Effectiveness of GP-referral vs. self-referral pathways to guided ICBT for depression, panic disorder and social anxiety disorder: a naturalistic study

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Abstract

Background: Therapist guided internet-delivered cognitive behavioral therapy (guided ICBT) appears to be efficacious for depression, panic disorder (PD) and social anxiety disorder (SAD) in routine care clinical settings. However, implementation of guided ICBT is limited partly due to low referral rates from general practitioners (GP). In response, self-referral systems were introduced in mental health care about a decade ago to improve access to care. Yet, little is known about how referral pathways may affect treatment outcomes in guided ICBT.

Objective: This study aims to compare the overall treatment effectiveness of GP-referral and self-referral to guided ICBT for patients with depression, PD or SAD in a specialized routine care clinic. This study also explores if the treatment effectiveness varies between referral pathways and the respective diagnoses.

Methods: This naturalistic open effectiveness study compares treatment outcomes from pre-treatment to post-treatment and from pre- to 6-month follow-up across two referral pathways. All participants underwent module based guided ICBT lasting up to 14 weeks, with weekly therapist guidance through asynchronous messaging. Participants self-reported symptoms before, during, immediately after, and 6-months post-treatment. Level and change in symptom severity were measured across all diagnoses.

Results: In total 460 patients met inclusion criteria, 305 GP-referred (GP), and 155 self-referred (Self). Across the total sample about 60% were female, mean age 32 years, average duration of disorder 10 years. We found no significant differences in pre-treatment symptom levels between referral pathways, across the diagnoses. Estimated effect sizes based on Linear Mixed Modelling showed large improvements from pre- to post-treatment and from pre- to follow-up across all diagnoses, with statistically significant differences between referral pathways (GP: 0.97 - 1.22, Self: 1.34 - 1.58, P: <.001 - .002) and for the diagnoses separately: depression (GP: 0.86 – 1.26, Self: 1.97 -2.07, P: <.001 - .018), PD (GP: 1.32 – 1.60, Self: 1.64 – 2.08, P: .065 - .016) and SAD (GP: 0.80 - 0.99, Self: 0.99 – 1.19, P: .178 - .222).

Conclusions: Self-referral to guided ICBT for depression and panic disorder appears to yield greater treatment outcomes compared to GP-referrals. We found no difference in outcome between referral pathway for SAD. This study underscores the potential of self-referral pathways to improve access and treatment outcomes within healthcare services.

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Therapist guided internet-delivered cognitive behavioral therapy (guided ICBT) appears to be efficacious for depression, panic disorder (PD) and social anxiety disorder (SAD) in routine care clinical settings. However, implementation of guided ICBT is limited partly due to low referral rates from general practitioners (GP). In response, self-referral systems were introduced in mental health care about a decade ago to improve access to care. Yet, little is known about how referral pathways may affect treatment outcomes in guided ICBT.

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In total 460 patients met inclusion criteria, 305 GP-referred (GP), and 155 self-referred (Self). Across the total sample about 60% were female, mean age 32 years, average duration of disorder 10 years. We found no significant differences in pre-treatment symptom levels between referral pathways, across the diagnoses. Estimated effect sizes based on Linear Mixed Modelling showed large improvements from pre- to post-treatment and from pre- to follow-up across all diagnoses, with statistically significant differences between referral pathways (GP: 0.97 - 1.22, Self: 1.34 - 1.58, *P*: <.001 - .002) and for the diagnoses separately: depression (GP: 0.86 – 1.26, Self: 1.97 -2.07, *P*: <.001 - .018), PD (GP: 1.32 – 1.60, Self: 1.64 – 2.08, *P*: .065 - .016) and SAD (GP: 0.80 - 0.99, Self: 0.99 – 1.19, *P*: .178 - .222).

Conclusion:

Self-referral to guided ICBT for depression and panic disorder appears to yield greater treatment outcomes compared to GP-referrals. We found no difference in outcome between referral pathway for SAD. This study underscores the potential of self-referral pathways to improve access and treatment outcomes within healthcare services.

Keywords:
Guided internet-delivered cognitive behavioral therapy, ICBT, referral pathway, GP-referral, self-referral, routine care clinic, depression, panic disorder, social anxiety disorder, psychological therapy.

Introduction

Depression and anxiety disorders are recognized as major contributors to global disability carrying significant societal costs and high personal impact [1]. Broadly accessible treatment is required to reduce this burden [2], yet a significant treatment gap remains between the need for and access to adequate care [3]. Pharmacological and psychological therapies have demonstrated equal effects in treating these mental disorders [4, 5]. However, psychological therapy is often preferred by patients over medication due to fewer side effects and better long-term outcomes [6, 7].

