Economic Evaluation of Mental Health Interventions

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ABSTRACT

This narrative review evaluates the cost-effectiveness of various mental health interventions, including cognitive behavioral therapy cognitive behavioral therapy and cognitive behavioral treatment, pharmacological treatments selective serotonin reuptake inhibitors, group therapy, Assertive Community Treatment (ACT), and digital mental health solutions. A broad range of studies from the past 20 years was included, with a focus on interventions for depression, anxiety disorders, and schizophrenia. Studies were selected based on economic evaluation methods (cost-effectiveness, cost-utility, and cost-benefit) and relevance to public healthcare systems. The findings indicate that cognitive behavioral therapy and ACT are highly cost-effective, with incremental cost-effectiveness ratios of $18,000 and $19,000 per quality-adjusted life year, respectively. Digital interventions, such as telemedicine and mental health apps, showed significant cost savings, particularly in underserved populations. Limitations include a lack of longitudinal studies and underrepresentation of low- and middle-income countries. Future research should focus on long-term outcomes and scalability of digital interventions.

Keywords: Cost-effectiveness analysis, Cognitive behavioral therapy, Digital mental health solutions, Assertive community treatment, Schizophrenia treatment

Introduction

The World Health Organization reports that mental health disorders are one of the leading burdens of diseases around the world in terms of high economic and societal costs.[1,2] These disorders put a huge strain not only on healthcare systems but also on indirect costs due to the loss of productivity, absenteeism, and long-term disability. According to the WHO, major mental health conditions such as depression and anxiety cost the global economy $1 trillion annually in lost productivity.[3–5] Nevertheless, despite all these significant economic and social burdens, interventions related to mental health are often underfinanced or not emphasized when health policy is discussed.

Economic analyses examine the costs, benefits, and overall effectiveness of mental health interventions. This is helpful when more people need health care but not enough finances to meet those needs. The next step is for stakeholders to make smart choices about allocation of resources. This is how we can figure out the financial and health effects of an intervention using tools like cost-effectiveness analysis (CEA), cost-utility analysis (CUA), and cost-benefit analysis (CBA).

The goal of this narrative review is to provide an in-depth view of all the research that has been done on the cost-effectiveness of different mental health interventions. Discussions also cover the various approaches currently in use, as well as the implications of these findings for healthcare policy and funding allocation. If we want to ensure that everyone can affordably access mental health care in need, we need to fill the gaps in our knowledge and conduct studies in these areas.

Literature Review

This section examines the various approaches to healthcare cost estimation, with an emphasis on their potential applications in the field of mental health interventions. This review is organized around exploring new digital therapies, different mental health conditions, and treatments, along with their effect on the economy. We have also identified some important research methods and examples from past work and critically evaluated the flaws in current research.

Economic Evaluation Methods in Healthcare

CBA, CEA, and CUA analyses are some of the most common ways for economic evaluation in health care.[6,7] These ways of comparing the effectiveness and cost of different treatments have helped numerous people with long-term illnesses like diabetes and heart problems. Most of the time, CEA is used to compare the pros and cons of different healthcare interventions.[8,9] The results are usually shown in terms of the incremental cost per health outcome, like life-years gained or quality-adjusted life years (QALYs).[1] In such chronic conditions as diabetes, CEA played a great role when comparing

Health economists use QALYs to determine the worth of medical treatments. A single metric is created by merging the quantity and quality of life. A QALY is an attempt to standardize the process of determining the extent to which a treatment improves a patient's health, both in terms of the number of years they live and the quality of those years. One QALY is the same as 1 year of fully healthy life expectancy. It is added when a treatment allows a person to live an extra year while being perfectly healthy. As an illustration, 0.5 QALYs would be the equivalent of 1 year of a quality-of-life rating of 0.5 (on a scale from 0 to 1).

Pharmaceutical interventions to those involving lifestyle modification programs and assisted policymakers to make efficient resource allocation decisions.[10,11]

CUA adds another dimension to CEA by introducing patient preference and quality-of-life measures.[12] It assesses interventions using QALYs that combine both the quantity and quality of life. This has become an especially pertinent methodology in chronic disease management and oncology, where survival and quality of life are important. CBA shows both the costs and benefits of programs in monetary terms; these can be

directly compared to determine the economic returns of an intervention.[13] This approach has been used less readily in health since the outcomes are harder to monetarize. Still, it has great potential in promoting investments, especially in public health programs wherein long-term economic benefits such as improved productivity or reduced disability costs are considered.[14] This is of great relevance in mental health due to the chronicity of many mental health disorders for a very long period. Interventions in mental health, on the other hand, should cover an array of outcomes that include emotional well-being, productivity, and social functioning.[15,16] This makes economic evaluations in mental health more complex but also critical for ensuring effective resource allocation.

Applications in Mental Health Interventions

Economic evaluation methods, such as CEA, CUA, and CBA, have been increasingly applied to mental health interventions during the last few years.[17] In the rising worldwide burden of mental health conditions, both direct costs related to health care and indirect costs related to lost productivity and caregiving, it is unimaginable to overstate how important economic evaluations should be to guide decision makers, providers, and payers in making efficient allocations.[18] The following section describes how these methods have been applied to the most significant mental health conditions affecting the population through depression, anxiety disorders, and schizophrenia. It highlights the cost-effectiveness of a range of interventions.

