Impact of COVID-19 social distancing measures on mental health care treatment outcomes for common mental disorders in the Netherlands: Videoconferencing therapy vs in-person interventions

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Impact of COVID-19 social distancing measures on basic mental health care treatment outcomes for common mental disorders in the Netherlands:

Videoconferencing therapy vs in-person interventions

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Statement of Contributions

This thesis is partially reproduced from the following article that I co-authored during my MSc studies:

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Abstract

In March 2020, the Dutch government began implementing measures to prevent the spread of the COVID-19 virus, and to reduce the burden to the national healthcare system. Historically, Dutch mental healthcare has been slow to implement and utilise digital interventions, however, the new public health policies regarding social distancing presented an acute and emergent need to do so. Despite therapists' concerns regarding its efficacy and potential technical challenges, countless mental healthcare professionals turned to videoconference therapy to conduct generalistic Basic Mental Healthcare outpatient treatments. This paradigm shift presented a rare opportunity to examine whether videoconferencing therapy yields comparable results to in-person interventions for common mental health disorders.

Arkin, a large mental healthcare facility and research institute in central Amsterdam, collects routine outcome monitoring data for patients under its care, to support shared decision-making. For the purposes of this study, basic mental healthcare patients (N = 1392) were divided into three cohorts: Treatments performed prior to, treatments performed partially during, and treatments performed entirely during the COVID-19 lockdown; and pre- and post-test data were used to compare outcomes.

Across the three cohort conditions, there were no differences in the treatment outcomes for videoconferencing therapy conducted during lockdowns, as compared to in-person interventions done prior to the COVID-19 pandemic, or blended treatments that had commenced as in-person treatment before the pandemic and then transitioned to videoconferencing during the lockdown.

This observational study seems to indicate that videoconferencing and in-person therapies can produce similar clinical results in Basic Mental Healthcare patients with common mental health disorders, bolstering the findings of other meta-analyses and randomized controlled studies investigating this topic.

Introduction

Since 2019, the COVID-19 pandemic has swept the world, generating a tremendous burden to healthcare systems, globally (Schiavone & Ferretti, 2021). While the uptake of digital interventions in mental healthcare (MHC) began prior to the COVID-19 pandemic (Fairburn & Patel, 2017), the acceleration in their use can be attributed to the demands of this time (Pierce et al., 2020; Probst et al., 2021; Wind et al., 2020) Throughout the world, public health policies during the COVID-19 pandemic required social distancing, however that did not denote that there be a loss of social interaction with others (David & Roberts, 2021). In fact, current communication technologies serve as efficient and effective vehicles to facilitate remote contact (Goodman-Deane et al., 2016), and interaction. Specifically, the social effects of rich digital communication tools such as videoconferencing can closely resemble those of in-person interactions (Krouwel et al., 2019). This bodes well for the future of digital mental healthcare (eMHC). Various types of videoconferencing psychotherapy were trialled prior to the COVID-19 pandemic (Backhaus et al., 2012), and MHC patients now have access to innovative digital resources that are an ever-growing in number and quality, such as online modules, internet-delivered cognitive behavioural therapy (iCBT), chatbots, and telepsychiatry (Gratzer et al., 2021).

Tele-mental health, including videoconferencing, phone, emails, internet, and virtual reality have all been considered acceptable forms of MHC service delivery for several years (Richardson et al., 2009), but uptake and widespread implementation of these technologies in psychological treatment environments lag other fields of healthcare (Vis et al., 2018). This might be attributed to therapists' attitudes regarding videoconferencing as an inferior modality of psychotherapy, as compared to in-person treatment (Humer et al., 2020), since an appreciable proportion of MHC practitioners report increased anxiety and lack of professional confidence in their therapeutic skills when delivering therapy via video conferencing (Aafjes-van Doorn et al., 2021; Békés et al., 2021). MHC practitioners underline the importance of the therapeutic alliance as a primary change agent when conducting psychotherapy with their clients, and many question the effectiveness of the alliance they can cultivate in the digital environment (Aafjes-van Doorn et al., 2021). This includes the notion that the important information found in non-verbal cues could be missed, or the ability to respond constructively in an emergent situation being impaired (de Beurs, Blankers, Gouiaan, et al., 2021). Furthermore, many MHC practitioners acknowledge a lack of trust in their clients' ability to