Cognitive behavioral therapy (CBT) is the psychological treatment with the strongest empirical support [8] and the recommended first-line treatment for depression and anxiety disorders [9, 10]. Internet-delivered cognitive behavioural therapy (ICBT) delivers evidence-based CBT specifically targeting, but not limited to, depression and anxiety disorders [11]. Systematic reviews have found the effect of guided ICBT for depression and anxiety disorders to be no different from that of face-to-face CBT [12-14]. Guided ICBT for depression and anxiety is found to work well in routine care clinics and tends to replicate results found in efficacy studies in Sweden, Denmark, Norway, Canada, and Australia [15-19], and to have long-term effects [20]. However, the implementation of guided ICBT has been slow, partly due to lack of knowledge, prejudice and negative attitudes among health care professionals and GPs [21]. This is concerning, as GPs in primary care often serve as

gatekeepers, and are responsible for initiating referrals to secondary care and specialist clinics.

The lack of referral from GP's to ICBT [21] has led to efforts enhancing access to care, with self-referral being proposed as a way to improve access to psychological therapies [22]. Self-referral implies that patients can seek the service from secondary care or specialist clinics, bypassing the need for referrals from GPs [22]. In addition, self-referral systems are believed to empower patients by giving them greater control over their healthcare [23]. Self-referral may also attract more motivated patients [8], potentially leading to improved outcomes [24]. According to Self-Determination Theory (SDT), the higher motivation and improved outcomes of self-referred patients compared to GP-referred, may stem from the greater control they have over their actions, which satisfies their need for autonomy [25]. When combined with a sense of competence and relatedness, this autonomy enhances the internal motivation to engage with treatment [26].

The practice of using self-referral pathways to specialist care varies across countries and clinical domains, with physiotherapy and mental health services being among the most common [27]. Self-referral is well studied in the fields of physiotherapy and is an available pathway to musculoskeletal (MSK) care in many countries [28]. Consistent, yet limited evidence suggests that self-referral in MSK yields clinical outcomes comparable to GP-referrals [29]. Research comparing different referral pathways to mental health services remain limited. In a recent systematic review examining who benefits from guided internet-based interventions across mental health diagnoses, 88 predictors and moderators of treatment outcome was analyzed, but referral pathway to treatment was not included [30]. A recent study recommends investigating referral pathways on patient outcomes [31]. However, a few studies on referral pathway already exist.

First, in a study on GP- and self-referral to psychological treatment for patients with severe health anxiety, Hoffmann et al. [8] examined the accuracy of these referral pathways in recruiting patients with treatment demanding symptom levels. The accuracy was assessed by comparing the proportion of patients in each referral group who met the treatment criteria, with results significantly favoring self-referral. One reason for this difference was that several GP-referred patients did not attend the clinical diagnostic interview and therefore excluded from the study. The findings suggest that self-referral may be a more accurate method for recruiting patients with severe health anxiety, as self-referred patients not only meet the criteria for treatment but also appear to be more motivated to participate in it [8].

Referral pathway has also been studied in relation to how consistently patients attend psychological therapy sessions within the Improving Access to Psychological Therapy (IAPT) services [32]. When comparing GP-referral, GP-initiated self-referral, and true self-referral to the IAPT, no significant differences were found between referral pathways and attendance to the subsequent therapy sessions. Moreover, the study examined the patient's preferred pathway and found that those who had a GP-initiated self-referral later stated a preference for the GP to take full responsibility for the referral process. Accordingly, 60% of the true self-referrers stated that they preferred to self-refer again if they needed additional services from the IAPT [32].

While studies on treatment outcomes across referral pathways to psychological therapy are scarce, a notable exception is an observational study comparing GP- and self-referral to two similar ICBT treatments for depression and/or anxiety [33]. In this study, patients from both referral pathways reported significant symptom reduction; however, those who self-referred showed larger effect sizes both at post-treatment and at the 3-month follow-up compared to those referred by their GPs [33].

No studies have yet investigated the role of referral pathway on treatment outcomes for guided ICBT for depression and anxiety disorders to a specialized routine care clinic. Based on the results from the comparison of GP- and self-referral pathways to ICBT [8, 33], we hypothesize that individuals who self-refer to specialist mental health care services will experience more improved treatment effectiveness from pre-treatment to post-treatment and for pre- to 6-month follow-up compared to those referred by GPs. Additionally, we will explore differences in treatment effectiveness across the specific diagnoses in relation to referral pathways.

Aim

The aim of this study was to compare the overall treatment effectiveness across different referral pathways—GP-referred and self-referred—in guided internet-delivered cognitive behavioral therapy (guided ICBT) for moderate depression, panic disorder, and social anxiety disorder. Secondly, we explored whether differences in treatment effectiveness between the referral pathways varies across the three diagnoses.

Method

Ethics

This study was approved by the Regional Committee for Medical Research Ethics (REK) 2014/2175. The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation, and with principles of the Declaration of Helsinki [34].

Setting

The data collection for this study was conducted at the eCoping clinic (eMeistring.no), a specialised routine mental health care clinic at Haukeland University Hospital in Bergen, Norway. All patients were referred to the eCoping clinic either from their general practitioner (GP) or by themselves through a direct contact with the eCoping team– resulting in both GP-referrals and self-referrals. The present study presents data form GP-referred patients included between September 2014 – May 2019, and self-referred patients included between September 2016 – May 2019.