Depression

Depression is among the most prevalent and expensive mental health conditions worldwide.[19] It creates high health care costs, for instance, hospitalization, medication, and psychotherapy, as well as indirect opportunity costs due to lost productivity resulting from absenteeism together with long-term disability.[20] As such, it has been the major focus of a range of economic evaluations in mental health.

Cognitive Behavioral Treatment versus Pharmacological Treatments

Cognitive behavioral treatment and pharmacological interventions, including selective serotonin reuptake inhibitors (SSRIs), are two of the most common interventions for depression.[21] The cost-effectiveness of many treatments compared to others finds both therapies effective in symptom reduction. However, long-term benefits in the form of low relapse rates make cognitive behavioral treatment a remarkably more cost-effective choice in the management of depression.[22,23] This seminal study explored cost-effectiveness in cognitive behavioral therapy versus SSRIs as treatments for moderate to severe depression.[24] The findings were that both treatments were cost-effective, but with the additional advantage that cognitive behavioral therapy gives, due to fewer relapses when treatment is stopped. Accordingly, the estimated ICER for cognitive behavioral therapy was $18,000 per QALY gained, below the threshold of commonly accepted $50,000 per QALY used by many health systems as indicative of cost-effective interventions.[25–28] This favorable ICER renders cognitive behavioral therapy as a highly cost-effective intervention, especially when long-term outcomes are considered.

Other economic evaluations have assessed the cost-effectiveness of stepped-care models for depression treatment, where patients first receive low-intensity interventions, such as self-help or digital cognitive behavioral therapy, followed by more intensive therapy if necessary.[29,30] The treatment intensity is optimized against patient response, thus making these models less costly overall. Stepped-care models—where patients progress to higher levels of care depending on their needs—further enhance the cost-effectiveness of some studies, as appropriate interventions at each stage of treatment prevent the overuse of intensive resources.

Against the background of the treatment of major depression, pharmacological treatments—most especially SSRIs—have also been proven to be cost-effective, especially when their effectiveness in terms of the speed of relief from symptoms and restoration of functionality are borne in mind.[31] SSRIs represent the most commonly prescribed class of antidepressants used as a first-line treatment because of their relatively low cost and benign side-effect profile.[32] With long-term treatment, however, the use of SSRIs can become more expensive because of the continuing cost of medication plus the risks associated with relapse after discontinuation; it is in this respect that the long-term benefits of cognitive behavioral therapy prove advantageous. Combination Therapy Combining cognitive behavioral therapy with pharmacotherapy has also been explored. Whereas the short-term expense of combination therapy is expensive, considering that time has to be spent with psychotherapy in addition to medication, the long-term advantages are economic: lower relapse rates, lower hospitalization rates, and a reduced need for further treatment, adding to the overall cost-effectiveness of combination therapy in the management of chronic or treatment-resistant depression.[32–44]

Anxiety Disorders

Anxiety disorders are among the most common mental health disorders, including generalized anxiety disorder (GAD), panic disorder (PD), and social anxiety disorder. Anxiety disorders are costly in terms of healthcare use and loss of productivity.[35] To date, economic evaluations of treatments for anxiety disorders have focused on group therapy, individual therapy, and medication, the emphasis often being on the cost-effectiveness of non-pharmacological treatments.[36]

Group Therapy versus Individual Therapy

Many economic analyses show that group therapy is more cost-effective compared to individual treatments of anxiety disorders in general, and this is particularly

the case when healthcare resources are limited. Indeed, some research carried out into GAD and PD has found that group therapy can lead to a cost per patient that is up to 50% lower than individual therapy.[37,38] This goes hand in hand with great cost reduction without compromising treatment outcomes; in fact, results from group therapy are comparable to individual therapy regarding symptom reduction and improvement in the quality of life. Group treatment treats patients in groups, hence reducing the cost, especially in public health systems or in places with limited availability of mental health professionals.[39] This is particularly so in community settings and for patients who may have barriers to engaging in individual therapy. In lower middle-income countries (LMICs), where resources for mental health are limited, group-based interventions, thus far, have proved highly scalable and cost-effective, allowing more patients to benefit from evidence-based therapies such as cognitive behavioral therapy.

Pharmacological Treatments

Anxiety disorders are typically treated using pharmacological interventions, such as benzodiazepines and SSRIs.[40] However, these treatments have become a concern due to their possible long-term economic consequences. Use of benzodiazepines may be effective in the short run but has long-term dependency and side effects and may also decrease the patient's ability to manage symptoms overtime.[41] The indications and recommendations for cognitive behavioral therapy and psychotherapies as the first line of treatment have been highly advanced for many cases, especially in those

with potentially longer relief while not carrying the risks associated with pharmacotherapy. The cognitive behavioral therapys were proved in economic evaluation to be the most cost-effective ones, with the estimated ICER for cognitive behavioral therapy in treating GAD being a value of $12,000 per QALY gained. This makes cognitive behavioral therapy not only clinically effective but also a cost-efficient intervention, especially when one considers the long-term costs linked with chronic anxiety and the economic consequences of a condition left untreated or undertreated, such as absenteeism and reduced productivity.[42]

Schizophrenia

Schizophrenia is a grave and debilitating mental illness that also has chronic symptoms, which often require lifetime treatment and support.[43] It has thus been able to generate high direct medical costs—for instance, hospitalizations, drugs, and continuous treatment—and indirect costs—for instance, loss of productivity at work and the impact on caregivers. Up to now, economic evaluations of schizophrenia treatments have concentrated on the comparison between first-generation antipsychotics (FGAs) with second-generation antipsychotics (SGAs), as well as the cost-effectiveness of community-based care models.