remain focused and attentive in videoconferencing therapy, in addition to their own ability to hold focused attention. They also recognise fears surrounding the use of unfamiliar technologies, and the possibility of encountering difficulties with them when working with a client. (Fletcher-Tomenius & Vossler, 2009). Moreover, in a survey of German psychiatric inpatient practitioners, regarding their attitudes towards internet-delivered psychiatric interventions, many relayed their concerns over their patients having the necessary digital devices and internet access (Sander et al., 2022). It seems that for successful service delivery of videoconferencing therapy, the MHC system would need to ensure the needs of both the practitioners and patients are being met.

Concerns of MHC patients around the use of videoconferencing therapy, closely reflect the concerns of their practitioner counterparts. In fact, recent research from Central West and Far North Queensland, Australia, posits that remote Australians strongly prefer in-person MHC treatment and are likely to prefer reverting to it post-pandemic, largely because in-person treatment is perceived as more efficacious (Amos et al., 2021). However, despite the low reports in preference for videoconferencing therapy amongst Australians, it seems there is intention to use such services if they are available; and once a patient has already made use of videoconferencing therapy, they are increasingly likely to utilise it again in-future (Loades et al., 2020). A patient survey recently conducted at Arkin elucidated the experience of videoconferencing therapy from the patient perspective. As an alternative to in-person treatment during lockdowns, patients reported benefits to videoconferencing therapy, however, similarly to the Australian study, most patients preferred to return to in-person therapy or blended treatment when public policy allows (de Beurs et al., 2021a). A study of patients with eating disorders, who were abruptly migrated to videoconferencing therapy at the start of the COVID-19 pandemic, illustrated that while a vast majority of patients had positive views of the transition, a small minority faced difficulties (Lewis et al., 2021). The researchers postulated that the responsibility falls to the MHC practitioner to remain attuned to patients who may be experiencing difficulties, to ensure that they receive an effective form of treatment. In this way, it can be noted that MHC practitioners are charged with new responsibilities when migrating MHC to videoconferencing delivery. While managing patient perceptions and expectations of the effectiveness of the MHC is important, identifying and caring for patients who struggle to adapt is paramount.

While MHC practitioners and patients alike have their reservations about the effectiveness of psychotherapy via videoconferencing, this is likely rooted in negative perceptions and personal expectancies. Several randomised controlled trials (RCTs) have reported as to the effectiveness of internet-based interventions for common mental disorders, and results indicate that internet-based therapy is equally as effective as in-person treatment (Andrews et al., 2010; Cuijpers et al., 2017; Karyotaki et al., 2018). This study seeks to expand the body of knowledge for this domain through the contribution of data collected in the Netherlands via ROM.

The COVID-19 pandemic presented a unique opportunity for researchers to investigate, the efficacy of videoconferencing therapy as compared to in-person treatment for common mental health disorders (e.g., depression, anxiety, PTSD) in the B-GGZ sector of Dutch MHC. Furthermore, the unanticipated and acute paradigm shift offered an unusual occasion to conduct research on this topic in the naturalistic setting of everyday practice. While the SARS-CoV-2 (COVID-19) virus is thought to have originated in Wuhan, Hubei province, People's Republic of China (Platto et al., 2021), within months of the December 29, 2019 public announcement, serious outbreaks emerged in Japan, South Korea, Thailand, Vietnam, Malaysia, Singapore, Nepal, Cambodia, the Philippines, Russia, the United Arab Emirates, Australia, Canada, the United States of America and Europe (i.e., France, Germany, Italy, UK, Finland and Sweden) (Tang et al., 2020). It was a relatively short duration of time (i.e., a mere few months) for a global pandemic to be declared by the World Health Organisation (WHO). When Dutch public health policies determined lockdown measures were required to control the spread of the COVID-19 virus, it was vital for B-GGZ MHC to transition psychotherapy treatments from in-person to a videoconferencing modality. In mid-March 2020, this occurred in a sudden and abrupt manner, leaving some patients to have received the entirety of their psychotherapy treatment in-person if it was completed prior to the lockdown, some patients to have their psychotherapy treatment modality changed part-way through (i.e., in-person to via videoconferencing), and some patients to receive all their treatment sessions via videoconferencing, if they began treatment after the lockdown. As such, the period of data collection occurred from 2019 to 2021. The goal of this research is to contrast these three psychotherapy treatment processes and their subsequent treatment outcomes.