Design

This study was a naturalistic open effectiveness study with repeated assessments for primary treatment outcomes and a 6-month follow-up for patients with moderate depression, panic disorder (PD) and social anxiety disorder (SAD) undergoing therapist guided internet-delivered cognitive behavioral therapy (guided ICBT).

Referral to treatment

Patients referred by GPs were evaluated by their doctors for symptom severity to determine the need for specialized care services; if deemed necessary, the GP authored a referral to the eCoping clinic. Patients who self-referred sent an email with their contact details to an address available on the eCoping website (www.eMeistring.no). Subsequently, an eCoping therapist conducted a clinical interview by telephone to assess symptom severity and the treatment's relevance. A summary of the interview was then generated as a self-referral.

A specialist in clinical psychology reviewed all referrals regardless of referral pathway in accordance with national priority guidelines for determining eligibility for specialised care treatment (Helsedirektoratet, 2015). Inclusion criteria for all patients were: 1) being 18 years of age or older, 2) diagnosed either with major depressive episode, social anxiety disorder, or panic disorder according 3) if using antidepressants, being on a stable dosage over the previous four weeks being, 4) fluent in oral and written Norwegian. Exclusion criteria for all patients were: 1) current suicidal ideation, 2) current psychosis, 3) current substance abuse, 4) using benzodiazepines daily, 5) immediate need of other treatment, 5) no access to the internet. All study-participants signed a written informed consent. Patients meeting the criteria for treatment received a scheduled appointment for a face-to-face consultation.

Procedure

During the face-to-face consultation, all patients underwent a diagnostic interview with the Mini-International Neuropsychiatric Interview (MINI) [35]. Based on the MINI, patients deemed unfit for eCoping were excluded and rereferred to a more suitable treatment option. The treatment program allocation was determined based on the MINI assessment.

Training

All therapists at the eCoping clinic were co-located for one to two days per week when working with guided ICBT, with an ordinary workload during the rest of the week. In addition to a one-year continuing education, the therapists received weekly peer supervision and monthly expert supervision from the Internet Psychiatry Clinic in Stockholm.

Treatment

For depression, the guided ICBT program included eight text-based modules including psychoeducation, behavioral activation, and cognitive reappraisal. PD was addressed with nine text-based modules with psychoeducation, working with automatic thoughts, behavioral experiments, in vivo exposure, and relapse prevention. Similarly SAD treatment comprised nine text-based modules including psychoeducation, working with automatic thoughts, behavioral experiments, shifting focus, and relapse prevention. The treatments are further described in detail in previous publications [17, 36, 37].

Treatment time for the three diagnoses was up to 14 weeks. Irrespective of treatment program, each participant was expected to spend 7-10 days' pr module, and access to next module was gained upon finishing the previous one. Each module required approximately 45 minutes to complete.

After each completed module or at least once a week, a therapist gave feedback and guidance tailored to individual participant needs based on their worksheets, symptom assessment and emails. While also introducing them to the next module. All feedback and communication were enabled asynchronously through a secure email system. Participants not heard from for one week, were contacted by the therapist via a SMS text message to encourage them to continue the work on the program.

Primary outcomes

All self-report measures and questionnaires were administered via the internet and made accessible at the end of each module. Participants completed the measures and questionnaires at pre-treatment,

after each module, post-treatment and at the 6-month follow-up. The programs for depression, PD and SAD had the following primary outcome measurers:

Depression: Montgomery Åsberg Depression Rating Scale, Self-rating version (MADRS-S) [38]. The MADRS-S comprises 9 items rated on a Likert scale from 0-6 (total score range: 0-54), where higher scores indicate more severe depression. The scale has been found sensitive to change [38, 39], and has shown high correlations between expert ratings and self-reports [38]. Internal consistency measured with the Cronbach's alpha yielded .77 for participants with GP-referral and .82 for self-referred participants.

Panic disorder: Body Sensation Questionnaire (BSQ) [40]. The BSQ has been found sensitive to symptom change during treatment [40]. The BSQ comprises 16 items rated on a 5-point Likert scale (total score range: 16-80) where higher scores indicate a higher level of fear and sensitivity to bodily sensations commonly experienced during autonomic nervous system arousal. Cronbach's alpha yielded .84 for participants with GP-referral and .88 for self-referred participants and showed good internal consistency reliability.

Social anxiety disorder: The social phobia scale (SPS) [41]. The SPS measures social phobia and the distress of being observed or watched while performing daily activities in the presence of others [41]. The SPS entails 20 questions rated on a 5-point Likert scale (total score range: 0-100), where higher scores indicate higher anxiety of being observed or scrutinised. The scale has shown good reliability and validity [41, 42], as well as discriminant validity in distinguishing individuals diagnosed with SAD from both healthy controls and individuals with other anxiety disorders [41]. Internal consistency measured with the Cronbach's alpha yielded .91 for GP-referrals and .93 for self-referred participants.

