

Advantages and limitations of Internet-based interventions for common mental disorders

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Several Internet interventions have been developed and tested for common mental disorders, and the evidence to date shows that these treatments often result in similar outcomes as in face-to-face psychotherapy and that they are cost-effective. In this paper, we first review the pros and cons of how participants in Internet treatment trials have been recruited. We then comment on the assessment procedures often involved in Internet interventions and conclude that, while online questionnaires yield robust results, diagnoses cannot be determined without any contact with the patient. We then review the role of the therapist and conclude that, although treatments including guidance seem to lead to better outcomes than unguided treatments, this guidance can be mainly practical and supportive rather than explicitly therapeutic in orientation. Then we briefly describe the advantages and disadvantages of treatments for mood and anxiety disorders and comment on ways to handle comorbidity often associated with these disorders. Finally we discuss challenges when disseminating Internet interventions. In conclusion, there is now a large body of evidence suggesting that Internet interventions work. Several research questions remain open, including how Internet interventions can be blended with traditional forms of care.

Key words: Internet interventions, cognitive behaviour therapy, mood and anxiety disorders, dissemination

(World Psychiatry 2014;13:4–11)

Internet-based psychological treatments have a relatively short history, but extend on principles and evidence established by computerized interventions (1) and bibliotherapy (2).

Reflecting the evolving nature of the field, a broad range of terms have been used to describe Internet-delivered treatments, although consistency is emerging (3). We will use the term “Internet-based interventions” for treatments that are mainly delivered via the Internet with at least some therapeutic tasks delegated to the computer.

We will focus on psychological treatments delivered via the Internet. However, it should be noted that the Internet is also widely used by patients and their significant others to seek information about mental health issues (4), and may also be used by patients to engage in online support groups (5). Information seeking and online support groups are not the topic of this paper, but should be considered as important for psychiatry, since they may influence patient management (6).

The model of Internet-delivered treatment for which there has been most research activity is Internet-delivered cognitive behaviour therapy (ICBT) (7). However, other models of psychotherapy (e.g., psychodynamic and interpersonal psychotherapies) have also been delivered via the Internet to a much lesser extent.

During ICBT, patients login regularly to a secure website over a specified period to access, read and download online materials arranged into a series of lessons or modules (8). They receive homework assignments which they are expected to complete before the next module is available. They also regularly complete computer administered questionnaires relevant to their presenting problems, which allows a therapist to monitor progress, safety and outcomes.

Two dimensions which can be used to categorise ICBT are whether it involves therapist contact, and whether it aims to treat mental disorders or prevent their development. Internet interventions that involve therapist contact can be further divided into those that involve real-time (synchronous) or delayed (asynchronous) interaction with patients. Examples of the former include contact via telephone, video, or messenger services (9), while examples of the latter include secure e-mail communications. For pragmatic purposes, therapists may use a combination of synchronous and asynchronous communications during treatment.

The amount of time therapists spend working with patients varies considerably between studies, with some requiring therapists to spend considerable time reading and responding to writing assignments (8). Many programs, however, involve only minimal guidance via e-mail (or secure asynchronous communication system), which requires considerably less time than face-to-face therapy (9,10).

In this paper we discuss the advantages and disadvantages of Internet-delivered treatments for common mental disorders, with a focus on ICBT, although other forms of Internet interventions are also mentioned. We examine a broad range of issues regarding recruitment, assessments, the role of the therapist in guided ICBT, treatments for mood and anxiety disorders, management of comorbidity, and dissemination.

RECRUITMENT OF PATIENTS

Patients may be recruited for Internet-delivered treatments by multiple means that include advertising and promotions through online and traditional media, epidemiological surveys

(11), webpages, and less frequently, referrals from health practitioners.

Allowing patients to self-refer to Internet interventions offers multiple advantages. It is a well-known fact that many persons with mood and anxiety disorders never reach specialist clinics and sometimes hesitate to even mention their problems when consulting general practitioners, and by means of online recruitment the treatment versus demand gap can decrease (12). In other words, patients who may have remained untreated for many years may be given evidence-based psychological treatment for the first time. This is indeed an observation we have made, as research participants in our trials and clinics often have had their problems (for example social anxiety disorder) for decades. Furthermore, the format of Internet interventions makes it possible for prospective patients to reflect on the treatment before they make an informed decision to commit to it.

