The Feasibility and Effectiveness of Computer-Guided CBT (FearFighter) in a Rural Area

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Abstract. Evaluations of computer-guided CBT (CCBT) suggest that this is a promising approach to closing the gap between the demand for, and the supply of, CBT. However, additional studies are required that are conducted by researchers independent of the programme developers, and include a wider range of participants. This independent study examined the viability of CCBT for panic and phobic anxiety in an unselected sample of referrals in remote and rural areas of Scotland. Outcome was assessed by a wide range of outcome measures, completed before and after treatment, and at 4-month follow-up. Participants experienced few difficulties in using the programme, and GPs and participants regarded CCBT as acceptable and useful. Major improvements were obtained, with several large effect sizes, which remained at follow-up. It was concluded that computer-guided CBT can play a useful part in delivering CBT services in rural areas; and that self-help CBT may be the only treatment option available to some sufferers.

Keywords: Computer-guided, panic, phobia, feasibility, acceptability, rural.

Introduction

Epidemiological surveys have revealed that approximately 16% of the adult population of the UK have a mental health problem (e.g. Jenkins et al., 1997). Most of the sufferers have a disorder that is amenable to treatment by cognitive behaviour therapy (CBT). However, there are too few therapists to cope with such patient numbers; demand greatly exceeds supply (Layard, 2005). Throughout the UK waiting times are long, often over 12 months. Increasing

the number of staff may not by itself provide a full solution; more radical approaches need to be considered.

Several studies have indicated that CBT can be delivered using computer-guided systems. The potential advantages of computer-guided CBT (CCBT) include reduced travelling times for patients and staff; accessibility in remote or unusual environments (e.g. oil rigs); acceptability to NHS and emergency services staff due to anonymity; availability of therapy at any time; and easy access for patients with physical disabilities or facial disfigurements.

A recent report from the National Institute of Health and Clinical Excellence (NICE, 2006) concluded that there was reasonable evidence to support the efficacy of CCBT, in the case of "FearFighter" for panic/phobic anxiety and "Beating the Blues" for anxiety and/or depression. Nevertheless, the report noted that further supportive evidence was required; in particular, there are few studies that have directly compared face-to-face therapy with computer-guided therapy. Furthermore, Cavanagh and Shapiro (2004), in a meta-analytic study, noted that the efficacy of CCBT appeared to be intermediate between waiting list and face-to-face therapy. In a large scale randomized controlled trial, Proudfoot et al. (2004) compared CCBT (Beating the Blues) with treatment as usual (whatever the general practitioner prescribed); CCBT was effective for depression; it was also effective for anxiety, but only for participants with high initial anxiety levels. Thus the available evidence is sufficient to permit optimism about the value of CCBT for anxiety and depression, but further evaluation is required.

There are further limitations to the research evidence in favour of CCBT, which the present study was designed to overcome. First, the efficacy studies of CCBT have largely been conducted with selected patient samples, limiting the generalizability of the findings; more effectiveness studies using unselected samples of typical patients are now required. Second, the patients in previous studies have mainly been urban dwellers, but the potential advantages of CCBT are particularly apposite for remote and rural areas; moreover, the content of a CCBT programme may not be suitable for rural dwellers in that common phobic situations that are widespread in urban areas are often rare in remote and rural areas (e.g. large supermarkets, public transport). Third, most of the CCBT programme evaluations have been conducted by the workers who created the programmes; independent evaluations need to be conducted by researchers with no vested interests. In the present study, all the research workers had no vested interests of any kind in any CCBT programme.

The present study was an independent evaluation of the feasibility, acceptability and outcomes of FearFighter in an unselected sample of patients with panic/phobic anxiety, in remote and rural areas of Scotland. The study was not primarily designed to examine the efficacy of CCBT; however, a secondary aim was to compare the outcome of FearFighter in rural patients with the outcome of face-to-face CBT in urban-dwelling patients from the same region.