To address the main aim of this study, we combined the outcome measures for the three treatment modalities. We harmonized the outcome scores and computed a common harmonized outcome measure (see formula), thereby increasing the net sample and the statistical power for the analyses [43]. We were unable to calculate internal consistency using Cronbach's alpha for the harmonized outcome measure due to the study procedure, which included missing data at the item level. This occurred because participants were not required to respond to all three outcome measures.

$$H = \frac{score - MIN}{MAX - MIN} * 100$$

Statistics

Data preparation and calculation of descriptive statistics and bivariate analyses including percentages, means, standard deviations, and cross tabulations with Chi-square tests, were conducted using IBM SPSS version 29[44]. Effect-sizes (ES) from pre-treatment to post-treatment and from pre- to 6-month follow-up is reported as Cohen's *d*, based on pooled standard deviations [45]. All measurement points (completed modules) were used for the analyses; however, the focus is the between-group (GP-referred vs. self-referred) difference in pre-treatment levels and changes from pre- to post-treatment and from pre- to 6-month follow-up. We performed analyses of the treatment outcome using linear mixed modelling (LMM). LMM is a recommended statistical method for handling missing data under the assumption of missing at random and uses all available data for estimation [46]. We analysed level and changes in data with a random intercept and fixed slope model. First, unconditional models including the time variable were tested. Time was defined as modules, giving changes in outcomes per module. To compare group differences over time we added the referral-group, both as a main effect and in an interaction effect with time. The Reliable Change

Index (RCI) was calculated using individual-level changes from pre-treatment to post-treatment and from pre- to the 6-month follow-up, based on observed data for participants in each referral pathway and diagnose. The RCI calculates whether changes in symptoms are reliable and not caused by measurement error [47]. Symptom level was considered to have improved if the outcome measure indicated a reliable change, as defined by the RCI [47]. The RCI was calculated with the formula 1.96*(SD*√2*√(1-Rel)), where SD is the observed standard deviation and Rel is the internal consistency at pre-treatment assessment for each referral pathway and outcome measure [48]. Improvement was defined by a negative RCI change, while deterioration by a positive RCI change.

Results

Participants

A total of 460 participants provided informed consent across the two referral pathways. Participant characteristics are shown in Table 1. Of the total sample, approximately two-thirds were referred by a general practitioner (GP-referred), while about one-third were self-referred. The gender distribution was just over 6 out 10 females in both groups. The mean age across the total sample was approximately 32 years, with an average duration of complaints of about 10 years. The distribution within the diagnose specific treatment programs were approximately 22% in depression, 38% in panic disorder (PD) and 41% in social anxiety disorder (SAD). Among participants in the depression group, the referral pathway was approximately equally distributed. In contrast, the pathway distribution for both the panic disorder (PD) group and the social anxiety disorder (SAD) group was about two-thirds GP-referrals and one-third self-referrals.

Table 1 about here

Table 1. Pretreatment characteristics

Demography	Total group N = 460	Self-referred N=155	GP-referred N=305	*P*
Gender: n/N (%)				
Female	282/440 (64.1%)	106 (70.2%)	176 (60.9%)	.054
Male	158/440 (35.9%)	45 (29.8%)	113 (39.1%)	
Age, mean (SD)	32.5 (11.0)	31.9 (10.3)	32.7 (11.4)	.122
Civil status: n/N (%)				
Married/cohabitant	225/435 (51.7%)	83 (55.0%)	142 (50.0%)	.324
Single	210/435 (48.3%)	68 (45.0%)	142 (50.0%)	
Education: n/N (%)				
Primary level	60/439 (13.7%)	14 (9.3%)	46 (16.0%)	<.001
Secondary level	193/439 (44.0%)	50 (33.1%)	143 (49.7%)	
Tertiary level	186/439 (42.4%)	87 (57.6%)	99 (34.4%)	
Years with complaints: years (SD)	10.2 (9.5)	9.80 (9.43)	10.35 (9.62)	.538
Treatment program: N (%)				
Depression	101 (21.7%)	48 (31.0%)	53 (17.4%)	
Panic disorder	172 (37.4%)	56 (36.1%)	116 (38.0%)	
Social anxiety disorder	187 (40.7%)	51 (32.9%)	136 (44.6%)	

N=number of participants, n=number of participants in that subgroup.

SD= standard deviation, GP-referred=referred by general practitioners

Attrition and adherence

In the depression group (N=101), 97 participants (96.0%) completed the MADRS-S assessment pre-treatment, 66 (65.3%) at post-treatment, and 41 (40.6%) at the six-month follow-up. The amount of missing data was found equal between the two groups (GP-referred: 4.9, SD = 2.9; Self-referred: 4.6, SD = 3.3). In the PD-group (N=172), 156 participants (90.7%) completed the BSQ pre-treatment, with 111 (64.5%) and 67 (38.9%) completing the assessment at post-treatment and follow-up, respectively. No difference in the amount of missing data was found between the two groups (GP-referred: 5.0, SD = 3.5; Self-referred: 3.9, SD = 3.1, t = 2.0, p = .051). For the SAD-group (N=187), 177 participants (95.2%) completed the SPS pre-treatment, followed by 99 (52.9%) at post-treatment and 59 (31.6%) at follow-up, with no difference in the amount of missing data between the groups (; GP-referred: 5.7, SD = 3.6; Self-referred: 4.9, SD = 3.8, t = 1.50, p = .143). Details on the observed diagnosis-specific outcome measures are provided in Table 1 in Multimedia Appendix 1.

