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### **Novel Platforms for care delivery. Internet-based interventions and telepsychiatry**

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## NOVEL PLATFORMS FOR CARE DELIVERY

### INTERNET-BASED INTERVENTIONS AND TELEPSYCHIATRY

Pim Cuijpers, Heleen Riper, and Aartjan T. F. Beekman

DESPITE THE considerable impact of depressive disorders on the quality of life of patients suffering from these disorders, a considerable number of patients do not seek any professional help, even in high-income countries (Bijl & Ravelli, 2000; Wang et al., 2005). This is true for patients of all age groups, but the number of older adults with depression who seek help is considerably lower than any other adult age group (Conner et al., 2010; Crabb & Hunsley, 2006). It has been estimated that the chance of visiting a mental health professional in older adults is half of the chance in younger adults, despite evidence demonstrating their need for such services (Robb, Haley, Becker, Polivka, & Chwa, 2003).

There are several intrinsic and extrinsic barriers to mental health care among older adults (Pepin, Segal, & Coolidge, 2009). An important intrinsic barrier is that older adults feel more responsible for solving their own problems. Although they recognize the symptoms of mental illness, they are less inclined than younger adults to consider outpatient services as appropriate treatment (Pepin et al.,

2009), although there are also indications that older adults in general have positive attitudes toward treatment of depression (Mackenzie, Scott, Mather, & Sareen, 2008). Furthermore, some older adults consider depression to be a normal part of aging and therefore do not report it to a professional. Stigma associated with mental illness is also an important obstacle to seeking help (Conner et al., 2010), but it is not clear whether this barrier is stronger in older than in younger adults (Pepin et al., 2009).

Extrinsic barriers to help-seeking operate outside of an individual seeking mental health services (Pepin et al., 2009). These include concerns about the payment of these services but also scarcity in clinicians specialized in treating older adults, concerns about transportation to treatment centers, ageist attitudes by general practitioners and other professionals, and the idea that depression is part of a normal aging process and does not require treatment (Robb et al., 2003).

Because of the low rates of receiving adequate treatment among older adults, and the intrinsic

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and extrinsic barriers to mental health care, it is important to develop evidence-based treatments that are easily accessible for patients and that keep time and costs at a minimum. Telemedicine and Internet-based treatments have been proposed to be such interventions (Andrews, Cuijpers, Craske, McEvoy, & Titov, 2010; Leach & Christensen, 2006; Spek et al., 2007a). In the past decade, dozens of trials have examined the feasibility, acceptability, and effects of such interventions. Although most of them have been conducted with younger and middle-aged adults, the available evidence suggests that these are also useful and effective in older adults.

In this chapter, we will describe what telemedicine and Internet-guided interventions are, the different types that exist, advantages and disadvantages of these treatments, and the evidence for the efficacy and effectiveness. We will also describe future directions for research and practice.

## WHAT ARE INTERNET-GUIDED AND TELEMEDICINE INTERVENTIONS

According to the American Telemedicine Association, telemedicine can be defined as "the use of medical information exchanged from one site to another via electronic communications to improve patients' health status" (<http://www.americantelemed.org/i4a/pages/index.cfm?pageid=3333>; approached at June 21, 2011). Telepsychiatry can be seen as the subfield that applies telemedicine to the field of psychiatry (Monnier, Knapp, & Frueh, 2003). Usually, videoconferencing between a patient and a psychiatrist or therapist is considered to be the most exemplary form of telepsychiatry. Professional consultation, for example, between a psychiatrist and a general practitioner, is also considered to be a form of telepsychiatry (Yellowlees et al., 2010). However, telephone-supported psychotherapy also falls within the definition of telepsychiatry, and it is, in fact, the best examined type of telepsychiatry (Leach & Christensen, 2006; Monnier et al., 2003).

