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Internet-Based and Other Computerized Psychological Treatments for Adult Depression: A Meta-Analysis

Gerhard Andersson[1] and Pim Cuijpers[2]

[1]Department of Behavioural Sciences and Learning, Swedish Institute for Disability Research, Linköping University, Linköping, and Department of Clinical Neuroscience, Psychiatry Section, Karolinska Institutet, Stockholm, Sweden; [2]Department of Clinical Psychology and EMGO+ Institute, VU University, Amsterdam, the Netherlands

Abstract. Computerized and, more recently, Internet-based treatments for depression have been developed and tested in controlled trials. The aim of this meta-analysis was to summarize the effects of these treatments and investigate characteristics of studies that may be related to the effects. In particular, the authors were interested in the role of personal support when completing a computerized treatment. Following a literature search and coding, the authors included 12 studies, with a total of 2446 participants. Ten of the 12 studies were delivered via the Internet. The mean effect size of the 15 comparisons between Internet-based and other computerized psychological treatments vs. control groups at posttest was $d = 0.41$ (95% confidence interval [CI]: 0.29–0.54). However, this estimate was moderated by a significant difference between supported ($d = 0.61$; 95% CI: 0.45–0.77) and unsupported ($d = 0.25$; 95% CI: 0.14–0.35) treatments. The authors conclude that although more studies are needed, Internet and other computerized treatments hold promise as potentially evidence-based treatments of depression. *Key words: computerized treatment; depression; Internet-based; role of support*

Adult depression is a costly condition for which numerous different treatments have been developed (Ebmeier, Donaghey, & Steele, 2006). Among the psychological treatment options, several have been found to be effective (Cuijpers, van Straten, Andersson, & van Oppen, 2008), with no or minor differences between the main treatment alternatives. Cognitive behaviour therapy (CBT), however, has been investigated in by far the most trials and in different administration formats such as group (McDermut, Miller, & Brown, 2001) and telephone-assisted (e.g. Simon, Ludman, Tutty, Operskalski, & Von Korff, 2004) treatments. Computer and, more recently, Internet delivery have become increasingly common administration formats for depression treatment in research and slowly but gradually in clinical settings as well. Computerized psychological treatments can be delivered on devices such as stand-alone or Internet-linked computers, PCs, palmtops, phone-interactive voice response systems, CD-ROMS, DVDs, cell phones, and VR equipment (Marks, Cavanagh, & Gega, 2007). However, during the last 5 years, it is mostly Internet-delivered treatments that have been tested in research.

Internet-delivered treatments of depression can take on different forms. One approach is largely based on bibliotherapy, with mainly text-based materials and guidance by a therapist via e-mail or phone. On the other end of the continuum, we find treatments that are briefer and usually do not target persons with clinical depression. Moreover, these

treatments are commonly not delivered with guidance and can hence be reached by more people at a lower cost. They are, however, probably less effective (Spek, Cuijpers, et al., 2007). Regardless of the role of support, treatment protocols also differ with regard to how often and how many online activities are included and how much feedback is automated.

There are now several reviews and meta-analyses on computerized (e.g. Cuijpers, Marks, et al., 2009; Reger & Gahm, 2009) and Internet-delivered (Barak, Hen, Boniel-Nissim, & Shapira, 2008; Griffiths & Christensen, 2006; Spek, Cuijpers, et al., 2007) treatments. In one previous review, Internet treatments for depression were covered (Andersson, 2006), but this was not a meta-analysis. The other meta-analyses were not specifically aimed at depression and have included only a limited portion of currently available trials. Given the very strong increase in the number of controlled trials on computerized and Internet-delivered treatments of depression in the past few years, we decided to conduct a new meta-analysis in which we focused on depression only. We were interested in investigating the role of support and the overall effects compared with other treatments. This meta-analysis adds to the literature by providing an overview of the field and by contrasting different approaches to computerized treatment.