Primary outcomes

LMM results showed that when harmonizing the outcome measures for all three diagnoses, significant symptom reduction was evident for both referral pathways from pre- to post-treatment and pre-to 6-moths follow-up. Overall, participants who self-referred demonstrated significantly greater estimated symptom reduction from pre-to post and pre-to 6-month follow-up compared to those referred by GPs. Overall, we found large effect sizes (ES > 0.8) over time.

The estimated scores from the LMM showed that the MADRS-S level decreased over time (Table 2). Self-referred participants showed no significant difference in depression scores from GP-referred participants at the pre-treatment assessment, but a statistically greater reduction from pre-treatment to post-treatment and pre-to 6-moths follow-up. Additionally, the self-referred group had a temporarily stronger estimated reduction in depression scores after completing Module 4.

Table 2 about here

Table 2. Estimated outcome measures over time for GP and Self-referred groups.

	Harmonized outcome		MADRS-S		BSQ		SPS	
	b	*P*	*b*	*P*	*b*	*P*	*b*	*P*
Pre	46.13	<.001	23.82	<.001	43.15	<.001	40.12	<.001
M1 [a]	-1.26	.183	-3.16	.003	-0.46	.596	0.33	.739
M2	-4.48	<.001	-3.98	<.001	-2.61	.004	-2.64	.012
M3	-7.90	<.001	-4.37	<.001	-7.23	<.001	-3.62	.001
M4	-10.47	<.001	-3.32	.007	-9.74	<.001	-6.23	<.001
M5	-13.20	<.001	-4.95	<.001	-11.04	<.001	-8.99	<.001
M6	-15.12	<.001	-7.13	<.001	- 12.26	<.001	-9.50	<.001
M7	-16.16	<.001	- 11.25	.005	- 12.32	<.001	- 10.66	<.001
M8	-27.77	<.001			- 13.40	.035	- 27.84	<.001
Post	-15.67	<.001	-5.15	<.001	- 12.57	<.001	-11.68	<.001
Follow-up	-19.63	<.001	-7.54	<.001	- 15.21	<.001	- 14.40	<.001
Group differences:								
Self-referred [b]	-2.26	.229	0.50	.756	-1.42	.444	-2.55	.350
Self-referred*M1	-2.52	.079	-0.74	.639	-1.23	.402	-1.83	.326
Self-referred*M2	-3.40	.024	-0.58	.719	-3.34	.030	-1.79	.366
Self-referred*M3	-3.74	.017	-2.00	.228	-1.04	.513	-4.35	.036
Self-referred*M4	-3.99	.014	-4.83	.005	-1.12	.504	-2.48	.248
Self-referred*M5	-3.83	.022	-3.35	.058	-2.17	.205	-2.67	.239
Self-referred*M6	-3.62	.036	-2.73	.134	-2.14	.224	-2.25	.329
Self-referred*M7	-5.00	.013			-3.18	.080	-3.01	.208
Self-referred*M8	-2.67	.829			-6.90	.450		
Self-referred*Post	-5.85	<.001	-6.60	<.001	-3.00	.065	-2.75	.178
Self-referred*Follow-up	-5.72	.002	-4.80	.018	-4.62	.016	-2.93	.222

[a] M: Module [b] Reference group: GP-referred
Pre: Pre-treatment; Post: Post-treatment; Follow-up: 6-months follow-up
MADRS-S: Montgomery Åsberg Depression Rating Scale, Self-rating version, BSQ: Body Sensation Questionnaire, SPS: Social Phobia Scale

Table 3 shows effect sizes (ES) from pre- to post and from pre- to follow-up within the referral pathways, Figure 1 depicts the corresponding level and change. The LMM scores showed that the estimated BSQ levels for both referral pathways decreased over time. Self-referred participants showed a significantly greater reduction in BSQ scores from pre-treatment to 6-month follow-up and a temporarily greater reduction after completing Module 2. The LMM scores showed that the estimated SPS levels and changes did not differ between the referral pathways from pre-treatment to 6-month follow-up. Self-referred participants showed a temporary significantly greater reduction from pre-treatment to Module 3.