Online recruitment and particularly patient self-referral has, however, raised questions about whether the characteristics of patients using online services are similar to those accessing traditional face-to-face clinics. This is important from the perspective of determining whether this model of service delivery can be provided at a public health level. A common observation in Internet trials is that research participants tend to be better educated than the general population. This may reflect an artefact of the digital divide, i.e., the fact that access to the Internet reflects socio-economic characteristics, although such differences may attenuate as access continues to increase across social groups. However, it may be that, by virtue of increased levels of education and the self-selected nature of recruitment, online patients are more motivated to participate in treatment, and therefore are more responsive.

Our experience is that patients who use Internet-delivered treatments represent a broad range of people. These include people with both low and high levels of education and different cultural groups. This represents a challenge for the design and delivery of ICBT, though some initial steps have been taken in culturally adapting treatments (13). Patients also present with a spectrum of experiences with previous mental health services. Some have previously received traditional face-to-face treatments, while others have never sought treatment, despite years or decades of distressing symptoms. There is relatively little research on patient characteristics in ICBT versus other trials and regular clinics, but there is evidence to suggest that participants in Internet trials are more similar to persons in the general population who have the same problems than patients who are seen in specialist clinics (14,15).

There is also now an increasing number of effectiveness trials on ICBT, i.e., trials that have been conducted in regular clinical settings. A recent review identified four controlled studies and eight open studies that had been conducted in regular clinics (16). All studies clearly showed that the promising effects of ICBT in trials with patients recruited via advertisements can also be observed when the treatment is transferred to regular clinics.

INTERNET-BASED ASSESSMENTS AND DIAGNOSIS

Accurate and reliable diagnosis and measurement of symptoms is as important in Internet-delivered treatments as in traditional face-to-face treatments. An expanding literature concerned with how to collect patient data via the Internet has evolved (17), and it is timely to highlight the pros and cons of online data collection.

We can conclude from several studies that questionnaire data can be collected without compromising psychometric characteristics (18-20), but there is a need for a systematic review of this issue and it is commonly argued that norms need to be collected separately for paper-and-pencil and Internet administration (17). Advantages of Internet administration of questionnaires are that the risk of missing items can be reduced and that crucial items can be automatically highlighted for the clinicians (e.g., red flags in case of elevated suicide risk). Moreover, summary scores can be automatically generated and algorithms developed to help therapists monitor progress and actively intervene in cases of suspected lapse. Automated administration also results in reduced costs associated with scoring and posting questionnaires.

The cons of Internet administration include first and foremost security issues. This is relevant not only to data storage, but also to methods of collection. While most researchers and clinicians comply with information security frameworks similar to online banking standards, the recent advent of mobile smartphones reminds us of evolving issues in security associated with new technology. An additional con is the difficulty of checking accuracy of responses and of obtaining additional information. The former can be addressed to some extent by asking patients to confirm that responses are correct, while the latter can be managed by the adoption of clinical protocols that require telephone contact when clinically indicated. These procedures must be implemented within a governance framework acknowledging legal and informed consent issues.

A more critical question concerns limits of diagnosing patients via the Internet. Clearly, self-diagnosis would have many advantages, such as saving clinicians' time, but to date there is little to suggest that self-assessments can replace structured diagnostic interviews, and Internet administration does little to change this fact (21). On the other hand, if patients are required to first receive a diagnostic assessment at a face-to-face clinic, some of the advantages of Internet interventions may be reduced. Indeed, at the Internet psychiatry unit in Stockholm, this is the case when patients are diagnosed at the clinic (22).

In research, it is common to conduct structured psychiatric interviews such as the Mini-International Neuropsychiatric Interview (23) via telephone. This procedure is better than not obtaining any diagnoses at all and can generate valid findings (24). However, there are disadvantages with not seeing the patient, and information may unavoidably be lost. Again, the adoption of pragmatic clinical protocols requiring face-to-face assessments in the presence of

sufficient complexity of symptoms can address issues relating to diagnostic accuracy.

In summary, online questionnaires work well, but psychiatric diagnoses cannot be reliably made using self-report only. A compromise is to conduct interviews over the telephone. A secure online video conferencing platform could work as well, although research is needed to investigate the relative costs and benefits associated with this option.

THE ROLE OF THE THERAPIST IN INTERNET-BASED TREATMENTS

Important discussions in the field of Internet interventions concern the role of a therapist or professional compared to automated programs that do not include any interaction with a human (25). Reviews of the literature consistently show that treatments that include guidance lead to better outcomes than unguided treatments (26-28), but there are occasional exceptions, and unguided treatments are emerging that can work by means of automated reminders and similar solutions (29,30).