This study investigates the effectiveness of conventional psychotherapy treatment via videoconferencing for common mental health disorders, using an observational experiment

design. Based on therapist and patient expectancies, we hypothesized the following effect of the treatment modalities: A diminished outcome for treatments that were conducted via videoconferencing, as compared to in-person treatments or treatments that commenced in-person but were transitioned to videoconferencing on March 16, 2020.

Methods

Design

To address the research question, a longitudinal observational study was conducted to gather data in an ecologically valid setting and maximize generalisability. The large sample size (N = 1392) increased the statistical power of the data and improved the internal and external validity. Participants were assigned to one of three treatment groups based on the mode of their psychotherapy delivery: 1) In-person prior to the COVID-19 pandemic lockdown, 2) Blended (combination of videoconferencing and in-person) for those who started their treatment before lockdown but transitioned to videoconferencing during the lockdown, and 3) Entirely videoconferencing for those who began therapy during the lockdown. The outcomes were analysed to determine if there were any differences in treatment effectiveness between the three groups, with a focus on determining if videoconferencing therapy was associated with diminished treatment outcomes compared to the other two groups.

Participants

This study made use of a convenience sample of Generalistic Basic MHC (B-GGZ) patients with mild-to-moderate common mental disorders (N=1392), who were already registered with the Arkin clinical sites after being referred for treatment by their general practitioner. The participants were individuals that had already received, started to receive, or were about to receive short-term cognitive behavioural therapy (CBT) treatment (a maximum of 12 sessions) for their mental health diagnosis, and only treatments begun on 1-1-2019 or later, and concluded by 25-5-2021 were included. The individuals in the sample identified as mostly female (66.7%), and all were between the ages of 18 and 83 year-of-age (M=36.9, SD=13.4). Of the participants, 37.5% had a DSM-5 diagnosis of a mood disorder; 20.8% had a DSM-5 diagnosis of an anxiety disorder; 12.5% had a DSM-5 diagnosis of post-traumatic stress disorder (PTSD); and the remaining 29.3% were diagnosed with other DSM-5 disorders such as adjustment disorder, psychotic disorder, and personality disorder; or did not meet the criteria for a DSM-5 diagnosis.

In accordance with the European Union's General Data Protection Regulation (EU GDPR art.7.1), it was necessary for the study participants to provide voluntary and informed consent to participate in research activities at the Arkin facilities when undergoing the intake

procedure. All participants understood the risks, benefits, expected outcomes, and alternatives of their involvement, as well as how their data will be used. All participants also understood that it was their personal right to withdraw their consent at any time. As Dutch law does not mandate an additional informed consent procedure for the collection of the ROM data that is anonymised and used to support research, quality-of-care, and shared decision-making, no additional informed consent procedure was performed for the specific purposes of this study.

Table 1

Participant characteristics

	B-MHC 1392	
N	*M*	*SD*
Age	36.9	13.4
Pretest severity (OQ-SD)	52.4	15.1
Functioning (GAF)	57.3	5.9
	N	*%*
Female gender	926	66.7
Primary diagnosis	*N*	*%*
Mood disorder	520	27.5
Anxiety disorder	289	20.8
PTSD	173	12.5
Adjustment disorder	128	9.2
Psychotic disorder	129	9.3
Personality disorder	15	1.1
Other/missing	134	9.7
Comorbidity	*N*	*%*
No comorbidity	806	58.1
Axis 1 comorbidity	552	39.8
Axis 2 comorbidity	30	2.2
	M	*SD*
Number of sessions	10.2	5.6
Treatment duration (days)	142.5	77.4

Note. This chart provides the sociodemographic data for study participants with complete pre- and post-test questionnaires.