Internet-based therapies can be seen as a specific type of guided self-help intervention. A self-help intervention can be defined as a psychological treatment, where the patient or client takes home a standardized psychological treatment and works through it more or less independently (Cuijpers & Schuurmans, 2007; Marrs, 1995). In the standardized psychological treatment, the patient can follow step-by-step instructions on what to do in applying a generally accepted psychological treatment to

himself or herself. The standardized psychological treatment can be written down in book form, but it can also be made available through other media, such as a personal computer, CD-ROM, television, video, or the Internet. Contact with therapists is not a necessity for the completion of the self-help therapy. If contact with a therapist takes place, it should only be of a supportive or facilitative nature. Contact is not aimed at developing a traditional relationship between therapist and patient, and it is only meant to support the carrying out of the standardized psychological treatment. Interaction between patient and therapist can take place through face-to-face contact, by telephone, by e-mail, or any other communication method.

Internet-guided self-help is a specific form of self-help. The contents are often comparable to those of self-help books. The technical possibilities of the Internet are used to improve the contents, for example, by adding video and audio files for illustrative purposes, by easing the use and scoring of self-rating questionnaires, and by providing easy ways to complete homework assignments. The Internet also offers the possibility to facilitate peer support.

## DIFFERENT TYPES OF INTERNET-GUIDED AND TELEPSYCHIATRY INTERVENTIONS

Internet-guided and telemedicine interventions can be delivered in many different formats and settings (Cuijpers & Schuurmans, 2007). Without trying to be exhaustive, we will describe the most important types of self-help that have been examined in effect studies:

- *Internet-based self-help without professional support.* There are several examples of unguided Internet-based treatments (Cuijpers et al., 2011). In these interventions, there is no professional or paraprofessional support, and patients can stop the treatment whenever they want.
- *Internet-based self-help as partial replacement of face-to-face therapy.* Internet-based self-help interventions can also be used to support regular treatment. Therapists can give a patient access to an Internet program in order to speed up treatment or to allow the patient to practice with and learn the principles of the therapy in his or her own time. Therapists can also advise the patient to have an Internet-based treatment for a specific problem, such as disturbed sleep or mild alcohol

problems, which might not be the focus of therapy but do interfere with the patient's functioning (Cuijpers & Schuurmans, 2007).

- *Internet-based self-help as an independent intervention.* Internet-based self-help can be delivered as an independent intervention or as part of a stepped-care approach in mood disorders (Scogin, Hanson, & Welsh, 2003). Usually, there is some support from a professional or paraprofessional. Most empirical studies have used these interventions (Andersson & Cuijpers, 2009; Andrews et al., 2010). The patient gets access to an Internet-based therapy and works it through independently, while keeping in contact with a professional by e-mail or chatting, at regular times. These contacts are brief and not aimed at developing a traditional relationship between patient and therapist, but only at answering questions about the method and stimulating the patient to continue with treatment.
- *Telephone-supported psychotherapies and other telepsychiatry interventions.* There are several studies in which psychotherapies are conducted through the telephone, without any face-to-face contact between patient and therapist (Leach & Christensen, 2006). Although most of these studies have been conducted with middle-aged and younger adults, there is no reason to assume that it is not effective in older adults. Telepsychiatry interventions with videoconferencing have been examined in several pilot studies in geriatric populations (Johnston & Jones, 2001; Tang, Chiu, Woo, Hjelm, & Hui, 2001; Yeung et al., 2009).

This list of Internet-based and telepsychiatry interventions is not exhaustive. Several other types are available, such as online support groups, and several others are currently being developed, such as serious gaming interventions and mobile interventions. However, the interventions described in the aforementioned list are the ones that are already available and have been examined in randomized controlled trials, although the number of trials still is limited for most of these interventions.

### ADVANTAGES, DISADVANTAGES, AND DANGERS

Internet-guided and telepsychiatry interventions have both advantages and disadvantages. One important advantage is that they may save time. In

telepsychiatry interventions there is no travelling time for patients or therapists. In Internet-based guided self-help interventions, even more time can be saved, because most of the therapy is conducted by the patient himself. The therapist only has to check whether the patient has done his or her homework and to have brief contact by e-mail or telephone to give feedback about the homework assignments. In one study it was found that the number of therapy sessions for depression could be reduced with about 50% if patients were given computer-assisted therapy as opposed to regular therapy (Wright et al., 2005). Another important advantage related to this is that self-help interventions can reduce the costs of treatment considerably.