Method

Identification and selection of studies

We used several methods to identify studies for inclusion. First, we used a database of 1036 studies on the psychological treatment of depression, which includes reports on combined treatments and comparisons with pharmacotherapy. This database has been described in detail elsewhere (Cuijpers, van Straten, Warmerdam, & Andersson, 2008) and has been used in a series of earlier meta-analyses (http://www.evidencebasedpsychotherapies.org). The database was developed through a comprehensive literature search (from 1966 to January 2009), in which we examined a total of 9011 abstracts: 1629 from PubMed, 2439 from PsycINFO, 2606 from Embase, and 2337 from the Cochrane Central Register of Controlled Trials. These abstracts

were identified by combining terms indicative of psychological treatment and depression (both MeSH terms and text words). For this database, we also collected the primary studies from 42 meta-analyses of psychological treatment for depression (http://www.evidencebasedpsychotherapies.org). For the current study, we examined the full texts of these 1036 studies, then examined the reference lists of earlier reviews and meta-analyses (e.g. Spek, Cuijpers, et al., 2007), and checked the references of the included primary studies.

We included (a) randomized trials (b) in which the effects of an Internet-based or computerized psychological treatment (c) were compared with a (noncomputerized) control or comparison group or a face-to-face psychological treatment (d) in adults (e) with depression (established by diagnostic interview or elevated levels of depressive symptoms based on self-report measures). We also included studies that were aimed at adults with depression and anxiety. We excluded studies on inpatients and those on adolescents or children (<18 years). We did not include component studies (e.g. Christensen, Griffiths, Mackinnon, & Brittliffe, 2006).

Comorbid general medical or psychiatric disorders were not used as an exclusion criterion. No language restrictions were applied.

Meta-analyses

For each comparison between Internet-based or computerized psychological treatment and control conditions, we calculated the effect size indicating the difference between the two conditions at posttest (Cohen's d or standardized mean difference). We calculated the effect sizes by subtracting (at posttest) the average score of the treatment group from the average score of the control group and dividing the result by the pooled standard deviations of the two groups. Effect sizes of 0.8 can be assumed to be large, 0.5 moderate and 0.2 small (Cohen, 1988).

In the calculations of effect sizes, we only used those instruments that explicitly measured symptoms of depression. If more than one depression measure was used, the mean of the effect sizes was calculated, so that each study only provided one effect size. We only used the effect sizes indicating the differences between the two types of treatment

at posttest. We decided not to examine the differential effects at follow-up because the number of effect sizes was too low. In addition, the follow-up period differed considerably among these studies.

To calculate pooled mean effect sizes, we used Biostat's computer program *Comprehensive Meta-Analysis* (version 2.2.021). Because we expected considerable heterogeneity among the studies, we decided to calculate mean effect sizes using a random-effects model. In the random-effects model, it is assumed that the included studies are drawn from "populations" of studies that differ from each other systematically (heterogeneity). In this model, the effect sizes resulting from included studies differ not only because of the random error within studies (as in the fixed-effects model) but also because of true variation in effect size from one study to the next.

As a test of homogeneity of effect sizes, we calculated the I^2 statistic, which is an indicator of heterogeneity in percentages. A value of 0% indicates no observed heterogeneity, and larger values show increasing heterogeneity, with 25% as low, 50% as moderate, and 75% as high heterogeneity (Higgins, Thompson, & Deeks, 2003). We also calculated the Q statistic but only report whether this was significant or not.

Subgroup analyses were conducted according to the mixed-effect model. In this model, studies within subgroups are pooled with the random-effects model, whereas tests for significant differences between subgroups are conducted with the fixed-effects model.

Publication bias was tested by inspecting the funnel plot on primary outcome measures and by Duval and Tweedie's (2000) trim and fill procedure, which yields an estimate of the effect size after the publication bias has been taken into account (as implemented in *Comprehensive Meta-Analysis*, version 2.2.021).

Results
Characteristics of included studies
A total of 12 studies, with 2446 participants (1324 in the Internet-based and computerized psychological treatment conditions, 996 in the control conditions, and 126 in the face-to-face comparison conditions) met all inclusion

criteria. Selected characteristics of these studies are presented in Table 1.