Setting

Study participants were seen in Amsterdam at one of Arkin's fourteen clinical sites, which specialises in the diagnosis and provision of focused, time-limed (a maximum of twelve sessions), primary MHC for patients with mild-to-moderate, singular mood, or stress and anxiety disorders. Arkin is the largest provider of MHC in Amsterdam, having been in existence for centuries (*Arkin*, n.d.). The Arkin Quality Charter promotes the appropriate care for all patients by describing how the right help is provided, in the right place, by the right healthcare professional, and all employees are expected to abide by the organisational core values of courage, connection, and curiosity. In line with these values, Arkin conducts research in close collaboration with neighbouring universities, for the purposes of improving the quality of care and of the primary process.

Participants in this study had been referred to Arkin's ambulatory care (B-GGZ) clinic by general practitioners as they were evaluated to be at low risk for suicide and/or other dangerous or harmful behaviour; and as their psychological conditions were considered non-complex, they were thought to benefit optimally from short-term CBT interventions.

At Arkin's B-GGZ, short-term CBT treatments are commonly provided by supervised master's level psychologists, and this was the case for participants in this study.

Procedure

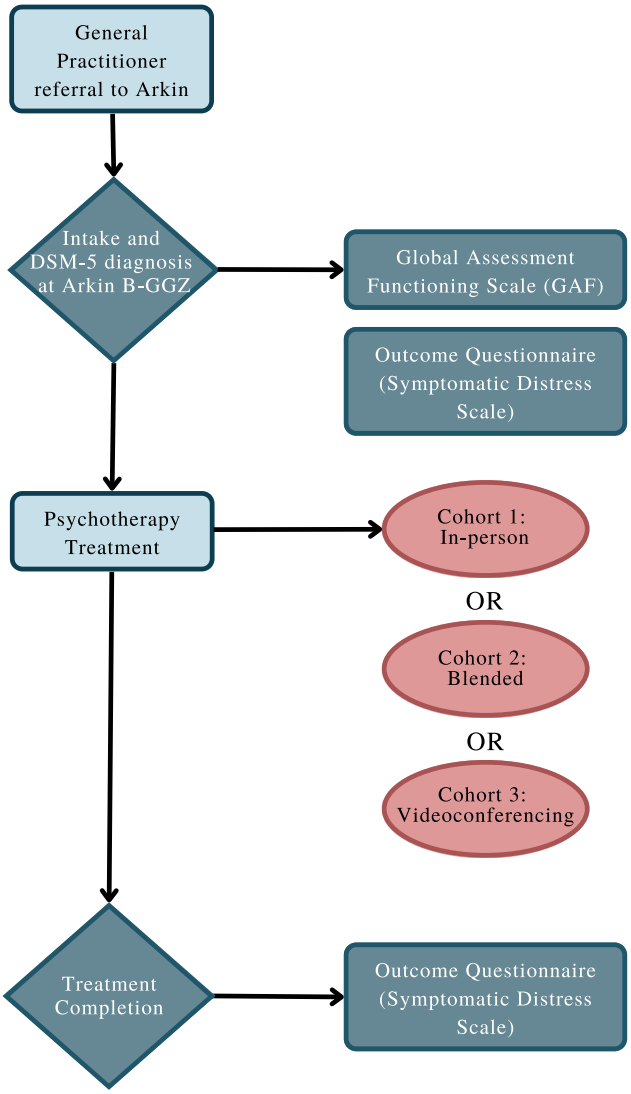
In this study, a longitudinal observational design was utilized to gather patient data between 1-1-2019 and 25-5-2021 through self-report questionnaires. The Symptomatic Distress scale of the Outcome Questionnaire (OQ-45) was chosen as a means of assessment, as it is a widely recognized, self-administered questionnaire that is quick and easy to use, and highly sensitive to changes over time. This tool was developed by Lambert et al. (1996) and is considered a valuable resource for measuring psychological distress in clinical and research settings. For all these reasons, it is rendered an effective tool for Routine Outcome Monitoring (ROM) purposes (ROM; Carlier et al., 2012; de Beurs et al., 2011). ROM refers to the repeated measurement of patient progress over the course of treatment (Carlier et al., 2017), and is now seen as an important tool for assessing quality-of-care for patients in MHC. Patient data is collected before, during, and after treatment, for the purposes of measuring the clinical response of patients. ROM is standard practice at Arkin, and in this study, the severity of symptoms and level of functioning were assessed at intake, and pre- and post-treatment scores

