1359105305057319
79. Lieberman MA, Golant M, Giese Davis J, et al. Electronic support groups for breast carcinoma. *Cancer*. 2003;97(4):920-925. doi:10.1002/cncr.11145
80. Winzelberg AJ, Classen C, Alpers GW, et al. Evaluation of an internet support group for women with primary breast cancer. *Cancer*. 2003;97(5):1164-1173. doi:10.1002/cncr.11174
81. Mo PKH, Coulson NS. Online support group use and psychological health for individuals living with HIV/AIDS. *Patient Educ Couns*. 2013;93(3):426-432. doi:10.1016/j.pec.2013.04.004
82. Marino P, Simoni JM, Silverstein LB. Peer support to promote medication adherence among people living with HIV/AIDS: the benefits to peers. *Soc Work Health Care*. 2007;45(1):67-80. doi:10.1300/J010v45n01_05
83. Grunberg PH, Dennis C-L, Da Costa D, Zelkowitz P. Infertility patients' need and preferences for online peer support. *Reprod Biomed Soc Online*. 2018;6:80-89. doi:10.1016/j.rbms.2018.10.016
84. Southall K, Jennings MB, Gagné J-P, Young J. Reported benefits of peer support group involvement by adults with hearing loss. *Int J Audiol*. December 2018. <https://www.tandfonline.com/doi/abs/10.1080/14992027.2018.1519604>. Accessed January 21, 2020.
85. Matthias MS, Kukla M, McGuire AB, Bair MJ. How Do Patients with Chronic Pain Benefit from a Peer-Supported Pain Self-Management Intervention? A Qualitative Investigation. *Pain Med Malden Mass*. 2016;17(12):2247-2255. doi:10.1093/pm/pnw138
86. Janssen EM, McGinty EE, Azrin ST, Juliano-Bult D, Daumit GL. Review of the evidence: prevalence of medical conditions in the United States population with serious mental illness. *Gen Hosp Psychiatry*. 2015;37(3):199-222. doi:10.1016/j.genhosppsy.2015.03.004
87. Druss BG, Singh M, von Esenwein SA, et al. Peer-Led Self-Management of General Medical Conditions for Patients With Serious Mental Illnesses: A Randomized Trial. *Psychiatr Serv Wash DC*. 2018;69(5):529-535. doi:10.1176/appi.ps.201700352

88. Goldberg RW, Dickerson F, Lucksted A, et al. Living well: an intervention to improve self-management of medical illness for individuals with serious mental illness. *Psychiatr Serv Wash DC*. 2013;64(1):51-57. doi:10.1176/appi.ps.201200034
89. Ory MG, Ahn S, Jiang L, et al. Successes of a national study of the Chronic Disease Self-Management Program: meeting the triple aim of health care reform. *Med Care*. 2013;51(11):992-998. doi:10.1097/MLR.0b013e3182a95dd1
90. Kinney RL, Lemon SC, Person SD, Pagoto SL, Saczynski JS. The association between patient activation and medication adherence, hospitalization, and emergency room utilization in patients with chronic illnesses: a systematic review. *Patient Educ Couns*. 2015;98(5):545-552. doi:10.1016/j.pec.2015.02.005
91. Acri M, Zhang S, Adler JG, Gopalan G. Peer-Delivered Models for Caregivers of Children and Adults with Health Conditions: A Review. *J Child Fam Stud*. 2017;25(2):337-344. doi:10.1007/s10826-016-0616-1
92. Markoulakis R, Turner M, Wicik K, Weingust S, Dobbin K, Levitt A. Exploring Peer Support Needs of Caregivers for Youth with Mental Illness or Addictions Concerns in Family Navigation Services. *Community Ment Health J*. 2018;54(5):555-561. doi:10.1007/s10597-017-0191-y
93. Smith R, Greenwood N. The impact of volunteer mentoring schemes on carers of people with dementia and volunteer mentors: a systematic review. *Am J Alzheimers Dis Other Demen*. 2014;29(1):8-17. doi:10.1177/1533317513505135
94. Friedman EM, Trail TE, Vaughan CA, Tanielian T. Online peer support groups for family caregivers: are they reaching the caregivers with the greatest needs? *J Am Med Inform Assoc*. 2018;25(9):1130-1136. doi:10.1093/jamia/ocy086
95. Bhatt J, McKinney J. Social isolation and loneliness are America's next public health issue. <https://www.beckershospitalreview.com/population-health/social-isolation-and-loneliness-are-america-s-next-public-health-issue.html>. Published December 2, 2019. Accessed February 3, 2020.
96. Gerst-Emerson K, Jayawardhana J. Loneliness as a Public Health Issue: The Impact of Loneliness on Health Care Utilization Among Older Adults. *Am J Public Health*. 2015;105(5):1013-1019. doi:10.2105/AJPH.2014.302427