Ten studies were aimed at adults in general, and one was aimed at older adults and one at young adults. All but one study recruited participants from the community. Only two studies included participants with depressive disorder diagnosed in a formal diagnostic interview. Six studies used a wait list control group, four a care-as-usual control group, and the remaining two studies another type of control group. The 12 studies included 15 comparisons between an Internet-based or computerized psychological treatment and a control group (three studies included two comparisons). In three studies, Internet-based or computerized psychological treatment was compared with face-to-face psychological treatment. Eleven of the 15 comparisons examined CBT, two problem-solving therapy, and one psychoeducation. Two studies examined computerized psychological treatment and the remaining 10 Internet-based psychological treatment. Five studies were conducted in the United States, four in the Netherlands, and one each in Sweden, United Kingdom, and Australia. In one study only 50% of the face-to-face treatment was replaced by a computerized treatment (Wright et al., 2005). We decided to include this study and examine whether removal of this resulted in changes of the mean effect size (which was not the case; see later discussion).

Internet-based and computerized psychological treatment versus control groups: overall effect size
The mean effect size of the 15 comparisons between Internet-based and computerized psychological treatment vs. control groups at posttest was 0.41 (95% confidence interval [CI]: 0.29–0.54; Table 2). Heterogeneity was moderate to high ($I^2 = 57.49$). The effect sizes and 95% CIs of the individual contrast groups are plotted in Figure 1.

Inspection of the forest plot suggested that two studies were possible outliers (Selmi et al., 1990; Wright et al., 2005). However, after removal of these studies, the effect size remained almost the same ($d = 0.37$; 95% CI: 0.26–0.49) and heterogeneity remained at a moderate level ($I^2 = 51.36$).

Table 1. *Selected characteristics of randomized controlled studies examining the effects of computerized and Internet-based psychotherapies for adult depression*

Study	Target population	Recruitment	Inclusion	Condition	N	Intervention	Therapist support	Internet/ computer	Measure[a]	Country
Andersson et al. (2005)	Adults (≥ 18 yrs)	Community	p > .55 for MDD (CIDI-SF) + MADRS-S 15-30	1. iCBT 2. WL/online discussion group	36 39	5 modules CBT and BA	E-mail	I, 10 wks	BDI; MADRS-S	Sweden
Christensen et al. (2004)	Adults (18–52 yrs)	Posted questionnaire	K-10 ≥ 22	1. iCBT 2. iPE 3. Attention placebo	182 165 178	1. 5 CBT modules 2. 5 PE modules	Telephone calls by lay interviewers (all conditions) –	I, 6 wks	CES-D	Australia
Clarke et al. (2002)	Adults	Via HMO	Depressed, nondepressed members	1. iCBT 2. CAU	144 155	7 chapters CBT	None	I, NSD	CES-D	United States
Clarke et al. (2005)	Adults	Via HMO	Depressed, nondepressed members	1. iCBT-a 2. iCBT-b 3. CAU	75 80 100	7 chapters CBT	None: iCBT-a: postcard reminders; iCBT-b: telephone reminders	I, NSD	CES-D	United States
Clarke et al. (2009)	Young adults (18–24 yrs)	Via HMO	Depressed, nondepressed members	1. iCBT 2. CAU	83 77	4 sections CBT	None	I, NSD	PHQ-9	United States
Proudfoot et al. (2004)	Adults (18–75 yrs)	Primary care	GHQ-12 > 4 + CIS-R > 12 (depression or anxiety)	1. cCBT 2. CAU	112 109	8 sessions cCBT	5 min help at beginning, end of each session	I, 8 weeks	BDI	United Kingdom
Ruwaard et al. (2009)	Adults (≥ 18 yrs)	Community	BDI 10-29	1. iCBT 2. WL	36 18	8 phases CBT, BA	Asynchronous contact	I; 11 wks	BDI, SCL-90-R–D	The Netherlands
Selmi et al. (1990)	Adults	Community	SCL-90-R > 65th percentile + BDI ≥ 16 + major, intermittent, minor depression (RDC-SADS)	1. cCBT	12	6 sessions CBT	Help at beginning, end of each session	C; 6 wks	BDI; HAM-D; SCL-90-R–D	United States