Maybe even more important is that Internet-guided and telepsychiatry interventions extend the reach to populations with mood and anxiety disorders who are not reached with more traditional forms of treatment. As indicated earlier, many patients do not seek professional help for a number of reasons. Internet-guided and telemedicine interventions may be able to solve some of the problems associated with help-seeking. First, possible concerns about transportation to treatment centers are not relevant in Internet-guided and telemedicine interventions because these interventions can be conducted without leaving home. Second, Internet-based treatments are based on the principle that patients solve their problems themselves. The treatments are only meant to support patients in helping themselves. The coaches are not traditional therapists; they only help patients work through the interventions. Because older adults feel more responsible for solving their own problems, these interventions may be more suitable for them than traditional mental health treatments. Third, the stigma associated with mental illness, which is a barrier in all age groups, may be less of a problem in Internet-guided and telemedicine interventions, because receiving these interventions is not visible for anyone else, and Internet-based interventions may be even conducted at the time the patient chooses, even if this is in the middle of the night. Fourth, especially Internet-guided interventions are cheaper for the patient than traditional therapies, because less time per patient is spent by the therapists. Because of these reasons, Internet-guided and telepsychiatry interventions may reach a segment of the population that is not reached by traditional treatment methods.

There are several other advantages. These interventions may reduce waiting lists, allow patients to work at their own pace, and abolish the need to

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**Table 31.1 Common Components of Internet-Guided and Telepsychiatry Interventions**

	COGNITIVE RESTRUCTURING	BEHAVIORAL ACTIVATION	PROBLEM-SOLVING THERAPY
Goal	Learn about dysfunctional thoughts and their relationship with mood, thoughts, and behavior:	Learn about the relationship between mood and activities:	Learn about the relationship between mood and problems experienced:
Components	Identify dysfunctional thoughts Evaluate the appropriateness of these dysfunctional thoughts Challenge these dysfunctional thoughts with more appropriate ones Modify existing dysfunctional thoughts into more functional ones	Identify different types of activities Register pleasant activities Aim and plan for an increase of pleasant activities (calendar) Decrease unpleasant or perceived necessary activities Develop reward system for conduct of pleasant activities Conduct and maintain plan Train social skills	Identify and relate problems, psychological complaints, and important goals in life Learn to distinguish between problems that are solvable, unsolvable, and unimportant problems Learn techniques to cope with the three types of problems Learn to focus on solvable problems and systematic solving strategies Apply these alternative strategies in daily life

schedule appointments with a therapist. Additionally, Internet-based therapies make it easier to treat the hard of hearing because these treatments typically work more with visual than auditory information (Marks, Cavanagh, & Gega, 2007). Even more advantages of Internet-based therapies can be named. For example, it may be programmed to enhance patients' motivation by presenting a wide range of attractive audiovisual information, adaptable to fit a client's preferences in whatever gender, age, accent, language, and game format. Furthermore, it can quickly and automatically report patient progress and self-ratings.

There are, of course, also some disadvantages and dangers worth mentioning. Patients may not be able to finish an Internet-based self-help intervention, which may result in a negative experience that could have a detrimental effect on their condition. Also, a patient's problems may be too severe for an (unguided) self-help intervention, which may prevent the provision of adequate help. Or the patient may suffer from a different disorder than the one aimed at by the intervention at stake.

Internet-based self-help interventions may have other disadvantages. Although the Internet is

available for most people in Western countries, and is expected to grow even further, there is still a large group of older people who do not have Internet access or for whom the intervention is not acceptable. The last group may have access to the Internet, but it will not work with it because of technophobia. Furthermore, the subtle nonverbal and verbal clues to clients' misunderstandings are not detected, and it may stimulate clients to cherry-pick from a range of homework options presented (Marks et al., 2007). Whether telepsychiatry and Internet-interventions may yield negative effects has not been properly examined in empirical research, and it should be the focus of future research.