97. Cheng S-T. Loneliness-distress and physician utilization in well-elderly females. *J Community Psychol*. 1992;20(1):43-56. doi:10.1002/1520-6629(199201)20:1<43::AID-JCOP2290200107>3.0.CO;2-3
98. Mullen RA, Tong S, Sabo RT, et al. Loneliness in Primary Care Patients: A Prevalence Study. *Ann Fam Med*. 2019;17(2):108-115. doi:10.1370/afm.2358
99. 80 people went to Dallas emergency rooms 5,139 times in a year — usually because they were lonely. WFAA. <https://www.wfaa.com/article/features/originals/80-people-went-to-dallas-emergency-rooms-5139-times-in-a-year-usually-because-they-were-lonely/287-f5351d53-6e60-4d64-8d17-6ebba48a01e4>. Accessed February 3, 2020.
100. Flowers L, Houser A, Noel-Miller C, et al. Medicare Spends More on Socially Isolated Older Adults. AARP Public Policy Institute; 2017. <https://www.aarp.org/content/dam/aarp/ppi/2017/10/medicare-spends-more-on-socially-isolated-older-adults.pdf>. Accessed February 3, 2020.
101. Simpson A, Flood C, Rowe J, et al. Results of a pilot randomised controlled trial to measure the clinical and cost effectiveness of peer support in increasing hope and quality of life in mental health patients discharged from hospital in the UK. *BMC Psychiatry*. 2014;14:30. doi:10.1186/1471-244X-14-30
102. Johansson T, Keller S, Sönnichsen AC, Weitgasser R. Cost analysis of a peer support programme for patients with type 2 diabetes: a secondary analysis of a controlled trial. *Eur J Public Health*. 2017;27(2):256-261. doi:10.1093/eurpub/ckw158
103. Peer Support Services Improve Clinical Outcomes by Fostering Recovery and Promoting Empowerment. Optum; 2016. <https://www.optum.com/content/dam/optum3/optum/en/resources/white-papers/PeersImproveOutcomes.pdf>. Accessed January 27, 2020.
104. Sledge WH, Lawless M, Sells D, Wieland M, O'Connell MJ, Davidson L. Effectiveness of Peer Support in Reducing Readmissions of Persons With Multiple Psychiatric Hospitalizations. *Psychiatr Serv*. 2011;62(5):541-544. doi:10.1176/ps.62.5.pss6205_0541
105. Johnson S, Lamb D, Marston L, et al. Peer-supported self-management for people discharged from a mental health crisis team: a randomised controlled trial. *The Lancet*. 2018;392(10145):409-418. doi:10.1016/S0140-6736(18)31470-3

106. Landers GM, Zhou M. An Analysis of Relationships Among Peer Support, Psychiatric Hospitalization, and Crisis Stabilization. *Community Ment Health J.* 2011;47(1):106-112. doi:10.1007/s10597-009-9218-3
107. Bergeson S. Cost-Effectiveness of Using Peers as Providers. *Faces Voices Recovery.* <https://facesandvoicesofrecovery.org/resource/cost-effectiveness-of-using-peers-as-providers/>. Accessed January 27, 2020.
108. Asay GRB. Absenteeism and Employer Costs Associated With Chronic Diseases and Health Risk Factors in the US Workforce. *Prev Chronic Dis.* 2016;13. doi:10.5888/pcd13.150503
109. Bubonya M, Cobb-Clark D, Wooden M. Mental Health and Productivity at Work: Does What You Do Matter? *Labour Econ.* 2017;46. doi:10.1016/j.labeco.2017.05.001
110. Fouad AM, Waheed A, Gamal A, Amer SA, Abdellah RF, Shebl FM. Effect of Chronic Diseases on Work Productivity: A Propensity Score Analysis. *J Occup Environ Med.* 2017;59(5):480-485. doi:10.1097/JOM.0000000000000981
111. Cigna Newsroom | Cigna Takes Action To Combat The Rise Of Loneliness And Improve Mental Wellness In America. Cigna, a Global Health Insurance and Health Service Company. <https://www.cigna.com/newsroom/news-releases/2020/cigna-takes-action-to-combat-the-rise-of-loneliness-and-improve-mental-wellness-in-america>. Accessed February 3, 2020.
112. Bacharach SB, Bamberger P, Biron M. Alcohol consumption and workplace absenteeism: The moderating effect of social support. *J Appl Psychol.* 2010;95(2):334-348. doi:10.1037/a0018018
113. Ibrahim N, Thompson D, Nixdorf R, et al. A systematic review of influences on implementation of peer support work for adults with mental health problems. *Soc Psychiatry Psychiatr Epidemiol.* June 2019. doi:10.1007/s00127-019-01739-1
114. Griffiths KM, Christensen H. Internet-based mental health programs: A powerful tool in the rural medical kit. *Aust J Rural Health.* 2007;15(2):81-87. doi:10.1111/j.1440-1584.2007.00859.x
115. Setoyama Y, Yamazaki Y, Nakayama K. Comparing support to breast cancer patients from online communities and face-to-face support groups. *Patient Educ Couns.* 2011;85:e95-100. doi:10.1016/j.pec.2010.11.008
116. Google receives more than 1 billion health questions every day. <https://www.beckershospitalreview.com/healthcare-information-technology/>