Table 1. *Continued*

Study	Target population	Recruitment	Inclusion	Condition	N	Intervention	Therapist support	Internet/ computer	Measure[a]	Country
Spek, Nyklicek et al. (2007)	Older adults (≥ 50yrs)	Community	Subthreshold depression (EDS ≥ 12, no MDD)	2. ftf-CBT 3. WL 1. iCBT	12 12 102	8 weekly modules CBT	None	I; 8 wks	BDI	The Netherlands
Van Straten et al. (2008)	Adults	Community	Self-defined depression or anxiety	2. gCBT 3. WL 1. iPST	99 100 107	5 weekly modules PST	E-mail	I; 5 wks	CES-D; MDI	The Netherlands
Warmerdam et al. (2008)	Adults	Community	CES-D ≥ 16	2. WL 1. iCBT 2. iPST 3. WL	106 88 87 87	1. 8 weekly modules CBT; 2.5 weekly modules PST	E-mail	I: group 1, 8 wks; group 2, 5 wks	CES-D	The Netherlands
Wright et al. (2005)	Adults (18–65 yrs)	Community	MDD (SCID) + BDI ≥ 14	1. cCBT + ftf 2. ftf-only CBT 3. WL	15 15 15	9 sessions CBT	25-min ftf sessions +25-min cCBT	C; 8 wks	BDI; HAM-D	United States

Note. *BA, behavioural activation; BDI, Beck Depression Inventory; C, computerized treatment delivery; CAU, care-as-usual; CBT, cognitive behaviour therapy; cCBT, computerized CBT; gCBT, group CBT; CES-D, Center for Epidemiological Studies–Depression scale; CIDI-SF, Composite International Diagnostic Interview Short-Form; EDS, Edinburgh Depression Scale; ftf, face-to-face; GHQ, General Health Questionnaire; HAM-D, Hamilton Depression Rating Scale; HMO, health maintenance organization; I, Internet treatment delivery; iCBT, Internet-based CBT; iPE, Internet-based psychoeducation; iPST, Internet-based problem-solving therapy; K-10, Kessler–10; MADRS-S, Montgomery–Asberg Depression Rating Scale; MDD, major depressive disorder; MDI, Major Depression Inventory; PE, psychoeducation; PHQ-9, Patient Health Questionnaire; PST, problem-solving therapy; RDC, Research Diagnostic Criteria; SADS, Schedule for Affective Disorders; NSD, no standard duration; SCID, Structured Clinical Interview for DSM-IV; SCL-90-R, Symptom Checklist-90-R; SCL-90-R-D, SCL-90-R Depression subscale.; WL, wait-list.*
[a]*Only the instruments that were used to calculate effect sizes are included.*

Table 2. *Meta-analyses of studies examining the effects of computerized and Internet-based psychological treatments for adult depression*

Study	N_{comp}	d	95% CI	Z	I^{2a}	p^{b}
Overall effects						
All studies	15	0.41	0.29–0.54	6.47****	57.49***	
One ES per study (highest)	12	0.45	0.29–0.61	5.39****	65.35***	
One ES per study (lowest)	12	0.43	0.27–0.59	5.21****	64.86***	
Two possible outliers removed[c]	13	0.37	0.26–0.49	6.41****	51.36**	
Subgroup analyses[d]						
Type						.107
Internet-based	12	0.37	0.24–0.49	5.84****	53.83**	
Computerized	3	0.85	0.27–1.43	2.89***	61.18*	
Control group						.038
Care-as-usual	5	0.23	0.06–0.40	2.68***	46.34	
Wait-list	7	0.56	0.37–0.76	5.60****	43.51	
Other	3	0.45	0.21–0.69	3.64****	59.38*	
Psychological treatment						.923
CBT	12	0.42	0.26–0.59	5.09****	64.82***	
Other	3	0.41	0.27–0.56	5.51****	0	
Anxiety allowed						.234
Only depression	13	0.38	0.25–0.51	5.75****	57.26***	
Depression or anxiety	2	0.64	0.24–1.04	3.13***	42.73	
Professional support						.000
Support	8	0.61	0.45–0.77	7.67****	23.74	
No professional support	7	0.25	0.14–0.35	4.75****	10.41	
C or I psychotherapy vs. ftf psychotherapy (all studies)	3	−0.05	−0.29–0.20	−0.36	0	