FGAs versus SGAs

Compared with FGAs, which were the primary treatment before the development of SGAs for schizophrenia, FGAs are much cheaper but generally carry more severe side effects, including extrapyramidal symptoms like
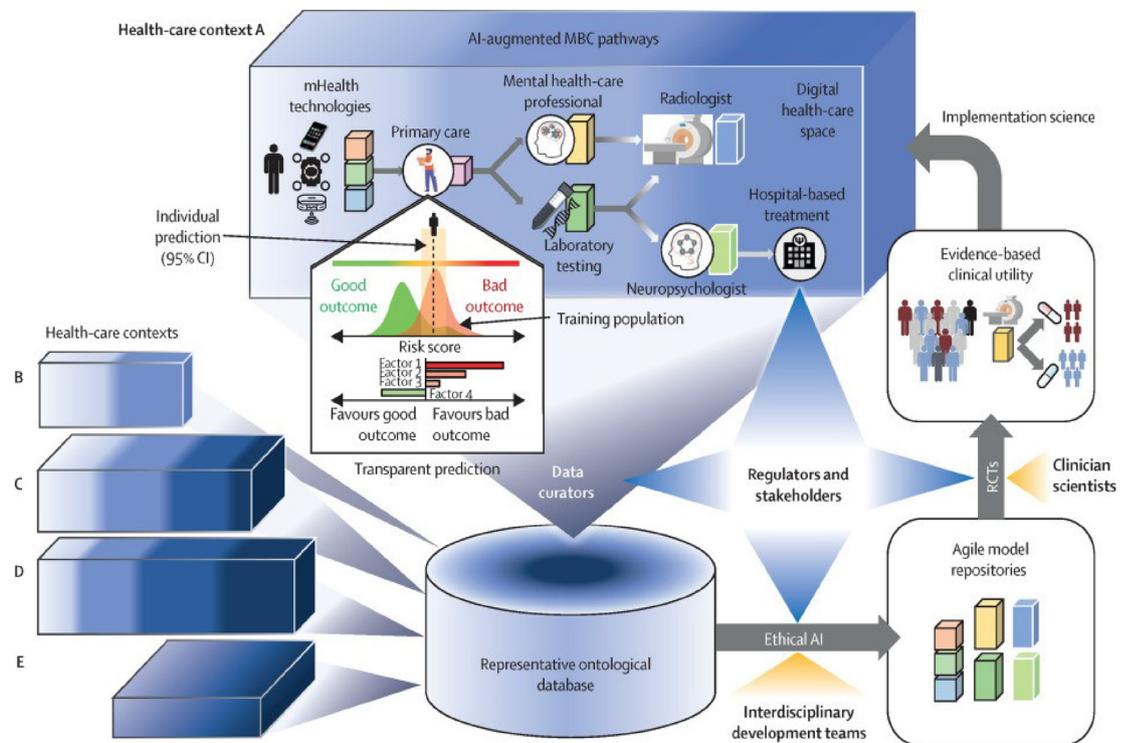
Fig 1 | AI-informed mental health care
Source: Koutsouleris N. et al.[50]

tremors and rigidity.[44] On the other hand, SGAs, while more expensive, have been demonstrated to be much more effective in reducing relapses, improving patient adherence to treatment compliance, and reducing hospitalization rates—all factors playing through in long-term cost savings. In fact, studies that make direct comparisons between FGAs and SGAs have noted that while the former bears an upfront cost higher than the latter, the latter's benefits are more cost-effective in the long term by preventing relapses and hospitalizations. One study derived an ICER for the SGAs risperidone and olanzapine to be below threshold compared to first-generation antipsychotics, especially with respect to long-term reduction of hospitalization rates and improvement in patients' functionality.[45]