## COMMON COMPONENTS

Most Internet-guided and telepsychiatry interventions are based on cognitive-behavioral techniques, such as cognitive restructuring and behavioral activation. Cognitive-behavioral interventions represent current state-of-the-art treatment for depressive disorders, as they have been shown to be effective in large numbers of well-designed randomized studies



and meta-analyses (Churchill et al., 2001; Wampold, Minami, Baskin, & Tierney, 2002). A far more pragmatic reason for choosing cognitive-behavioral techniques is the fact that these techniques tend to be very straightforward and can therefore be readily broken up into relatively easy steps, as opposed to most other common psychological interventions, such as psychodynamic or interpersonal therapies. In Table 31.1, the goals and content of the most common components of Internet-guided and telepsychiatry interventions are presented.

The core of cognitive-behavioral therapy is cognitive restructuring. The intervention is focused on the impact a patient's present dysfunctional thoughts have on current behavior and future functioning. Cognitive restructuring is aimed at evaluating, challenging, and modifying a patient's dysfunctional beliefs. Behavioral activation is aimed at increasing positive interactions between a person and his or her environment. Registration of pleasant activities is an important part of behavioral activation, as well as the development of a plan to increase the number of pleasant activities in daily schedules. Social skills training can be a part of behavioral activation. Apart from cognitive restructuring and behavioral activation, problem-solving techniques are also often included in Internet-guided and telepsychiatry interventions. Systematic problem solving is usually considered to be one of the techniques in cognitive-behavioral therapy. In problem-solving therapy, a patient learns to solve currently existing personal problems. First, the existing problems are defined as well as possible, then a list of possible solutions is generated, the best solution is selected, a plan is made to solve it, and the plan is executed; if the problem is not solved by this, there is a loop back to the first step.

Although most telepsychiatry interventions are also based on cognitive-behavioral therapy, the telephone offers more opportunities to use other psychological techniques. For example, pilot projects have been conducted in which social support has been provided through the telephone (Hunkeler et al., 2000), as well as broader disease management programs (Datto, Thompson, Horowitz, Disbot, & Oslin, 2003).

## THE EFFECTS OF INTERNET-GUIDED INTERVENTIONS FOR MOOD DISORDERS

There are a growing number of randomized controlled trials showing that telepsychiatry and

Internet-based therapies are effective. However, almost all of this research has been conducted in younger and middle-aged adults (Diamond et al., 2010). There are only few studies specifically aimed at older adults (e.g., Egede et al., 2009). On the other hand, there is no a priori reason to assume that these interventions are less effective in older adults.

Several recent meta-analyses have shown that Internet-interventions are effective for mood and anxiety disorders (Andersson & Cuijpers, 2009; Andrews et al., 2010; Cuijpers et al., 2009; Spek et al., 2007a). The effect size found for Internet-based interventions is comparable to those found for face-to-face therapies, ranging from 0.78 (Hedges's  $g$ ; Andrews et al., 2010) to 0.61 (Cohen's  $d$ ; Andersson & Cuijpers, 2009) for supported Internet-interventions. This is very comparable to face-to-face therapies, which result in effect sizes in the same ranges (Churchill et al., 2001; Cuijpers et al., 2010).

Most Internet-based therapies can be considered to be guided self-help interventions in which the patient applies the intervention to himself or herself more or less independently. In a recent meta-analysis of studies in which guided self-help intervention was directly compared with face-to-face therapies for depression or anxiety, no significant difference was found between the two types of therapy, despite sufficient statistical power (Cuijpers et al., 2010). Because only a few studies actually used Internet-based interventions (most used self-help books), we have to be cautious with definite conclusions. These results do, however, provide suggestive evidence that Internet-based therapies may be as effective as face-to-face therapies.

Almost all of the studies examining Internet-therapies for depressive disorders have been conducted with middle-aged and younger adults. Until now, only one study has been conducted with older adults (Spek et al., 2007b, 2008a, 2008b), and although the study was aimed at older adults (50 years or older), most of the 301 participants were 60 years or younger (mean age was 55). In this study a cognitive-behavioral Internet-based therapy was compared with the same intervention in group format (the "Coping with Depression" course), and a waiting list control group. No significant difference between the two treatment conditions was found, and both were superior to the waiting list control group (Spek et al., 2007b). At 1-year follow-up, both treatment conditions still showed a significantly better outcome than the control group, and still no

significant difference between the active conditions was found.