Note. CBT, cognitive behaviour therapy; C, computerized treatment delivery; CI, confidence interval; ES, effect size; ftf, face to face; I, Internet treatment delivery; N_{comp}, number of comparisons. [a]The p values indicate whether the Q statistic is significant (the I^2 statistics does not include a test of significance). [b]The p values indicate whether the difference between the effect sizes in the subgroups is significant. [c]Selmi et al., 1990; Wright et al., 2005. [d]All subgroup analyses were conducted with mixed-effects analyses. *p < .10. **p < .05. ***p < .01. ****p < .001.

In our analyses, we included three studies in which two psychological treatments were compared with the same control group. This means that multiple comparisons from these three studies were included in the same analysis. These multiple comparisons, however, are not independent of each other, which may have resulted in an artificial reduction of heterogeneity. Therefore, we conducted another meta-analysis, in which we included only one comparison per study (Table 2). From the three studies with multiple comparisons, we first included only the comparison with the largest effect size. As can be seen in Table 2, these analyses did indicate that heterogeneity increased somewhat in some analyses ($I^2 = 65.35$), although the effect size did not differ very much from the overall analyses. Then we repeated these analyses and included only the smallest effect size of the three studies with multiple comparisons. These analyses also resulted in increased heterogeneity ($I^2 = 64.86$) and a comparable effect size.

Neither the funnel plots nor Duval and Tweedie's trim and fill procedure indicated a significant publication bias.

Subgroup analyses

We conducted several subgroup analyses (Table 2). These included type of psychological treatment (Internet-based vs. computerized), type of control group (care-as-usual, wait-list, other), content of psychological treatment (CBT vs. other), whether the study only included participants with depression or also persons with anxiety, and whether there was professional support during the therapy (yes or no).
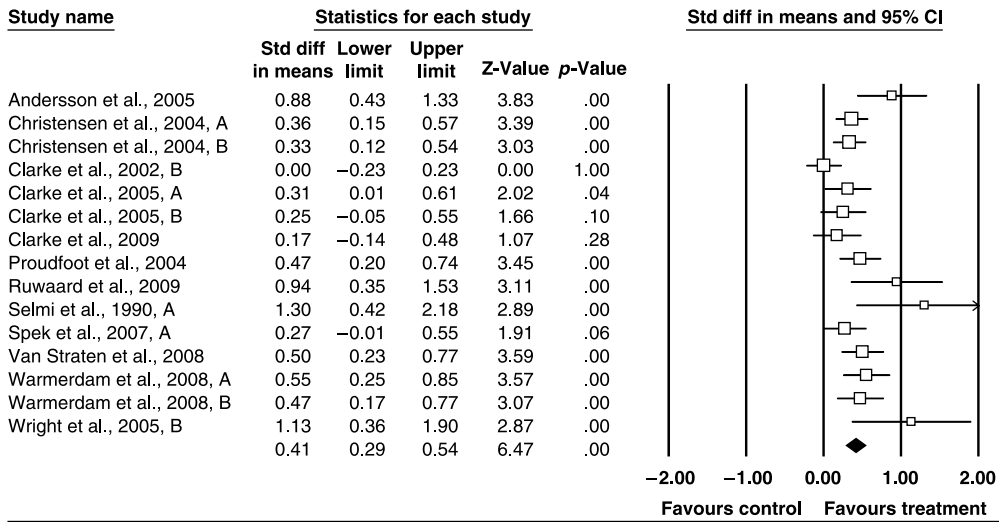
Study name	Statistics for each study					Std diff in means and 95% CI
	Std diff in means	Lower limit	Upper limit	Z-Value	*p*-Value	
Andersson et al., 2005	0.88	0.43	1.33	3.83	.00	
Christensen et al., 2004, A	0.36	0.15	0.57	3.39	.00	
Christensen et al., 2004, B	0.33	0.12	0.54	3.03	.00	
Clarke et al., 2002, B	0.00	−0.23	0.23	0.00	1.00	
Clarke et al., 2005, A	0.31	0.01	0.61	2.02	.04	
Clarke et al., 2005, B	0.25	−0.05	0.55	1.66	.10	
Clarke et al., 2009	0.17	−0.14	0.48	1.07	.28	
Proudfoot et al., 2004	0.47	0.20	0.74	3.45	.00	
Ruwaard et al., 2009	0.94	0.35	1.53	3.11	.00	
Selmi et al., 1990, A	1.30	0.42	2.18	2.89	.00	
Spek et al., 2007, A	0.27	−0.01	0.55	1.91	.06	
Van Straten et al., 2008	0.50	0.23	0.77	3.59	.00	
Warmerdam et al., 2008, A	0.55	0.25	0.85	3.57	.00	
Warmerdam et al., 2008, B	0.47	0.17	0.77	3.07	.00	
Wright et al., 2005, B	1.13	0.36	1.90	2.87	.00	
	0.41	0.29	0.54	6.47	.00	