Community-Based Interventions include: Assertive Community Treatment

The community-based intervention counterpart is Assertive Community Treatment (ACT), which has emerged as a cost-effective alternative to long-term hospitalization or institutional care for persons with schizophrenia.[46,47] ACT is a comprehensive, team-based approach that provides individualized support to patients with severe mental illness, aiming at reducing hospitalizations and improving social functioning. Evidence suggests that ACT drastically decreases the requirement for inpatient care.[48] It has also been linked to superior employment, housing stability, and overall quality of life. Economic evaluation for ACT also considered the fact that, while there are increased upfront costs due to the intensive nature of the care model, major savings are realized in the long term through a reduction in hospital admissions, better treatment adherence, and increases in patient autonomy. In the long term, ACT was found to be more cost-effective, with a significant decrease in both direct and indirect costs compared to standard care.[49]
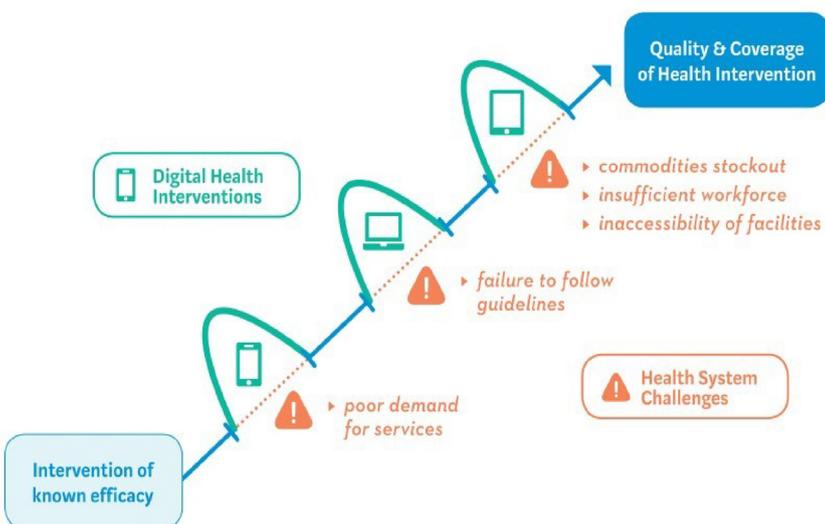

Fig 2 | Digital health interventions to overcome health system challenges

Source: WHO Guideline Recommendations on Digital Interventions for Health System Strengthening. Geneva: World Health Organization.[51]

Figure 1 shows a multidisciplinary, collaborative healthcare pathway that uses AI. It mainly explores how AI technologies can be used to make different areas of healthcare better, like primary care, lab testing, radiology, mental health care, and digital healthcare platforms. Using risk scores derived from a number of factors, the center focuses on predicting what will happen to each person. The ability to tell the difference between good and bad outcomes is what these predictions do for clinicians. Clear AI models trained on big data sets help make predictions more accurate. The healthcare situations (A–E) are grouped into different levels, which shows that this AI-enhanced system can be used on a larger scale and in more than one healthcare setting. Ethics in AI development, clinical utility based on evidence, and multidisciplinary teams are all very important for making sure that these models are used safely and effectively in real-life clinical settings, while regulators and stakeholders keep an eye on everything.[50]

The application of economic evaluation methods to mental health interventions has generated valuable insight regarding the relative cost-effectiveness of the different treatments for conditions such as major depression, anxiety disorders, and schizophrenia. While pharmacological interventions like SSRIs and SGAs are still indispensable to psychiatry practice, nondrug interventions have demonstrated meaningful cost-effectiveness in the form of cognitive-behavioral therapy, group therapy, and community-based models such as ACT, particularly in the long term. These findings highlight the need to incorporate both direct and indirect costs in the economic assessments of mental health interventions and frame a reduction in the economic burdens of mental health disorders as a promise of innovative models of care.

Digital and Emerging Interventions

Some of the innovative avenues opened by digital technologies for healthcare include cost-effective mental health interventions. Indeed, a great deal of research has been carried out into telemedicine, mental health apps, and online cognitive behavioral treatment programs from an economic perspective to further improve access to care and reduce the cost of face-to-face therapy.

Figure 2 discusses a digital health intervention, which is a specific use of technology to reach health-related goals. Digital health interventions cover a lot of ground, and the software and technologies (like digital apps) that make them possible are always changing to keep up with how quickly the field is changing. The WHO's Classification of Digital Health Interventions v1.0 is a good place to start when putting the different digital health interventions that solve specific health system problems into groups.

As an example, digital applications and ICT systems (such as logistics management information systems) are implemented and apply digital health interventions (such as to notify stock levels of health commodities) to address health system challenges (such as insufficient supply of commodities) and achieve
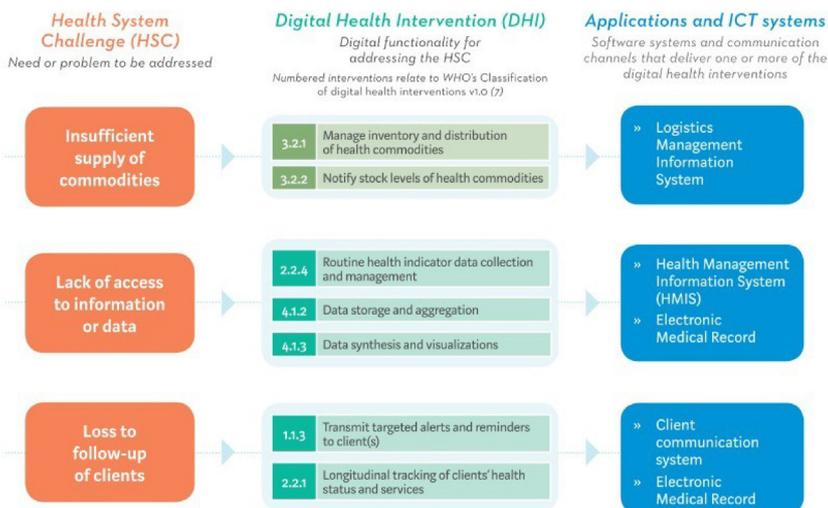
Fig 3 | Examples of how digital health interventions may address health system challenges, implemented through ICT systems.