FearFighter was chosen for this study because it appeared to have been more intensively and systematically evaluated than other computer programmes for treating anxiety states. For example, Marks, Kenwright, McDonough, Whittaker and Mataix-Cols (2004) conducted a randomized controlled trial of FearFighter, comparing CCBT with face-to-face CBT; no significant differences between the delivery methods were found. Full details of the FearFighter programme can be seen at www.fearfighter.com.

The specific research questions were:

1. Are enough patients willing to accept computer-guided CBT to justify its introduction in a rural area?

2. What are the problems in arranging regular access to a computer for patients living in a rural area?
3. Are rural GPs willing for their patients to be treated by CCBT?
4. How is the use of CCBT viewed by patients, GPs, other primary care staff, and mental health specialists?
5. How often are sessions disrupted by technical breakdown?
6. How far does FearFighter reduce symptoms of panic/phobia?

Method

The project lasted from May 2004 to December 2005, and was funded by the Chief Scientist Office of the Scottish Executive Department of Health (grant number CZH/4/129).

Recruitment and selection

The project was located in a remote and rural area of Scotland, with an adult population of about 160,000 and with less than 8 people per km^2. The area contained 56 GP practices. All GPs received an information pack, requesting referrals, and offering to visit the practice to give a presentation. Patients could be new referrals, or on a waiting list. GPs could advise the team if FearFighter might not be suitable for a patient on a waiting list, for example someone with a learning disability (this did not happen). Self-referrals were also accepted, to supplement initial slow recruitment. If willing to participate, patients were issued with the information sheet, the consent form, and the outcome measures, and a face-to-face or telephone screening appointment was arranged with a psychologist. A Screening Questionnaire was used that had previously been developed for selecting patients for self-help in primary care; it includes items on the presence of anxiety and depression, motivation to use self-help, substance misuse, and active suicidal thoughts (Gega, Kenwright, Mataix-Cols, Cameron and Marks, 2005). A note was taken of current medication.

Patients needing more time to consider were offered another appointment. Those who were unwilling to participate received face-to-face treatment "as usual". Participant confidentiality was ensured by using a unique ID number and password. The project computer held no identifying information.

Inclusion criteria were all patients over 16 with phobic anxiety or panic who had ready access to a telephone, no current substance abuse, no suicidal plans, and a reading age above 11 years. The presence of substance abuse and suicidal ideation were assessed by the FearFighter programme, and via the Screening Questionnaire; reading age was estimated by simple questioning (e.g. of newspaper reading habits).

Measures

Two questionnaires are built in to the FearFighter programme: the Fear Questionnaire (FQ) (Marks and Mathews, 1979), and the Work and Social Adjustment Scale (WSA) (Mundt, Marks, Shear and Greist, 2002). Three additional measures, independent of the FearFighter programme, were employed in this study: the Beck Anxiety Inventory (BAI) (Beck and Steer, 1993); the Hospital Anxiety and Depression Scale (HADS) (Zigmond and Snaith, 1983); and the Global Clinical Improvement Scale (GCIS) (Guy, 1976), which employs ratings from 1

("very much worse") to 7 ("very much better"), with 4 as "no change". The measures were administered before treatment, after treatment and at follow-up, by a local clinician or by one of the research team; on a few occasions they were sent and returned by post.

Comprehensive patient and professional satisfaction questionnaires were devised for the project, which were administered immediately post treatment. The details will be the subject of a separate publication, but brief findings are presented in the Discussion.

Patient access to computers

Internet links were used at home, in primary care, voluntary agencies and other settings. Three laptop computers and printers were available for loan to patients if there was no alternative. Lack of access to a computer was not a barrier to using FearFighter for any patients; however, one patient had no ready access to a telephone and could not therefore log on to the internet.

Refusers, failure to recover and emergencies

Patients who refused FearFighter, or who did not improve after trying it, were offered "as usual" face-to-face therapy. In case of emergencies, support and advice were available from NHS clinical psychology staff.

Training

Two of the FearFighter developers conducted three one-day workshops on FearFighter, attended by the research team, and local psychologists and CPNs. Subsequently the training was "cascaded" to other NHS staff.