from the outcome questionnaire (OQ) were compared, analysing for symptom change and functioning.

While all Arkin patients are encouraged to complete their self-report questionnaires, not all do so. This study excluded patients for which there was incomplete data and included only patients who completed pre- and post-test questionnaires, which was approximately 70.3% of B-GGZ patients in the 1-1-2019 to 25-5-2021 interval. Fully assessed treatments and treatments with incomplete data at pre-test were compared to analyse for selective ROM nonresponse (de Beurs et al., 2019). A response rate > 50% was considered sufficient to yield outcome data with limited bias. This study also excluded the data for B-GGZ patients who received lengthy treatments (> one year) and utilised only the first and last ROM assessments for pre- and post-test data.

Figure 1

Participant procedure flowchart



Note. This flowchart illustrates the participant journey for this study, from the time the general physician refers to Arkin to the completion of treatment.

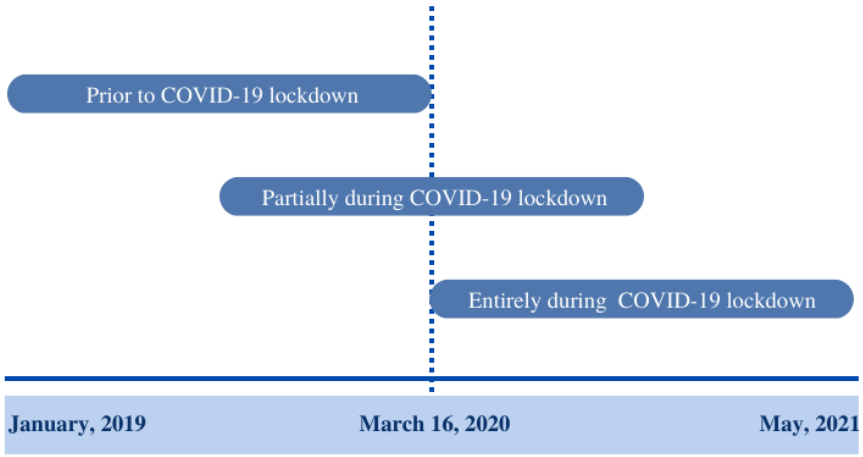
Patient Cohorts

Patient cohorts were determined based on the timing of their treatment schedule, relative to the onset of COVID-19 lockdown measures. (i) In-person treatment conducted and concluded prior to the date that the first lockdown came into effect (16-03-2020); (ii) Treatment conducted partially during the COVID-19 lockdown (in-person prior to 16-03-2020, and via videoconferencing after this date); and treatment conducted entirely during the

first COVID-19 lockdown (16-03-2020 or later). Demographics, clinical characteristics, and ROM response rates for the three cohorts are presented in Table 2.

Figure 2

Cohorts relative to March 3, 2020



Note. This figure provides a visual composition of the three cohorts, based on the first and last treatment dates relative to the COVID-19 lockdown on March 16, 2020.