Source: WHO Guideline Recommendations on Digital Interventions for Health System Strengthening. Geneva: World Health Organization; 2019.[51]

Fig 4 | Components of digital health implementations

Source: WHO Guideline Recommendations on Digital Interventions for Health System Strengthening. Geneva: World Health Organization; 2019.[51]

health objectives (maintain consistent availability of commodities) (Figure 3).

Digital health interventions are used within a country's health system, and their success depends on a number of important factors depicted in Figure 4. These factors include: *(i) the health domain and the content that goes with it; (ii) the digital intervention itself and the features it provides; (iii) the hardware, software, and communication channels that are used to deliver the intervention; and (iv) the country's infrastructure, leadership and governance, strategy and investment, compliance with laws and policies, workforce, standards, and interoperability, as well as common services and other apps.*

There is also the increasing application of telemedicine for disorders such as major depression and anxiety.[52] Various economic assessments conducted within telemedicine studies reflect that the method cuts down on travel costs among individuals, lessens the burden of time among patients and providers, and allows for flexibility in scheduling.[53] One study undertaken regarding telepsychiatry across rural settings demonstrated that the intervention was cost-effective since patient conformity with treatment improved because of reduced logistical barriers.[54]

Applications for mental health, such as those that provide mindfulness exercises or cognitive behavioral therapy-based interventions, have indeed shown significant cost-savings when compared to traditional therapy. These services can be scaled at lower costs, allowing more patients to receive treatments than would otherwise be possible. Indeed, a number of studies estimated that app-based cognitive behavioral treatment serves the patients just as well as in-person therapy for mild to moderate depression and anxiety disorders, with up to 60% cost savings.[55] Online therapy programs are accessible, enabling flexibility and economy compared to face-to-face therapy, especially for populations with poor access to services. Particularly relevant in the context of the COVID-19 pandemic, this has accelerated demand for remote mental health services.

Literature on economic evaluation regarding mental health interventions is immense and continues to grow. Traditional approaches, such as CEA, CUA, and CBA, no doubt may highlight the cost-effectiveness of the interventions for conditions related to depression, anxiety, and schizophrenia; however, there are significant long-term analytical gaps and a lack of standardization in terms of economic metrics. New digital interventions, such as telemedicine and app-based therapies, could hold promising potential for cost-effective care at scale, but much more work is needed to understand their long-term economic implications. If these challenges are not addressed, the future of shaping mental health policies and ensuring that interventions are accessible will not be possible.

Methodology

This section presents the methodology employed in conducting a narrative review of economic evaluation studies that have targeted mental health interventions. It allows a lot of flexibility in synthesizing a wide range of studies across diverse themes and contexts, therefore providing an overview of the existing literature on the subject area. While systematic reviews focus on a very specific question, usually with strict inclusion criteria, this narrative review enables a broader discussion of themes and interdisciplinary insights by combining findings from health care economics, mental health, and psychology.

Narrative Approach for Review

The narrative review aimed at summarizing and synthesizing findings using key methodologies, such as CEA, CUA, and CBA, which were applied to mental health interventions. This was to provide an overview of the current knowledge, identify gaps in literature, and highlight implications for future research and

policy development. The scoping started by defining the scope, focusing on studies related to the economic evaluation of mental health interventions for three major conditions: *depression, anxiety disorders, and schizophrenia*. Besides that, emerging digital mental health solutions, such as telehealth and app-based therapies, were added to provide a more complete vision of state-of-the-art interventions. The main objective was to evaluate how CEA, CUA, and CBA have been applied to mental health interventions, while the secondary objective looked at the assessment of cost-effectiveness of particular treatments and identification of themes, such as an increasing role of digital platforms. Challenges such as short-term versus long-term evaluations and underrepresentation of LMICs were also considered in the process.

Inclusion Criteria

Altogether, different inclusion criteria were set with the purpose of securing that the findings of the review were relevant and of high quality. The included studies consisted of peer-reviewed journal articles reporting on economic evaluations of mental health interventions using methods such as CEA, CUA, CBA, or any similar methodologies. Qualitative and quantitative study types were considered in order to bring wide insight into the economic impact of various interventions. Only the studies within the past two decades were included, between 2003 and 2023, to allow current developments in economic modeling and mental health treatments. Other studies involved the assessment of digital interventions for mental health. Further, only the studies published in English were assessed, given that with limited resources, it was not possible to translate articles published in other languages. Interventions reviewed included pharmacological treatments, psychotherapy, therapies conducted in groups or individually, and digital interventions, such as telehealth and mental health apps.

Exclusion Criteria

The criteria used to exclude studies made sure that the review remained on the topic of economic evaluations rather than clinical effectiveness. Studies that did not have an economic evaluation part were excluded. For example, studies that only looked at clinical outcomes without cost data were left out. To protect the review's integrity, sources that were not reviewed by other researchers were also left out. These included government reports, white papers, and conference proceedings. Also not included were case studies, editorials, and opinion pieces that weren't structured economic evaluations because they did not give enough quantitative or comparative data.