The treatment intervention

Patients were introduced to FearFighter, and given a sheet advising them on how to use the programme and whom to contact in case of difficulties or emergencies. A unique ID number was allocated. Patients had unlimited access to FearFighter for 10 weeks. Telephone support was available during normal office hours.

Project advisory group

A project advisory group was established, chaired by an academic nurse. Membership comprised the chief investigator, one service user, a GP, an NHS psychologist, the head of local adult psychology services, a trust service development manager, and the project manager. The group met every 3–4 months.

Results

Data were analysed using Minitab 14. All effect sizes (ES) in the tables below refer to the standardized mean difference (*d*).
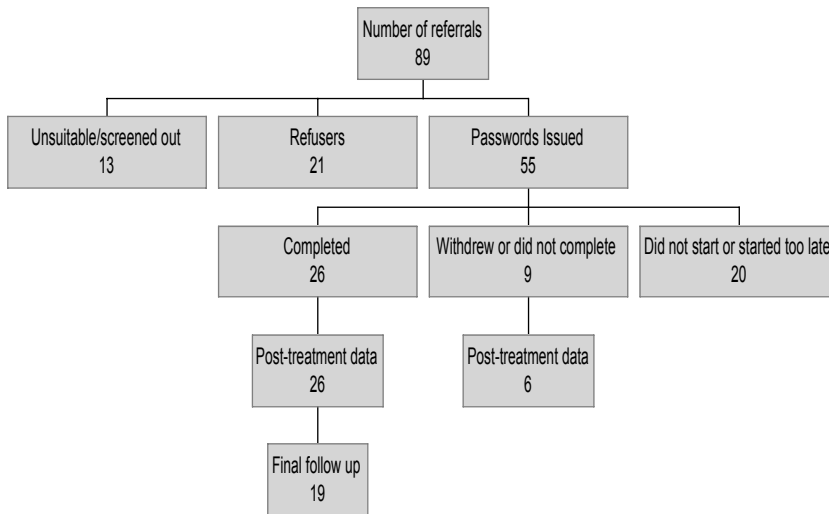
Figure 1. Patient recruitment and retention

The sample

The study planned to examine the feasibility of FearFighter in a sample of up to 60 patients. Eighty-nine patients were referred, of whom 13 (15%) did not meet the inclusion criteria (e.g. no phobic avoidance); and 21 (24%) refused to participate (dislike of computers; prefer face-to-face; did not reply to correspondence). The remaining 55 (62%) were given a password for access to the programme; of these, 5 did not start (6%) and15 (17%) started too late for pre-treatment or other data to be obtained. Accordingly, 35 patients provided pre-treatment data and started to use FearFighter, of whom 32 returned post-treatment data and 19 returned follow-up data. Most of the patients (26 out of 35) completed every stage and provided post-treatment data; and 9 completed at least some stages, of whom 6 provided post-treatment data. Figure 1 shows a chart of patient recruitment and retention.

Average time from post-treatment to follow-up was 4.5 months (range 1–8 months). Sixty percent were referred by GPs (from 20 practices), 6% by local psychologists, 19% by other professionals, and 15% were self-referred. Sixty (66%) of the referred patients were female; average age was 40.2 years (*SD* 10.9).

There were no significant differences in demographic or other pre-treatment baseline data, between those who completed the programme, late starters, and those who did not complete the full programme.

Patient access and contact

Project laptops were borrowed by 8 patients during the project. The average contact time from initial contact (including screening, support sessions, and laptop delivery) was 115 minutes (*SD* 69.0) per participant; excluding laptop delivery, contact time was 92 minutes (*SD* 56.0). This did not include therapist travelling times or repeat missed appointments. No patients needed to contact the NHS clinical psychology staff for support in an emergency.