−2.00   −1.00   0.00   1.00   2.00

Favours control   Favours treatment

Figure 1. Internet-based and other computerized treatments of depression compared to control groups: standardized effect sizes. The letters A and B in the above figure refer to different subsamples within each study.

As can be seen in Table 2, the type of control group was significantly associated with the effect sizes ($p < .05$). Studies with a wait-list control had higher effect sizes than care-as-usual and other control groups. However, heterogeneity remained high in these subgroups. We also found that studies in which no professional support was given had lower effect sizes than those in which support was given ($p < .000$). The heterogeneity in these two groups was low ($I^2 < 25\%$).

Because the study by Christensen, Griffiths, and Jorm (2004) was complex to interpret (there was some support by telephone but no clear help in working through the treatment), we repeated this subgroup analysis without this study. The results were, however, comparable (unguided: $d = 0.18$; 95% CI = 0.05–0.30, $I^2 = 0$; guided: $d = 0.61$, 95% CI = 0.45–0.77, $I^2 = 23.74$; p difference = .000).

Discussion

The aim of this meta-analysis was to summarize the literature on Internet-based and other computerized psychological treatments for adult depression. We found an overall effect size of $d = 0.41$, but that estimate is probably not meaningful because it hides the finding that interventions in which

support is provided to the participant are more effective. Indeed, the computerized interventions with support showed an average between-group effect size of $d = 0.61$, whereas the unsupported treatments had a much smaller effect of $d = 0.25$. This is similar to the findings by Spek, Cuijpers, et al. (2007), who found that interventions without support had an average effect size of $d = 0.24$, whereas Internet interventions with support had a large mean effect size of $d = 1.0$. Although the meta-analyses overlap in terms of studies included, we included more recent studies and also other computerized treatments not covered in the Spek et al. study (e.g. not Internet-delivered). Overall, it appears that computerized treatments with therapist support are much more effective than unsupported treatments, and this has been confirmed in open studies as well (e.g. Christensen, Griffiths, Groves, & Korten, 2006). However, the concept of support is not fully investigated in the literature, and we cannot exclude the possibility that some forms of support can be automated or that other factors, such as having a clear deadline for completion of a treatment with a scheduled follow-up (e.g. a telephone interview), would make less-supported treatments more effective (Nordin, Carlbring, Cuijpers, & Andersson, in press). Clearly, there is a need to investigate

the concept of support further and the role of therapist factors in computerized treatments (e.g. Almlöv, Carlbring, Berger, Cuijpers, & Andersson, 2009).