Despite the positive results of this study, it is the only study on an Internet-based treatment for depression aimed at older adults. Furthermore, the participants in this study are relatively young and should not be compared, for example, with the "older old" of 80 years and older. On the other hand, there is no a priori reason to assume that these interventions are less effective in older adults compared to middle-aged and younger adults. In a recent meta-regression analysis, considerable evidence was found that psychological treatments in general are as just as effective in older adults as they are in middle-aged and younger adults (Cuijpers et al., 2009).

Several meta-analyses in this field find that guided Internet-based interventions are more effective than interventions without any type of support by a professional (Andersson & Cuijpers, 2009; Spek et al., 2007a). Internet-based interventions with support by a coach are about as effective as face-to-face therapies, even when this support is given by students (Warmerdam, van Straten, Twisk, & Cuijpers, 2008) or technicians (Titov et al., 2010). Unguided Internet-based interventions, on the other hand, also have significant effects on depression, but these are considerably smaller (effect size,  $d = 0.28$ , which corresponds to an NNT of 6; Cuijpers et al., 2011). This difference between guided and self-guided Internet-interventions is not a principal one. It is very possible that in the near future self-guided therapies will be developed that are as effective as guided therapies. However, the currently available unguided therapies are not yet as effective as the guided therapies.

The effects of Internet-based therapies for depression have been supported by a growing number of studies in this field. The research in this area is not limited to depression. Since the year 2000 and especially since 2005, the number of studies examining the effects of Internet-based therapies for all kinds of mental health and physical problems is exploding. At this moment dozens of randomized controlled trials have examined the effects of Internet-based therapies for generalized anxiety disorder, panic disorder, social phobia, sleep problems, pain, migraine, eating problems, and problems with smoking and lifestyle (Cuijpers, van Straten, & Andersson, 2008; Marks et al., 2007).

While the effects of Internet-based treatments for depression and other problems are relatively

well established, we have to remember that only patients who are motivated to be treated with such interventions participate in these studies. Patients who are not motivated for Internet treatments will not participate in such trials. At the same time very little is known about how many patients are motivated to participate in Internet-based interventions and how many are not. Although it is true for all treatments that studies are limited to patients who are willing to receive the studied intervention, Internet-interventions are new and it is not known whether patients who are now being treated with regular psychotherapy are willing to be treated with Internet therapies. Nor do we know how many patients who are now untreated will be treated when Internet interventions are widely available.

## THE EFFECTS OF TELEPSYCHIATRY INTERVENTIONS FOR MOOD DISORDERS

The effects of telepsychiatry interventions with videoconferencing for depression have not yet been examined extensively in randomized controlled trials. In one randomized trial, 119 depressed veterans referred for outpatient treatment were randomly assigned to either telepsychiatry or face-to-face treatment. Both treatments lasted 6 months and consisted of pharmacotherapy, psychoeducation, and brief supportive counseling. No significant differences were found between these two conditions, suggesting that telepsychiatry may be as effective as face-to-face therapies (Ruskin et al., 2004). Although several other randomized controlled trials have been conducted with telepsychiatry with videoconferencing (García-Lizana & Muñoz-Mayorga, 2010; Hailey, Roine, & Ohinmaa, 2008; O'Reilly et al., 2007; Westphal, Dingjana, & Attoe, 2010), no other trials have examined treatments of depression in older nor in middle-aged and younger adults.

Several more randomized controlled trials have examined the effects of telephone-supported psychological treatment. A recent systematic review identified 14 randomized trials examining the effects of telephone-supported psychological treatments (Leach & Christensen, 2006). Six of these trials were focused on depressive disorders, although none of these were aimed at older adults. Although the results of these studies indicate that telephone-supported psychological treatments may be effective as

treatments for depression, the sample sizes of these studies were small and the quality was not optimal. Therefore, no definite conclusions can be drawn at this moment. Larger and better randomized trials are needed to establish the effects of telepsychiatry interventions with and without videoconferencing.