Table 3 about here

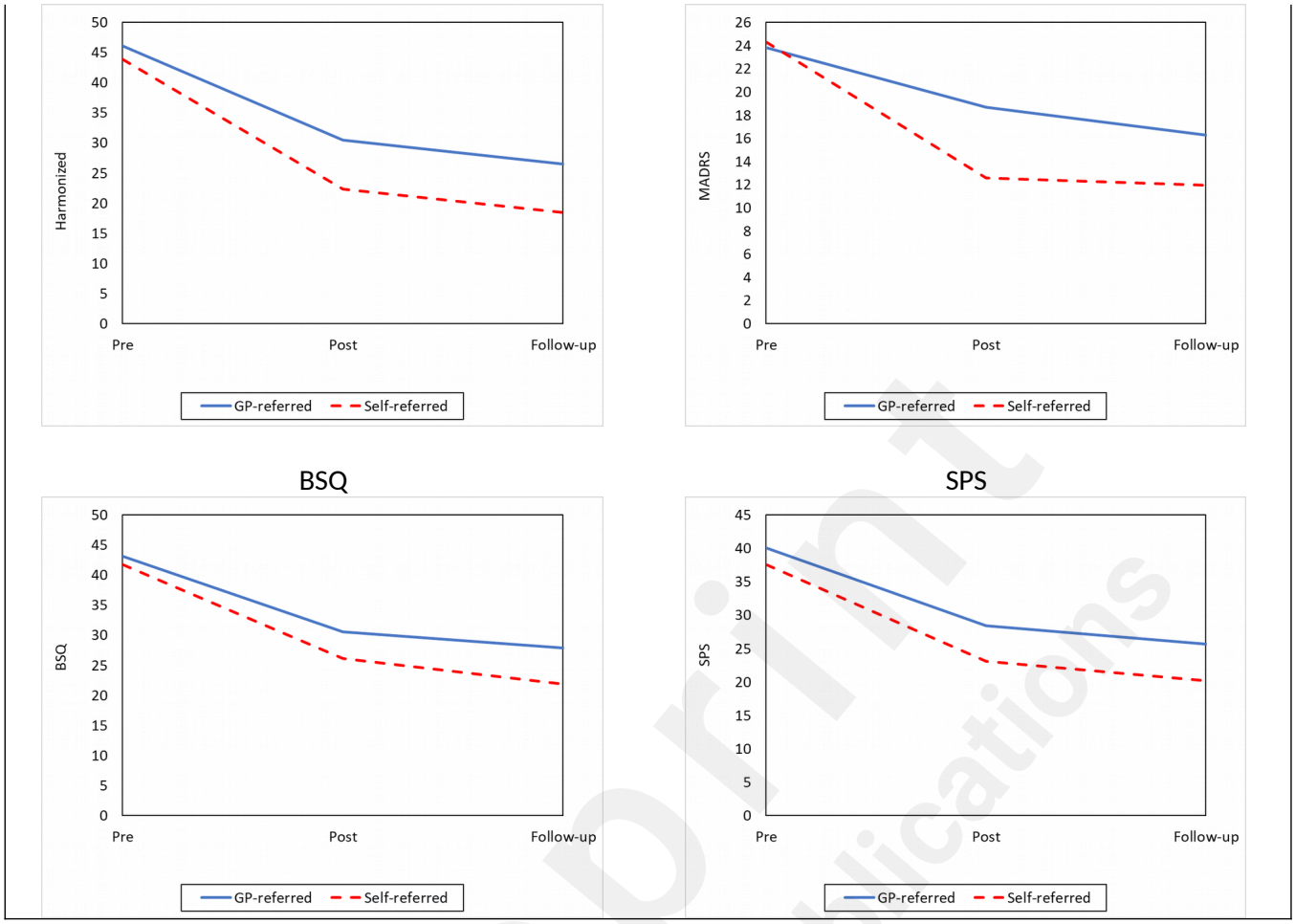
Table 3. Estimated outcome measures pre, post, follow-up.

		Pre	Post		$\Delta_{GP,Self}$	Follow-up		$\Delta_{GP,Self}$
		Mean [a]	*Mean* [a]	*ES*	*p*	*Mean* [a]	*ES*	*p*
Harmonized outcome	GP	46.13	30.46	-0.97		26.50	-1.22	
	Self	43.87	22.35	-1.34	<.001	18.52	-1.58	.002
MADRS-S	GP	23.82	18.67	-0.86		16.28	-1.26	
	Self	24.32	12.57	-1.97	<.001	11.98	-2.07	.018
BSQ	GP	43.15	30.58	-1.32		27.94	-1.60	
	Self	41.73	26.16	-1.64	.065	21.90	-2.08	.016
SPS	GP	40.12	28.44	-0.80		25.72	-0.99	
	Self	37.57	23.14	-0.99	.178	20.24	-1.19	.222

GP: GP-referred, Self: Self-referred, Mean [a]: Model estimated mean values, $\Delta_{GP,Self:}$ Difference between GP and Self in change, ES: effect size, Harmonized outcome: harmonization of MADRS-S, BSQ, and SPS Pre=pre-treatment, Post=post-treatment, Follow-up= 6 months follow-up MADRS-S: Montgomery Åsberg Depression Rating Scale, Self-rating version, BSQ: Body Sensation Questionnaire, SPS: Social Phobia Scale

Figure 1 about here

Figure 1: Estimated outcome scores at pre-treatment, post-treatment, and 6-month follow-up



Pre=pre-treatment, Post=post-treatment, Follow-up= 6 months follow-up. MADRS-S: Montgomery Åsberg Depression Rating Scale, Self-rating version, BSQ: Body Sensation Questionnaire, SPS: Social Phobia Scale.