The available evidence indicates that indeed any contact with a clinician may improve outcomes. For example, a systematic review of Internet interventions for depression found a linear effect for the role of clinician contact, such that between-group Cohen's *d* effect size was of $d=0.21$ if there was no therapist contact either before or during treatment, of $d=0.44$ if there was therapist contact before treatment only, of $d=0.58$ if there was therapist contact during treatment only, and of $d=0.76$ if there was therapist contact both before and during treatment (31).

While some data indicate that, when given choice, patients may be more likely to opt for unguided treatments, there are important advantages to guided treatments. First, a therapist can make a diagnosis, to help determine the suitability of a treatment for a patient. Second, the intervention can be tailored and advice individualized following consultation with experienced clinicians: in fact, some support in ICBT is asynchronous, which means that clinicians can consult colleagues and other experts before answering and providing feedback to patients (32). Third, there are clear indications that support increases adherence and prevents dropout, an important issue given that at least some unguided interventions have suffered from unacceptably high dropout rates (33). Fourth, therapists can actively assist patients to access other services that may be required, including social, health and crisis services.

However, there are also outstanding questions about the optimum frequency and form of support that should be provided. First, there is no clear dose-response relation between support and outcome, and treatments in which substantial support is given do not appear to differ from treatments with minimal support (e.g., 10 minutes or less per client and week) (28). Second, while studies indicate that equivalent clinical outcomes have been obtained whether support is

provided by a professional psychologist or a coach, providing the latter is under careful clinical supervision and the ICBT is highly structured (34-36), it is unclear whether similar outcomes would be obtained with less structured interventions. Third, while guided Internet interventions are cost-effective (37,38), the provision of guidance is indeed more costly than automated treatments, and unguided treatments with small effects can still be cost-effective (39). Thus, from a public health perspective, the minimal costs of providing Internet interventions without guidance can in some cases be justified if they are safe. A fourth outstanding question relates to the limited knowledge about therapist factors which are widely held to be important in face-to-face treatments (40). In addition to the findings regarding the role of technical versus more psychotherapeutic guidance (34-36), there are a few studies in which the therapist factor has been studied showing no or small effects (41,42).

On the other hand, the way guidance is provided seems to be important even if most of the communication tends to be of a supportive character (43). In a study in which the therapist correspondence was coded, it was found that a lenient attitude towards homework was associated with a worse outcome (10). Consistent with this, observations from our online research and clinical work indicate that better outcomes are associated with adherence to scripts which direct patients to key issues, while minimizing therapist drift.

Therapeutic alliance is another factor that is widely regarded as important in psychotherapy outcome research. Several studies on Internet interventions have collected data from patients on how they rate the therapeutic alliance with their online therapists (44). Most studies show no association with outcome, even if alliance ratings tend to be fairly high (45,46). There are, however, a few studies in which alliance early in the treatment predicted outcome (47,48).

In sum, and to date, most studies suggest that therapist contact is associated with better outcomes in Internet interventions. However, provided the content of the Internet treatment is of appropriate quality and sufficiently engaging for patients, therapist expertise may be less important than in face-to-face therapies. Thus, depending on the degree of structure in the model of Internet intervention adopted, guidance can be mainly practical and supportive rather than explicitly therapeutic in orientation. This offers advantages in terms of fidelity and efficiency of patient and therapist time. Indeed, the therapist can focus on supporting patients to master skills and overcome hurdles to the application of the intervention.

INTERNET-BASED TREATMENTS FOR MOOD AND ANXIETY DISORDERS

Most studies on Internet-based treatments have evaluated interventions for mood and anxiety disorders of mild to moderate severity (with the exception of some anxiety disorders

that can be regarded as severe). In a surprisingly short time, treatments have been developed and tested for a range of anxiety disorders, including panic disorder (49), social anxiety disorder (50-52), generalized anxiety disorder (53,54), post-traumatic stress disorder (8,55), obsessive-compulsive disorder (56,57), severe health anxiety (58), and specific phobia (59). Most studies have been on adults, but there are also studies on children/adolescents (60,61) and older adults (62).

The majority of studies of mood disorders have examined major depression and have evaluated different forms of CBT (35,63,64). In addition, several Internet intervention studies have evaluated other models of therapy, including psychodynamic psychotherapy (65) and physical activity (66). Direct comparisons of face-to-face CBT and ICBT have shown equivalent outcomes, with gains sustained in the long term (67), and this pattern of results was replicated in effectiveness studies (16).