## DIRECTIONS FOR THE FUTURE

Internet-based interventions and telepsychiatry are promising interventions. They may reduce the costs of treatments for mood and other mental health problems in older adults considerably. They may also reach patients who are now untreated, they may simplify treatments considerably, and stimulate self-management. At this moment however, too few well-designed randomized trials have established the effectiveness of these interventions. In older adults almost no trials have been conducted. Internet-based interventions and, to a lesser extent, telephone-supported interventions have been examined and there are sufficient indications that these are effective. The multiple settings in which telepsychiatry interventions can be used for the elderly, such as at home or nursing homes or homes for the elderly, are not yet studied sufficiently either.

However, modern technologies offer much more possibilities than currently used. Direct contact between therapists and the patient through the television are technically possible, serious gaming is becoming a serious alternative for regular mental health interventions, and the Internet is now moving quickly toward mobile connections to the Web. The bigger screen of tablet handheld technologies accommodates the use of mobile devices especially by the elderly. This offers new technological possibilities for assessing mental health problems and implementing interventions into daily life, and many new pilot studies are currently developed. Clearly, technological developments go much faster in these areas than research in general and randomized controlled efficacy trials specifically. In the next decade we will see how this field develops.

One important issue is to improve the understanding of how Internet interventions stimulate behavior change and symptom improvement. A careful examination and testing of changes in behavior that lead to symptom improvement is essential for the understanding of how Internet interventions, and even treatments in general, work. To realize this, models specific to Internet interventions are needed,

as there are obvious differences in treatment delivery from traditional interventions. We also have to do more research specifically aimed at older adults and develop interventions in such a way they are feasible and acceptable for older patients.

Another important research issue concerns implementation and dissemination of Internet interventions. The research in this area has progressed considerably in the past decade, and it is time to think about dissemination and implementation in routine care, although this may not yet be true for specific interventions for older adults. Most health care systems are not equipped to finance the interventions. Models for the dissemination and implementation of scalable interventions are needed. Making Internet interventions available to the public is an important goal. It is important to examine models of commercialization that help determine how to efficiently disseminate these programs. A range of business models should be made available to develop research prototypes into fully scaled applications.

It is also important to develop an understanding of who will use Internet interventions and how to encourage adherence. By closely examining the characteristics of its users a better understanding should emerge on who will use the interventions and who will not. Furthermore, it will help improve the tailored nature of these programs, and to predict outcomes. Poor adherence and early dropout are issues of major concern for most health interventions, perhaps even more so for Internet interventions. Developing ways to reduce attrition, improve adherence, and maintain compliance are major objectives for research in this area.

## CONCLUSION

Mood disorders are highly prevalent in older adults and result in huge losses in quality of life and high levels of service use. Internet-based interventions and telepsychiatry are important new tools to reduce the disease burden of these disorders. They may save considerable amounts of therapist time, reach populations with mood and anxiety disorders who cannot be reached otherwise, reduce waiting lists, simplify the organization of care, save traveling time, and reduce the stigma of going to a therapist. A growing body of research shows that Internet interventions are as effective as the more traditional face-to-face therapies, although more research is needed in older adults.

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Not all questions regarding Internet-based interventions and telepsychiatry have been answered. The disadvantages, such as lack of adequate diagnostics, lack of access to the Internet, and technophobia, may result in negative effects for some patients or clients. More research is needed on core areas of these interventions. These include the effective ingredients and behavioral change processes, optimal ways of implementing and disseminating such interventions, the profiles of users for whom this type of intervention is effective, and the improvement of adherence.

There is no doubt, however, that Internet-based interventions and telepsychiatry will change mental health care for older adults considerably, especially with the new developments of mobile technologies and the integration of the Internet in the television.

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Dr. Cuijpers has nothing to disclose.

Dr. Ripper has nothing to disclose.

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