Reliable change

Overall, of those who self-referred, statistically significant more participants showed an improvement in clinical reliable change (RCI) from pre- to post-treatment compared to those referred by their GP (Table 4). Conversely from pre- to follow-up, we found no statistically significant differences between the referral pathways. RCI improvement based on the observed data, required a reduction of at least 6 points on the MADRS-S, 8 points on the BSQ, and 9 points on the SPS, across both referral pathways. There were statistically significant differences in RCI improvement between referral pathways among participants with depression from pre-treatment to post-treatment favoring those who self-referred. Of participants with depression or PD who reported no change in symptom level at post-treatment and at the 6-month follow-up, the majority was GP-referred. In contrast, among participants with SAD, the reliable change in reported symptom level between the referral pathway was minor at both post-treatment and the 6-month follow-up.

Table 4 about here

Table 4. Reliable Change in outcome measures

	Total		MADRS-S	
	GP	Self	GP	Self

	%	*n*	%	*n*	%	*n*	%	*n*
Post-treatment								
Improved	63.0	114	83.0	83	51.5	17	86.7	26
No change	29.3	53	16.0	16	36.4	12	13.3	4
Deterioration	7.7	14	1.0	1	12.1	4	0.0	0
p [a] =				.001				.008
Follow-up								
Improved	73.2	71	82.6	57	55.0	11	71.4	15
No change	22.7	22	17.4	12	35.0	7	28.6	6
Deterioration	4.1	4	0.0	0	10.0	2	0.0	0
p [a] =				.145				.263
	BSQ				SPS			
	GP		Self		GP		Self	
	%	*n*	%	*n*	%	*n*	%	*n*
Post-treatment								
Improved	70.8	51	86.8	33	60.5	46	75.0	24
No change	26.4	19	13.2	5	28.9	22	21.9	7
Deterioration	2.8	2	0.0	0	10.5	8	3.1	1
p [a] =				.143				.269
Follow-up								
Improved	76.2	32	91.7	22	80.0	28	83.3	20
No change	21.4	9	8.3	2	17.1	6	16.7	4
Deterioration	2.4	1	0.0	0	2.9	1	0.0	0
p [a] =				.274				.702

GP: GP-referred, Self: Self-referred, Follow-up= 6 months follow-up
[a] χ^2 – test for differences in distributions for improved, no change, and deterioration between referral pathways

Discussion

This study compared the overall treatment effectiveness of guided internet-delivered cognitive behavioral therapy (guided ICBT) across GP-referred (N=305) and self-referred (N=155) pathways for participants with moderate depression, panic disorder (PD) or social anxiety disorder (SAD). We also explored whether differences in treatment effectiveness between the referral pathways varied across the diagnoses separately. All participants underwent guided ICBT in a secondary routine mental health care clinic.

Principal findings

Overall, there was large effect sizes of guided ICBT from pre-treatment to post-treatment and from pre-treatment to 6-month follow-up, aligning with the large effects reported in a systematic review of routine care practice on the effectiveness of guided ICBT for depression and anxiety [49], and further aligning with treatment results from previous investigations from the same specialized routine care clinic [17, 36, 37].

Our overall results support the hypothesis that participants who self-refer have significantly larger treatment effectiveness compared to those referred by their GP. This is evident from the relatively large, estimated effect sizes in the harmonized scores in the self-referred group (ES: 1.34 - 1.58) compared to the GP-referred group (ES: 0.97 - 1.22). Additionally, there was a significant difference in reliable change between the self-referred and the GP referred group. These results are noteworthy, especially since no difference in pre-treatment symptom level was found across referral pathways. Our results favoring self-referral, are consistent with those of Staples et al. [33] where self-referred patients showed greater effect sizes compared to GP-referred patients both from pre-treatment to post-treatment and from pre- to the 3-month follow-up. Neither our study nor previous studies on referral pathway to ICBT [33] did investigate potential mechanisms behind the findings that self-referred patients have better treatment effectiveness, leaving open the possibility that unaccounted-for factors may be influencing our results.

One such factor could be differences in motivation and autonomy among participants across the referral pathways. According to self determination theory (SDT), internal motivation thrives when individuals experience autonomy, capability, and relatedness [25]. Self-referred participants may feel a greater sense of empowerment and autonomy by actively choosing to seek help through guided ICBT [23], which could enhance their motivation to engage with treatment more effectively compared to GP-referred participants [8]. The hope of recovery and the desire to gain control over one’s life, identified as internal motivators in a study by Wilhelmsen et al. [50], may be particularly strong among self-referred participants, who make the decision to undergo therapy independently. This increased autonomy may enhance their motivation to engage with treatment [25]. In turn, higher motivation may lead to more effective engagement with ICBT tasks, which could boost the self-referres’ sense of competence (Deci & Ryan, 2000).