- google-receives-more-than-1-billion-health-questions-every-day.html. Accessed January 25, 2020.
117. Frakt A. Using the Web or an App Instead of Seeing a Doctor? Caution Is Advised. *The New York Times*. <https://www.nytimes.com/2016/07/12/upshot/using-the-web-or-an-app-before-seeing-a-doctor-caution-is-advised.html>. Published July 11, 2016. Accessed January 25, 2020.
 118. Smailhodzic E, Hooijsma W, Boonstra A, Langley DJ. Social media use in healthcare: A systematic review of effects on patients and on their relationship with healthcare professionals. *BMC Health Serv Res*. 2016;16(1):442. doi:10.1186/s12913-016-1691-0
 119. Kaplan K, Salzer MS, Solomon P, Brusilovskiy E, Cousounis P. Internet peer support for individuals with psychiatric disabilities: A randomized controlled trial. *Soc Sci Med* 1982. 2011;72(1):54-62. doi:10.1016/j.socscimed.2010.09.037
 120. Høybye MT, Dalton SO, Deltour I, Bidstrup PE, Frederiksen K, Johansen C. Effect of Internet peer-support groups on psychosocial adjustment to cancer: a randomised study. *Br J Cancer*. 2010;102(9):1348-1354. doi:10.1038/sj.bjc.6605646
 121. Eysenbach G, Powell J, Englesakis M, Rizo C, Stern A. Health related virtual communities and electronic support groups: systematic review of the effects of online peer to peer interactions. *BMJ*. 2004;328(7449):1166. doi:10.1136/bmj.328.7449.1166
 122. Kaplan K, Salzer MS, Brusilovskiy E. Community participation as a predictor of recovery-oriented outcomes among emerging and mature adults with mental illnesses. *Psychiatr Rehabil J*. 2012;35(3):219-229. doi:10.2975/35.3.2012.219.229
 123. Griffiths K, Callear A, Banfield M. Systematic Review on Internet Support Groups (ISGs) and Depression (1): Do ISGs Reduce Depressive Symptoms? *J Med Internet Res*. 2009;11:e40. doi:10.2196/jmir.1270
 124. Anderson C, Seff LR, Batra A, Bhatt C, Palmer RC. Recruiting and Engaging Older Men in Evidence-Based Health Promotion Programs: Perspectives on Barriers and Strategies. *J Aging Res*. 2016;2016. doi:10.1155/2016/8981435
 125. King AJ, Simmons MB. A Systematic Review of the Attributes and Outcomes of Peer Work and Guidelines for Reporting Studies of Peer Interventions. *Psychiatr Serv*. 2018;69(9):961-977. doi:10.1176/appi.ps.201700564

126. Worrall H, Schweizer R, Marks E, Yuan L, Lloyd C, Ramjan R. The effectiveness of support groups: a literature review. *Ment Health Soc Incl.* 2018;22(2):85-93. doi:10.1108/MHSI-12-2017-0055
127. McColl LD, Rideout PE, Parmar TN, Abba-Aji A. Peer support intervention through mobile application: An integrative literature review and future directions. *Can Psychol Can.* 2014;55(4):250-257. doi:10.1037/a0038095
128. Freeman E, Barker C, Pistrang N. Outcome of an online mutual support group for college students with psychological problems. *Cyberpsychology Behav Impact Internet Multimed Virtual Real Behav Soc.* 2008;11(5):591-593. doi:10.1089/cpb.2007.0133
129. Munce SEP, Shepherd J, Perrier L, et al. Online peer support interventions for chronic conditions: a scoping review protocol. *BMJ Open.* 2017;7(9). doi:10.1136/bmjopen-2017-017999