Table 1. Recruitment, retention, referrals and screening

	All referrals	Unsuitable	Refusers/no further contact	Did not start/started too late	Non-completers	Completers
Female	59 (66%)	7	16	10	6	20
Male	30 (34%)	6	5	10	3	6
Post treatment information					6	26
Follow-up information						19
Referrer						
CPN	17	1	1	3	3	9
GP	54	8	14	16	5	11
Psychology	5	2	1			2
Self	13	2	5	1	1	4
Screener						
Project Psychologist		9		11	3	9
CPNs				1	4	14
Project manager		4		8		2
Psychology					2	1

Table 2. Pre-treatment vs post-treatment measures ($N = 32$)

Sub-scales of Fear Questionnaire from FearFighter					
	Mean pre-treatment (*SD*)	Mean post-treatment (*SD*)	95%CI	Paired *t* (*N*)	*p*	ES (*d*)
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Social anxiety	18.8 (9.9)	12.5 (9.6)	2.9 to 9.7	3.83 (27)	<.001	0.75
Depression	27.2 (11.2)	19.7 (11.4)	4.0 to 11.0	4.38 (27)	<.001	0.86
Blood phobia	12.0 (8.4)	10.0 (8.6)	−0.1 to 4.1	2.0 (27)	.056	0.39
Agoraphobia	15.9 (11.9)	10.0 (11.6)	3.1 to 8.8	4.3 (26)	<.001	0.86
Additional measures from FearFighter						
WSA	17.0 (9.1)	11.7 (9.2)	1.1 to 9.5	2.6 (22)	.016	0.56
Suicide	0.6 (1.0)	0.4 (0.7)	−0.2 to 0.7	1.2 (24)	.247	0.25
Measures independent of FearFighter						
HADS Depression	7.7 (4.4)	5.3 (4.4)	1.1 to 3.7	3.7 (32)	<.001	0.66
HADS Anxiety	13.7 (4.1)	10.1 (4.4)	2.1 to 5.1	4.92 (32)	<.001	0.89
BAI	27.3 (13.0)	16.3 (11.2)	7.1 to 14.6	5.9 (32)	<.001	1.05

Outcome measures

For the 32 people with post treatment data, significant improvements in three of the Fear Questionnaire sub-scales (Social Anxiety; Depression; Agoraphobia) were found. Patients also improved significantly on the WSA, HADS Depression, HADS Anxiety, and BAI; the latter two had large ESs. Details are in Table 2.

Table 3. Outcome measures at pre-treatment, post-treatment and final follow-up ($N = 19$)

	Time	Mean	SD	Repeated measures ANOVA	p	ES pre- to post-	ES post- to final
Sub-scales of Fear Questionnaire from FearFighter							
Social anxiety	Pre-	19.3	10.34	$F(2,34) = 11.79$	<.001	0.97	0.53
	Post-	12.0	10.93				
	Follow-up	13.4	11.59				
Depression	Pre-	25.8	13.71	$F(2,34) = 11.15$	<.001	0.99	0.03
	Post-	16.9	11.39				
	Follow-up	16.4	9.56				
Blood phobia	Pre-	12.1	9.16	$F(2,30) = 3.06$	.062	0.39	0.27
	Post-	9.9	10.15				
	Follow-up	8.6	7.08				
Agoraphobia	Pre-	17.7	12.38	$F(2,32) = 13.62$	<.001	0.95	0.29
	Post-	10.2	12.68				
	Follow-up	11.1	12.36				
Additional measures from FearFighter							
WSA	Pre-	17.5	11.34	$F(2,30) = 6.12$	.006	0.66	0.13
	Post-	11.3	10.54				
	Follow-up	11.2	9.72				
Measures independent of FearFighter							
HADS Dep	Pre-	8.5	5.15	$F(2,36) = 9.66$	<.001	0.76	0.09
	Post-	5.4	5.17				
	Follow-up	5.3	5.16				
HADS Anx	Pre-	13.3	4.20	$F(2,36) = 13.78$	<.001	0.82	0.16
	Post-	9.3	4.97				
	Follow-up	8.8	4.67				
BAI	Pre-	23.6	12.44	$F(2,36) = 19.18$	<.001	1.46	0.17
	Post-	13.4	10.15				
	Follow-up	11.7	9.87				