Data Sources and Search Strategy

Multiple academic databases, such as PubMed, PsycINFO, EconLit, and Scopus, were searched to make sure the review was complete. Some of the keywords that were searched for were "cost-effectiveness analysis," "cost-utility analysis," "economic evaluation," "mental health interventions," "depression," "anxiety disorders," "schizophrenia," "telehealth," "digital mental health," and "mental health apps." And along with or operators (AND, OR) were used to narrow down searches and make sure that relevant studies were found. The reference lists of important articles were also examined to find other studies that were not found in the first search.

Data Extraction and Synthesis

After choosing the studies based on the criteria for what to include and exclude, data were gathered and put together from a number of different areas. Both the method of economic analysis (e.g., QALYs, DALYs, and cost per QALY) and the sort of analysis employed (CEA, CUA, or CBA) were readily apparent. Along with data on the length and location of the interventions, information was gathered on the interventions that were being examined (e.g., cognitive behavioral treatment, SSRIs, and telehealth) and those that were being compared to them. Cost information, such as treatment costs, hospitalization rates, and lost work time, was also extracted when it was available. This included both direct and indirect costs. The most important results from each study were put together, with a focus on incremental cost-effectiveness ratios, cost per QALY/DALY, and any economic benefits that were found. Some problems with the studies were also pointed out, such as the fact that some groups were not fully represented, there were only short follow-up periods, and there were no sensitivity analyses.

Limitations of the Review

Narrative reviews, on the other hand, allow us to include studies in a more flexible way, which may introduce bias into the selection process. The language limit of English may have also left out relevant studies written in languages other than English. Also, studies that were not reviewed by experts in the field (grey literature) may have missed important information because they were not included. Lastly, many of the studies that were examined did not have longitudinal data, which makes it harder to predict the long-term cost-effectiveness of certain interventions, especially digital mental health solutions.

Results

The outcomes of this review show the economic assessments of mental health interventions, with a focus on digital mental health platforms, depression, and anxiety disorders.

These results show that different interventions are cost-effective, especially when it comes to allocating resources and planning for long-term healthcare.

Economic Evaluation of Depression Interventions

Medications such as SSRIs and cognitive behavioral therapy are the treatments for depression that have received the most attention from researchers. Increasing amounts of research are showing that cognitive behavioral therapy is helpful, especially when looking at the long-term benefits like lower rates of relapse.

Table 1 | Cost-Effectiveness of Depression Interventions

Intervention	ICER (USD per QALY)	Relapse rate (%)	Follow-up period
Cognitive behavioral therapy	$18,000	15	1 year
SSRIs	$22,000	25	1 year
Stepped-care model	$15,500	10	1 year

Table 2 | Cost-Effectiveness of Anxiety Disorder Interventions

Intervention	ICER(USD per QALY)	Cost reduction (%)	Follow-up period
Group Therapy	$12,000	40%	6 months
Individual Therapy	$25,000	N/A	6 months
cognitive behavioral therapy	$14,000	N/A	1 year
SSRIs	$20,000	N/A	1 year

Case Study

Comparison of cognitive behavioral therapy and SSRIs: According to a study by Schoenbaum et al.,[56] people with major depressive disorder were randomly assigned to either get SSRIs or cognitive behavioral therapy. It had a lower relapse rate over time, according to an economic analysis. Both treatments made depression symptoms better. It was found that the ICER for cognitive behavioral therapy was $18,000 per QALY gained and $22,000 per QALY for SSRIs. With this information, we could compare the extra costs of cognitive behavioral therapy to those of SSRIs. It was found that stepped-care models, in which treatment gets harder over time, were both the most cost-effective and efficient way to use healthcare resources, as presented in Table 1.

Economic Evaluation of Anxiety Disorder Interventions

The main things that cost-effectiveness studies have explored for treating PD and GAD are group therapy, medication, and one-on-one therapy. The cost of individual therapy is higher in places with few resources, but group therapy is always cheaper.

Case Study

Cost-Effectiveness of Group versus Individual Therapy for GAD: Heuzenroeder et al.,[57] and Haseth et al.,[58] found that group therapy for GAD was more effective and less expensive than individual therapy. Costs and improvements in anxiety symptoms had both cut in half by the end of the sixth month. However, the ICER for one-on-one therapy was $25,000, while the ICER for group therapy was only $12,000. Based on these results, group therapy might be helpful in public health care systems and places with few resources. Potential treatments were also considered to include benzodiazepines and SSRIs. However, cognitive behavioral therapy remains more cost-effective over time, according to Mihalopoulos et al.,[59] who found an ICER of $14,000. From Table 2, it can be deduced that people who have struggled with anxiety for an extended period will find this to be particularly true.

Table 3 | Cost-Effectiveness of Schizophrenia Interventions

Intervention	ICER (USD per QALY)	Hospitalization reduction (%)	Follow-up period
FGAs	$45,000	10	2 years
SGAs	$28,000	25	2 years
ACT	$19,000	50	1 year

Economic Evaluation of Schizophrenia Interventions

People with schizophrenia require frequent hospitalizations, which contributes to the high expense of treating this severe and long-lasting mental illness. Economics studies and community-based programs like ACT have compared FGAs and SGAs, two generations of antipsychotics.