Several advantages and disadvantages are emerging. Advantages include improved access to evidence-based treatments for patients as well as cost-effectiveness compared to face-to-face treatment. Furthermore, since patients can return to the program at their convenience to access treatment information, this may facilitate learning and retention. In addition, with the assistance of automated software features, therapists can monitor patient progress and outcomes and proactively support patients before a crisis develops. This means that patients in an Internet intervention may receive support from a therapist faster than would have been the case if they were receiving only weekly visits.

The main disadvantages appear to reflect the relatively new nature of the field. For example, there is limited knowledge about the characteristics of patients who are likely to benefit. Several studies have explored this issue, but few consistent predictors have been identified (68,69) and more research is needed. An additional and related topic requiring further information is the rate of negative outcomes and the risk that these are not detected. Negative outcomes following psychological treatments are a neglected aspect (70), and practically nothing has been written on this topic concerning Internet interventions.

From the perspective of integrating Internet interventions with existing mental health services, outstanding questions include the potential benefits of sequencing ICBT with face-to-face psychotherapy. One possible scenario may envisage the Internet intervention as a first step followed by more intense face-to-face treatments when needed (71). This sequence may be more frequently appropriate when the first step is unguided ICBT. On the other hand, we have seen patients who have failed face-to-face treatments and subsequently improve following ICBT, which may reflect issues associated with treatment readiness. More research is needed here, as not much is known regarding ICBT as a step in stepped care models.

In summary, there is a strong and consistent evidence base in favour of ICBT. Factors relevant to face-to-face treatments, including treatment readiness, are likely to be rele-

vant. However, more information is required about the rate and determinants of dropout and non-response, as well as on the potential benefits of sequencing ICBT with face-to-face psychotherapy.

MANAGING COMORBIDITY

To date, the majority of Internet interventions have targeted specific disorders. However, a limitation of such interventions is the high prevalence of comorbidity (either co-occurrence of a mood and an anxiety disorder or co-occurrence of a mood or an anxiety disorder with other mental or physical disorders). Two recently developed strategies for addressing this problem are transdiagnostic and tailored Internet treatments. Both have received empirical support in controlled trials (65,72-74) and are associated with different pros and cons.

The main pros of transdiagnostic treatments include their high face validity with patients, who often report recognizing the relevance of learning about a range of symptoms; time saving for both patients, who do not have to work through different disorder-specific protocols, and therapists, who have to administer only one, rather than multiple interventions, which then allows capacity for individualizing therapy based on specific patient characteristics; and potentially reduced relapse rates due to increased emotional resilience. The main con are outstanding questions about whether patients with some diagnoses, such as that of social anxiety disorder, will benefit less from a transdiagnostic than from a disorder-specific treatment. This risk may be addressed by the provision of extra material which can be targeted towards specific needs (75).

The pros of tailored treatments include acknowledging and meeting patient preferences by providing a choice of treatment modules (76). Further, tailoring treatment content according to symptom profile does not only involve picking a suitable treatment program for the patient (like for example modules on generalized anxiety disorder, insomnia and problem solving), but also adapting the treatment according to the capacity of the patient (65). Finally, it is possible that tailored treatments are better suited to handle more severe disorders, which was indeed found in a controlled trial comparing standard ICBT versus tailored intervention in depression with comorbid problems (65). Among the disadvantages with tailored ICBT as it is currently set up, are the fact that the tailoring process is still based on best practice, since specific algorithms on how the tailoring should be made are being evaluated, and the risk of adding too much material, with the possible problem of overloading the patient.

Overall, there is now evidence to suggest that both transdiagnostic and tailored approaches to Internet interventions work, although their relative merits compared to diagnosis-specific treatments are less well known, with some studies reporting a superiority of the former (e.g., 65) and others reporting no difference (e.g., 76).

DISSEMINATION INTO CLINICAL SETTINGS

Several studies have examined the effect of Internet interventions delivered in regular clinical services (16). These studies consistently show that the promising results of Internet treatments found in efficacy studies (mainly with ICBT) are replicated in effectiveness studies, with moderate to large effect sizes.

There are advantages and disadvantages involved in the use of Internet interventions in regular clinical practice. First, because of the highly structured and often scripted nature of the intervention, therapist drift is less likely to occur compared to face-to-face therapies. Second, outcome monitoring is often embedded in the clinical implementation, thus facilitating the assessment of progress and safety (22). Third, Internet interventions can be organized as nationalized centralized health care (i.e., specialist centres), which reduces the need for duplication of resources and facilitates training and supervision. This frees up resources for other important activities, such as updating and adapting treatments to new needs (for example, delivering the treatments in different languages). Fourth, Internet interventions can also be delivered as local care in general practices and therefore be combined with other treatment options such as medication and face-to-face psychotherapy.