There were few studies available for the contrast between Internet-based or other computerized treatments and face-to-face treatments. Here we found no difference, which is in line with other studies in the field of anxiety disorders (e.g. Carlbring et al., 2005; Kiropoulos et al., 2008). There is a need to further test whether computerized treatment, and Internet-delivered treatment in particular, can be as effective as face-to-face treatments in depression. These studies need to be designed as equivalence studies, and indeed in our meta-analysis the finding of no difference could be regarded as a promising sign of equivalence between the treatment formats. Although the effects of supported computerized treatments in this meta-analysis are in line with those of previous meta-analyses for psychological treatments (e.g. Cuijpers, van Straten, Andersson, et al., 2008), they are somewhat lower. However, the effects are not low when compared with the effects of psychological treatments in primary care (Cuijpers, van Straten, van Schaik, & Andersson, 2009). Several other findings are worth commenting on. We did not find a significant difference between computerized and Internet-delivered treatments, but this could be due to power problems. In line with findings of other studies, the type of control group influenced the effect size estimate, with lower effects when treatment as usual was the comparison group. This was expected because no treatment is worse than some treatment. We did not find any differences between CBT-oriented and other forms of computerized treatments. This comparison was unbalanced, with most of the studies being done from a CBT perspective, but we welcome more studies on computerized treatments from a non-CBT perspective, because it is not settled whether other evidence-based psychological treatments such as interpersonal psychotherapy are possible to transfer to the computer medium or the Internet. We also did not find any effects of comorbid anxiety on the effect size estimate, but this needs to be further explored in future studies, because there are very few studies on computer interventions for depression in which other conditions than depression have been assessed.

In this meta-analysis, we did not present data on quality assessment. However, all studies were checked using the four basic criteria, as suggested in the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins & Green, 2005): allocation to conditions conducted by an independent (third) party, blinding of assessors of outcomes, completeness of follow-up data, and adequacy of random allocation concealment to respondents. Overall, the study quality was not satisfactory, but studies are increasingly following the CONSORT guidelines (e.g. Boutron, Moher, Altman, Schulz, & Ravaud, 2008).

There are several possible challenges for future research. First, Internet-delivered and other computerized psychological interventions are still not supported by a solid database, and many studies have failed to perform a proper diagnostic assessment (Andersson & Cuijpers, 2008). There is a need for accurate diagnostic procedures in future trials. Second, most studies have been done either in an academic setting with participants recruited via advertisement or by an epidemiological screening approach. Only one of the studies in our meta-analysis included patients recruited from primary care. There is a need for effectiveness studies of Internet and other computerized treatments involving patients from psychiatric settings. Third, studies on long-term effects of treatment are largely lacking. There is a 1-year follow-up of the trial by Christensen et al. (2004), which showed some remaining benefits (Mackinnon, Griffiths, & Christensen, 2008), but more research is needed, in particular, because help-seeking and health care use might be affected as an effect of treatment (Christensen, Leach, Barney, Mackinnon, & Griffiths, 2006). Fourth, our meta-analysis did not cover the issue of whom Internet and other computerized treatments are suitable for. For example, one study found an indication that number of previous depression episodes was related to worse treatment outcome (Andersson, Bergström, Holländare, Ekselius, & Carlbring, 2004). It is also important to investigate differential predictors of outcome for different treatment formats (Spek, Nyklíček, Cuijpers, & Pop, 2008).

This meta-analytic review has some limitations. First, we included very heterogeneous treatments and samples. This can be seen as an advantage for a meta-analysis because we then could investigate differences between studies. However, because relatively few studies could be located, we were underpowered to detect effects for some contrasts. A second limitation has to do with the selection of adult samples only. Our impression is that the available studies on adolescents do not alter our main finding that support may be needed to achieve good outcomes (e.g. O'Kearney, Gibson, Christensen, & Griffiths, 2006). A third limitation concerns the methodological quality of the studies that we did not fully report. For example, we did not include analyses on the drop-out rate for different treatments, which is a known problem in Internet interventions.

Despite the limitations of this meta-analysis, we believe there is emerging evidence that Internet and other computerized intervention can be helpful in reducing symptoms of depression.

Acknowledgments

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