Case Study

Cost-Effectiveness of SGAs versus FGAs: A 2-year study by Rosenheck et al.,[60] indicated that SGAs (such as risperidone) were less expensive than FGAs (such as haloperidol). Even though SGAs cost more up front, they have a better ICER of $28,000 per QALY compared to $45,000 per QALY for FGAs because they lower the rates of relapse and hospitalization. Patients on SGAs had fewer relapses and needed to stay in the hospital less often, which saved money in the long run.

Case Study

ACT: Knapp et al.,[61] did a study in the UK that looked at how cost-effective ACT was compared to standard care for people with schizophrenia. People who got ACT (individualized care in the community) were 50% less likely to end up in the hospital and were much better at playing with their friends. Because ACT had an ICER of $19,000 per QALY gained, it was a very good use of money.

Patients who got ACT were less likely to have to go back to the hospital than patients who got regular treatment. This proves from Table 3 that community-based treatments for schizophrenia are worth the money.

Emerging Digital Interventions in Mental Health

For mental health issues, more people are using apps and telemedicine. The reason for this is that they help lower the cost of healthcare.

Case Study

Telemedicine for Depression: One study by Fortney et al.,[62] and Salisbury et al.,[63] found that telemedicine cut the cost of treating depression by 30%. One of the main reasons was that people did not have to work as hard or travel as far. Telemedicine is a very cost-effective alternative to seeing a doctor in person. It has an estimated ICER of $10,000 per QALY.[64] This study suggests that telemedicine could make high-quality, low-cost medical care easier for people who live in rural areas or who do not receive enough care.

Case Study

Mental Health Apps for Anxiety Management: A 2018 study by Firth et al.,[65] looked at how cost-effective it is to

Table 4 | Cost-Effectiveness of Digital Mental Health Interventions

Intervention	ICER (USD per QALY)	Cost reduction (%)	Follow-up period
Telemedicine for depression	$10,000	30	1 year
Mental health apps for anxiety[1]	$8,000	40	6 months

use mental health apps like Headspace and Calm to treat anxiety disorders. With this type of digital therapy, the ICER was only $8,000 per QALY gained, which is 40% less than other types of therapy. Mental health apps seem like a great, low-cost option because so many people can use them. Communities that do not have easy access to mental health care are especially impacted.

Table 4 shows that many mental health interventions are helpful for people with some mental illnesses, like schizophrenia, depression, and anxiety. Cognitive behavioral therapy, community-based care, medication-based treatments, and digital interventions are some examples of these methods. With the help of telemedicine, mental health apps, and programs like ACT, people can get mental health care more easily at lower cost.

Discussion

Mental health problems like schizophrenia, depression, and anxiety disorders are looked at, along with digital mental health interventions, to see how much they cost and how well they work. Based on the results, it is clear that pharmaceutical treatments, psychotherapies, and digital interventions are not very cost-effective. Many studies have shown that cognitive behavioral treatment can lower the need for long-term medical care, even though it costs more at first. It stays away from drug users and improves their mental health over time. This type of therapy is known for having long-lasting effects, especially when it comes to preventing relapse. Similar to what this review says, studies like Cuijpers et al.,[66] found that cognitive behavioral treatment not only helps with symptoms but also makes things better in the long run. It works for a long time because it teaches patients coping skills that make relapse much less likely. Also, Layard et al.,[67] said that the role of cognitive behavioral treatment in improving long-term functionality saves society money, especially because people are more productive at work.

Stepped-care models that change between low- and high-intensity treatments based on how well the patient responds also make care more cost-effective. According to Richards et al.,[68] stepped-care models are very good at allocating resources because they let patients get more intensive care only if they need it, which can cut overall healthcare costs by up to 20%. SSRIs are still a good first-choice treatment for people with moderate to severe depression because they work quickly. But because they lead to more relapses than cognitive behavioral therapy, they are not as cost-effective in the long run. According to Bockting et al.,[69] people who stopped taking SSRIs had much

higher rates of relapse, which meant they needed more treatment cycles. Also, for those who are unable to attend therapy sessions due to financial constraints or distance, SSRIs remain an effective method of treating depression.[70]

Economic Evaluation of Anxiety Disorder Interventions

It has been investigated into how much it costs to treat anxiety disorders, especially GAD and PD, and it was found that group therapy is a much better deal than individual therapy. A lot of people are still using drugs like SSRIs and benzodiazepines to deal with their issues. But because they are afraid of addiction and side effects, some people have switched to longer-term treatments like cognitive behavioral therapy. This review agrees with the study by Cummings et al.,[71] That study found that people save half as much money when they go to group therapy instead of one-on-one therapy. It helps a lot of people at once, which is great for public health systems that do not have finances.

This shows that interventions that help groups are more cost-effective than those that help individuals in isolation.

Fewer people in LMICs can get to one-on-one therapy, so group therapy is better for them. In LMICs, group therapy cut down on the direct costs of health care and the time lost at work because of anxiety that could not be seen. Short-term use of SSRIs and benzodiazepines can help with anxiety. However, the longer you take them, the worse the effects may get because they can become addicting. Van Zoonen et al.,[72] and Bandelow et al.,[73] found that SSRIs were a good way to treat GAD and PD in the short term. People will be concerned, though, about how much their medicine will cost over time since they have to take it every day. This is especially true when compared to cognitive behavioral treatment and other types of therapy. During the long term, Bogucki et al.,[74] found that it was less expensive than drug therapy. This held true most when it came to lowering the costs of health care related to people not responding to treatment or relapsing.