Guided ICBT relies on the patient’s ability to activly engage with the treatment and to implement changes into their everyday living. Increased competence and connection may improve their engagement with homework, compliance with exposure exercises, and relapse prevention. These factors are crucial to therapy effectiveness, but also identified as major challenges in ICBT [51]. However, because technology is central to ICBT, factors like low computer self-efficacy, lack of basic computer skills or computer anxiety may undermine perceived competence and hinder engagement with treatment [52]. Previous studies have found that participants with lower levels of computer anxiety tend to show greater interest in ICBT [53]. Although these factors were not explicitly analyzed in our study, they may help contextualize the significant differences in treatment outcomes we found between the referral pathways.

In line with the SDT-theory [25], the weekly ICBT-therapist support may further strengthen the self-

referrals' sense of connection, fulfilling the need for relatedness. This sense of relatedness, as highlighted in a qualitative study by Wilhelmsen et al. [50], was found to motivate patients to persist with guided ICBT and blended care for depression. The study identified that relatedness encompassed feelings of belonging with partners, family, friends, and the therapist, all of which contributed to maintaining engagement with the treatment [50]. We found no significant differences in civil status between referral pathways. While exploring participants' sense of belonging and social networks would be highly interesting, it is beyond the scope and data availability of the current study.

Exploring the difference in treatment effectiveness between depression, panic disorder (PD), and social anxiety disorder (SAD), revealed large effect sizes of guided ICBT from pre-treatment to post-treatment and from pre-treatment to the 6-month follow-up, regardless of referral pathway. These findings align with the large effects reported in systematic reviews for depression [49, 54], for PD [55, 56], and for SAD [57]. Our results indicate statistically significant differences in effect sizes between referral pathways across the three diagnoses.
First, for depression, we found differences between the referral pathways from pre- to post-treatment and from pre to 6-month follow-up, favoring those who self-referred. Secondly, for PD, we found differences between the referral pathways from pre- to follow-up, again favoring the self-referred. Thirdly, for participants with SAD no significant differences in treatment outcomes were found between the referral pathways. At an individual level, measured by the RCI [47], a difference between referral pathways was identified for participants with depression from pre- to post-treatment, favoring self-referral. However, no such difference was identified for PD or SAD. For participants with SAD, we found overall large effect sizes, but no difference between the referral pathways. This might be partially explained by SAD tending to be a more chronic disorder than PD and depression [58]. Our results suggest greater similarity across referral pathways. This may be caused by the comorbidity with other mental disorders, which is common in SAD [59].

Limitations

A first limitation to our study is the lack of a control group, thus not allowing us to imply causality of our findings. Therefore, we cannot definitively attribute the significant differences in treatment outcomes to the referral pathway. Second, since we did not assess participants' motivation for treatment, we can only speculate whether underlying patient characteristics such as those outlined by the Self Determination Theory [25], contributed to variations in effectiveness across referral pathways. Third, as we were only able to assess primary outcome measures for the diagnoses and did not assess secondary outcomes such as comorbidity disorders or quality of life, we cannot document a broader impact of the results.

Implications

Our results show that participants who self-referred experienced significantly greater treatment outcomes compared to those referred by a GP. This suggests that self-referral may be a more effective pathway for achieving long-term improvements, particularly for patients with depression and PD. Patients who self-refer may be more motivated to engage with treatment, leading to better

results. These findings highlight the importance of facilitating self-referral in guided ICBT, as it could reduce wait times and provide patients with quicker access to evidence-based treatments. Information campaigns could also help raise public awareness about the benefits of guided ICBT and self-referral. Health services should focus on identifying and addressing potential motivation barriers in GP-referred patients, as motivation is crucial for increasing engagement and improving treatment outcomes.

For patients with SAD, however, our results show no significant difference between referral pathways, suggesting the need for a more individualized approach to choosing the most suitable referral method.

Conclusion

This study demonstrates that both GP- and self-referral pathways to guided ICBT is effective for moderate depression, panic disorder, and social anxiety disorder when delivered in a specialized routine care clinic. Notably, self-referred participants experienced significantly greater treatment outcomes both from pre-treatment to post-treatment and form pre- to 6-month follow-up compared to those referred by a GP. We suggest that this additional treatment outcome may stem from differences in internal motivation, with self-referred participants being more motivated to engage with the treatment, leading to greater long-term improvements. Our results highlight the vital role of self-referral and patient autonomy in driving sustained progress, particularly for depression and panic disorder. The non-significant difference for participants with social anxiety disorder suggests that the impact of referral route may be less pronounced, as both referral pathways appear to foster comparable levels of treatment engagement and outcomes.

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Multimedia Appendix 1

Supplemental table of observed diagnosis-specific outcome measures

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Supplementary Files