Among the disadvantages, the first and foremost is probably the common negative clinician and patient attitudes towards Internet interventions (77,78). Nevertheless, some surveys show that attitudes among people with mental disorders recruited from the general population may be more positive (79,80), and there are probably differences between countries depending on the level of Internet access. Furthermore, the skepticism of clinicians can be addressed through education (81).

A second related problem is that clinicians may feel threatened and fear losing their work as practicing psychotherapists if Internet interventions are disseminated. Given the scarcity of trained clinicians and the large number of people in need of evidence-based psychological treatments, this is likely not well founded, and Internet interventions should be regarded as a complement to other services rather than as a full replacement for face-to-face therapies (in particular for more severe patients).

Third, dissemination can be hindered or even made impossible by how legal and ethical regulations apply to online clinician-patient interaction (82). For example, in Norway, e-mail exchanges (even in secure closed systems) were not allowed, which had implications for the dissemination of a Swedish program in Norway (83), as guidance had to be provided by telephone (this has now been changed). Further, in countries like Germany, it has been considered inappropriate to provide psychotherapy over the Internet as a regular secondary care treatment, although this is gradually changing (84).

Fourth, dissemination into primary care depends on the willingness of practitioners to refer patients to Internet interventions. It may be difficult to coordinate local services

(for example general practices) unless proper training is provided and diagnostic guidelines are well established rendering referrals safe. Stepped care procedures may be one solution, where Internet interventions are presented as one step in a stepped care process (85).

In conclusion, there are still few experiences of large scale dissemination of Internet interventions worldwide. While the evidence to date suggests that Internet interventions are effective when provided in regular clinical settings, and that more patients can get access to health care in that way either immediately or as part of a stepped care procedure, it is still the case that clinicians and patients need to know more about these interventions. Moreover, clinical guidelines need to be developed.

CONCLUSIONS AND FUTURE DIRECTIONS

With the number of studies on Internet interventions exceeding one hundred (86), there is now considerable support for the use of the Internet for delivering evidence-based psychotherapy for common mental disorders. The field has recently evolved to the point where several clinics are now providing such services as part of regular health care.

Conclusions that can be drawn from the work to date are that assessments using the Internet offer considerable advantages for patient care, in particular for monitoring safety, progress and outcomes, and for research purposes. However, because of uncertainty about the validity of online diagnoses, it is recommended that, when possible, patients with complex presentations be referred to existing face-to-face services rather than to automated online diagnostic systems.

Internet interventions for comorbid mood and anxiety disorders, including transdiagnostic and tailored treatments, have produced encouraging results. However, these interventions mainly target comorbidity between different forms of mental disorders, and there is a need to develop treatments that target also somatic disorders, as there are many studies on Internet intervention for common somatic disorders showing promising results (87).

Finally, recent reports indicate that Internet interventions work well in regular settings. We are currently in the process of disseminating Internet interventions and there are several challenges involved in this process. Questions have been raised about the possibility to develop and disseminate Internet interventions to better serve minority groups who may have less access to mental health services (13), and to persons in countries where mental health services may be less developed (88).

Likely areas for development and future research include exploring outstanding questions about the characteristics of those likely to benefit, how best to integrate Internet interventions with existing services, and optimal strategies for combining Internet interventions and medication. The latter question is pertinent given the common scenario in regular care of the prescription of selective serotonin reuptake

inhibitors for mood and anxiety disorders alongside psychotherapy, with such combinations often yielding better results than monotherapies (89).

Further work is also required to address the lack of studies on children, adolescents and older adults. Outstanding questions remain about the role of therapists and the optimum way to provide guidance during Internet interventions. There is also a need for integrating modern information technology with face-to-face therapy and this has not yet been the topic of much research (90).

In conclusion, we expect that the field of Internet interventions will continue to evolve at a rapid rate. While results of studies in this field have been very encouraging, we caution that efforts at dissemination must progress cautiously to ensure best outcomes for patients. We also expect further and considerable developments in the relevant research, as studies move from enquiring about effectiveness to exploring processes of change.

Acknowledgements

G. Andersson acknowledges his co-workers and students working with Internet interventions, and Linköping University, the Swedish Science Foundation and Forte for financial support. N. Titov acknowledges his colleagues, participants and patients, Macquarie University, and the National Health and Medical Research Council.

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DOI 10.1002/wps.20083