Cost-Effectiveness of Schizophrenia Interventions

People who have schizophrenia have to stay in the hospital a lot, which makes treatment one of the most expensive mental illnesses. This review also shows that ACT and SGAs lower the direct and indirect costs of taking care of schizophrenia. More people end up in the hospital and have relapses with FGAs than with SGAs. Because of this, SGAs are a cheaper way to manage for the long term. At first, SGAs were more expensive, but a study by Leucht et al.,[75] showed that this was because their ICER was better than FGAs's, at $28,000 per QALY compared to $45,000 per QALY. Starting an SGA costs more at first, but it pays off in the long run because fewer hospital stays and caregiving work. This is because SGAs help people function better and have fewer relapses. Wunderink et al.,[76] found that SGAs helped people do better in their personal and professional lives.

People with schizophrenia can get better care for less money due to ACT. This is because people with schizophrenia do not have to go to the hospital as often. Malone et al.,[77] discovered that ACT cuts hospital stays in half over the course of a year, as it uses a personalized method that is based on the community. This method lowers the direct costs of health care and also helps patients become more a part of society over time and saves money for health care and social services over time.

Emerging Digital Mental Health Interventions

Telemedicine and apps are being used by people for their mental health. Because of these innovations, new ways of providing mental health care that are more effective and cost less are starting to appear. More people in rural areas and countries with low or medium incomes will be able to get services that are not available to them. There is evidence that telemedicine can make depression treatment much cheaper, especially in areas that are not well served or where people cannot easily reach doctors. Telemedicine is great for people who live in remote areas because it saves them from having to go to a gym or hospital in person. Patients who can do their treatment from anywhere are more likely to follow through with it as directed. This lowers the number of people who quit and improves long-term outcomes. A lot of people who have anxiety disorders do not have time to go to therapy, but mental health apps like Headspace and Calm can help. Cost-effective app-based therapies were found to do a great job, cutting costs by 40% and giving more quality years of life.[78–80] That means a lot of people can get low-cost, evidence-based help through mental health apps. It is very important to be able to grow in LMICs because it is hard to get to mental health services. It was also said by Thieme et al.,[81] that mental health apps could help treat anxiety disorders where there is not enough medical infrastructure.

Policy Implications

This review explains about how to evaluate mental health interventions from an economic point of view. Mental health services should be available and last a long time. To make this happen, policymakers should focus on interventions that work well at lower cost. Interventions that have been shown to be very cost-effective, like cognitive behavioral therapy, group therapy, and ACT, should get the most money from policymakers. Not only do these interventions relieve symptoms right away, but they also lower long-term healthcare costs by stopping relapses, making patients more useful, and lowering the number of hospital stays.

More people can afford to use digital mental health interventions like telemedicine and mental health apps, which means more people, especially those who aren't getting enough care, can get treatment. Because it facilitates easier and more affordable access to mental health care for those living in rural and remote areas, telemedicine ought to be the norm in this field.

Similarly, in LMICs, where access to regular mental health services is often lacking, the widespread use of mental health apps may help bridge the gap in care. Due to a lack of resources, many LMICs struggle to provide access to mental health care for their populations. Cheaper methods like group therapy and digital platforms could fix the lack of mental health care in these areas. These are just a few examples of the low-cost solutions that lawmakers in LMICs should prioritize implementing to ensure that all citizens have access to mental health care. Others include mental health apps and community-based care models.

Conclusion

Many types of mental health care have been shown to help keep costs down. Some of these are cognitive behavioral therapy, SSRIs, group therapy, ACT, and digital solutions for mental health. Over time, cognitive behavioral treatment saves a lot of money because it lowers the number of times people with depression and anxiety relapse. Some medicines, like SSRIs, help in the short term but not so much in the long term because people tend to relapse and have to go through treatment over and over again. SGAs and ACT are the most cost-effective ways to treat schizophrenia, especially when it comes to getting people out of the hospital and helping them do more things. Also, digital interventions like telemedicine and mental health apps are becoming more popular. These are low-cost and scalable ways to improve access to care, especially for groups that aren't getting enough of it.

Findings like this show importance for public health care systems to offer low-cost mental health treatments. This will improve patient outcomes and make the best use of resources. Interventions that have been shown to be cost-effective, like cognitive behavioral therapy, group therapy, active cognitive therapy, and digital mental health platforms, should be given priority by policymakers.

Limitations and Possible Future Paths

While this review does a good job of compiling evidence on how to calculate the cost of mental health interventions, it is not without flaws. First, this review is limited by the lack of high-quality economic evaluations, especially in LMICs, where getting access to mental health interventions that work at a low cost is still very hard. Longitudinal studies that look at the bigger social and economic benefits of mental health interventions over time should be a top priority for future research. Also, making economic metrics more consistent across studies would make them easier to compare and give us a better idea of how these interventions could be used around the world. The current evidence shows that many mental health interventions are cost-effective. However, more research is needed to fill in the gaps in long-term effectiveness and the effects of digital mental health solutions in different settings. To meet the growing need for mental health services around the world, more research needs to be done into scalable, low-cost models of care.

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