The GCIS (1 to 7 ratings) yielded significant improvements in patients' ratings of their symptoms, at post-treatment and at follow-up. One sample *t* tests were used, with 4 ("no change") as the null (contrast) level. At post-treatment, the mean rating was 5.0 ($SD = 1.01$); ($t = 5.0$, $df = 32$, $p = <.001$; 95% CI = 4.6 to 5.4). At follow-up, the mean rating was 5.4 ($SD = 1.0$); ($t = 5.7$, $df = 18$, $p = <.001$; 95% CI = 4.9 to 5.9).

Table 3 shows that significant improvements in symptoms remained at follow-up. It is clear from comparing effect sizes from pre-treatment to post-treatment and post-treatment to follow-up, that all the change occurred during the treatment phase with little further improvement (nor deterioration) during the final follow-up period.

As regards "caseness" as indicated by the HADS scores ("case" being a score greater than 10) there were trends for participants to move from being a "case" to being a "non-case" (decrease of 48.6% in number of "cases") for anxiety and for depression, but the trends

were not statistically significant using the McNemar test. Finally, there were no significant differences between those who completed the full FearFighter programme (26) and those who completed only parts of it (6), in respect of the three key outcome variables (Global Improvement Scale, and the changes in HADS Anxiety and in BAI).

Discussion

Acceptability to patients

Patients in rural Scotland are willing to accept computer-guided CBT, as indicated by the high proportion taking up the offer of FearFighter. Thirteen (15%) of those referred were excluded for a variety of reasons, a proportion lower than that reported elsewhere (Marks et al., 2004). Only 24% of referrals refused to take part, a percentage similar to that in face-to-face treatment.

Access to computers

Access to computers at home was not a problem for 75% of the participants. The travel time to transport borrowed laptops was substantial and reduced the time-saving advantage of CCBT. Those who borrowed the project laptops experienced no problems in setting up or using the programme. The mean support time per patient was less than 2 hours. This figure is higher than that reported by Marks et al. (2003), which may reflect the additional time taken to transport laptops to remote areas. The support time was still substantially below the duration of face-to-face therapy (typically 8 hours).

Referrals by GPs

Rural GPs were willing to refer patients for CCBT. Recruitment was initially slow, but the referral rate increased whenever further letters were sent to GPs, and accelerated when the deadline for referrals was announced. As referrals from GPs were slow initially, posters about the project were placed in surgeries, dentist waiting rooms, and A&E departments (with permission from the Local Research Ethics Committee); this stimulated a further 13 referrals.

Sixty-one percent of participants were referred by 20 GP practices, with a further 12 patients being referred by 3 GP practices after the deadline; this is a reasonable referral rate-other studies obtained 17% to 28% of referrals from GPs (Marks et al., 2005). GP feedback suggested that with further demonstrations of FearFighter, referrals might have been greater. Displaying posters in a wider variety of venues may also have increased self-referrals. However, a maximum of 60 FearFighter licenses had been purchased for the project; it was therefore considered inappropriate to stimulate a demand for FearFighter towards the end of the project, when there was a risk of running out of licenses.

Views of patients and health professionals about FearFighter

This subject will be covered in detail in a separate paper, but it may be helpful to give an outline here. Briefly, data on a 1 to 4 rating scale were obtained from 31 patients at the end of treatment. Seventy percent rated the quality of service as good or excellent; and 97% were satisfied with the help and advice received. Only one patient found the programme difficult to

use and to log on to. One third of patients considered that most of their needs had been fully met by the programme. Two-thirds considered that not having a face-to-face therapist was advantageous, because of increased autonomy and confidentiality; two-thirds also considered it disadvantageous because they missed having someone to talk to directly. Of the 20 GP practices that referred patients to the project, 14 responded to an evaluation questionnaire, of which 11 considered that their patients benefited "to some extent" or better, and all agreed that FearFighter was suitable for patients in rural Scotland.

Technical breakdowns

During the project, there were no breakdowns in the FearFighter system that were of sufficient magnitude to interfere with the treatments.

Clinical effectiveness of FearFighter

Participants demonstrated substantial improvements in their fears on eight outcome measures, at post-treatment ($N = 32$) and at follow-up ($N = 19$). Interestingly, significant improvements also occurred in depression, which was not directly targeted in the project. Although there was a shift from "case" to "not-case" on the HADS scales, none of the caseness changes were statistically significant; this lack of significance probably reflects the small sample size. The effect sizes in Table 3 show that there were substantial improvements during the active treatment period, which remained at final follow-up, with no evidence of post-treatment deterioration on any measure. Effect sizes for the 19 who provided follow-up data for HADS Anxiety (0.82) and BAI (1.46) were high, and seem to compare well with the typical level of effect sizes reported for face-to-face therapies (e.g. 0.68 reported by Haby, Donnelly, Corry and Vos, 2006); however, this was not a randomized controlled trial, and the data do not permit unequivocal conclusions of treatment equivalence. Based on the results of this and of other studies (e.g. Marks et al., 2004), it can be concluded that FearFighter appears to be effective in improving the symptoms of phobic anxiety and panic in some patients.

Interestingly, there were neither clinical nor statistically significant differences between the three key outcome measures (Global Improvement Scale, and changes in the HADS Anxiety scale and in the BAI) of those who completed the programme, and those who did not. This suggests that patients stopped using the programme when they began to feel the benefits. Treatment non-completers are not necessarily treatment failures.

It should be emphasized that the patients in this study were largely unselected in that minimal exclusion criteria were employed. Moreover, there were no substantial nor statistically significant differences in pre-treatment data between those who completed the programme and those who did not complete it. This treatment sample is therefore likely to be representative of panic/phobic anxiety patients in general, and the results should be applicable to other patients, especially those in rural areas.

The secondary aim of directly comparing face-to-face CBT in urban areas with CCBT in rural areas in the same region was not undertaken. Repeated requests were made to health professionals for information on patients with phobic anxiety and panic, who had completed face-to-face CBT. No replies were received. It transpired that local clinical psychology and CPN services were concentrating their limited resources on severe and enduring disorders, such as schizophrenia, chronic depression, and borderline personality disorder, and little time

was devoted to panic and phobia for which virtually no referrals were received during the study period. This confirms that there is a need for non face-to-face methods such as FearFighter. If patients do not receive computer-guided CBT or other forms of self-help, they may well receive no specialist treatment at all (Richards, Lovell and McEvoy, 2003).

Further research

There are several aspects of CCBT that require further investigation. It is important to determine who may benefit most from CCBT, relative to face-to-face treatment. Further research is needed to compare the outcomes of CCBT with those of face-to-face, telephone, telemedicine and other technology-based approaches. Establishing the most effective levels, methods and sources of providing support for CCBT patients is also important. Moreover, internet-based treatments for a wider range of psychological problems should be developed. Anxiety and depression are common amongst patients with diseases such as heart disease and cancer, but the content of CCBT programmes that are designed for people with primarily mental health problems may not be suitable for patients with physical disorders and it may be worthwhile to devise special programmes tailored to their particular needs. Finally, more attention should be given to the cost benefit and cost effectiveness analysis of CCBT.

Summary and conclusions

Patients in rural and remote areas are willing to accept CCBT, and most have ready access to a computer. GPs are willing to refer patients for CCBT, but regular prompting for referrals may be necessary. Clear and enduring improvements in symptoms were obtained, at a level that appears to be similar to that of face-to-face CBT.

The accumulated evidence indicates that it would be clinically beneficial to make FearFighter available in rural areas. Previous work has already demonstrated its value in inner cities. CCBT appears to be a viable self-help approach to the treatment of anxiety states; this is important in view of the ubiquitous difficulties that are encountered in gaining access to face-to-face CBT.

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