Table 2

Comparison of treatment duration, and demographic and clinical characteristics of the three B-MHC treatment cohorts (N = 1392)

	Relative to COVID-19								
	Prior		Partially		During		Total		
	1001		338		640				
Initial sample size (*N*)	*N*	*%*	*N*	*%*	*N*	*%*	$\chi^2(2)$	*p*	
Treatment dropouts	108	10.8	55	16.3	97	15.2	10.03	.007	1 < 2 = 3
ROM response	721	72.0	231	68.3	440	68.8	2.79	.25	1 = 2 = 3
	M	*SD*	*M*	*SD*	*M*	*SD*	*F*(2)	*p*	Post hoc
Age	36.6	13.0	37.4	14.0	37.0	13.6	0.35	.71	1 = 2 = 3
Pretest severity (OQ-SD)	53.4	15.4	51.2	14.1	51.6	15.0	2.84	.06	1 = 2 = 3
Functioning (GAF)	57.1	6.0	57.2	6.2	57.6	5.7	0.71	.49	1 = 2 = 3
	N	%	*N*	%	*N*	%	$\chi^2(2)$	*p*	
Female gender	484	67.2	155	67.7	287	65.4	0.53	.77	1 = 2 = 3
Diagnosis	*N*	%	*N*	%	*N*	%	$\chi^2(12)$	*p*	
Depression	307	42.6	81	35.4	132	30.1	30.31	.003	1 > 2 > 3
Anxiety	139	19.3	58	25.3	92	21.0			2 > 3 > 1
PTSD	77	10.7	32	14.0	64	14.6			
Adjustment disorder	59	8.2	15	6.6	54	12.3			
Pers disorder	9	1.3	0	0.0	6	1.4			
Psychotic disorder	62	8.6	23	10.0	44	10.0			
Other	67	9.3	20	8.7	57	10.7			
Comorbidity	*N*	%	*N*	%	*N*	%	$\chi^2(6)$	*p*	
No comorbidity	406	56.4	133	58.1	267	60.8	2.81	.59	1 = 2 = 3
Axis 1 comorbidity	296	41.1	91	39.7	165	37.6			
Axis 2 comorbidity	18	2.5	5	2.2	7	1.6			
	M	*SD*	*M*	*SD*	*M*	*SD*	*F*(2)	*p*	Post hoc
Number of sessions	15.0	7.8	18.5	7.0	15.8	8.7	16.73	<.001	2 > 1, 2 > 3, 1 = 3
Mean treatment duration	124.6	73.5	200.8	73.3	141.5	70.7	95.67	>.001	2 > 1, 2 > 3, 3 > 1

Note: 1 < 2 = 3 indicates the contrasts between the three treatment groups with respect to treatment dropouts, with Group 1 having less attrition than Groups 2 and 3 which have relatively equal attrition.

Measures

All patients were diagnosed in accordance with the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders (DSM-5), and their level of functioning was assessed at pre-test using the Global Assessment Functioning scale (GAF; Endicott et al., 1976). Patients' electronic recorders were scrutinised to glean information on participant attrition, as practitioners are encouraged to capture reasons for the discontinuation of a patient's treatment in this database.

The Outcome Questionnaire was used to collect patient information pre- and post-treatment, as this measurement instrument was designed to assess psychotherapy progress and outcomes. (OQ-45; Lambert et al., 1996). The full 45-item outcome questionnaire (OQ) measures three domains central to mental health: Symptomatic Distress, interpersonal relations, and social role performance, however, for this study only the Symptomatic Distress scale was used. The OQ-SD scale consists of 25 items that measure psychological symptoms and substance use/addiction and is considered highly reliable, with good concurrent and construct validity.

Clinical Significance (CS) and the Reliable Change Index (RCI) were used to operationalise treatment outcome. CS refers to the practical or applied value or importance of the effect of a psychotherapeutic intervention, and it is an important advance in the evaluation of psychotherapeutic treatment effects (Kazdin, 1999). The RCI provides a measure of both statistical and clinical significance, determining whether any change from pre- to post-test is statistically reliable (Jacobson & Truax, 1991). The RCI is considered a highly reliable alternative to *t*-test, ANOVA, and regression analyses (Zahra & Hedge, 2010), and was particularly useful in this study, as the sample size was relatively small, and the index provided a statistical measure for membership to one of the four post-test levels: Recovered, merely improved, no reliable change, or deteriorated. Scores were converted to T-scores and a cut-off of 5 T-score points was used as posited by (de Beurs et al., 2019). To categorise a patient as functional or dysfunctional at post-test (CS), a cut-off score of $T < 55$ (de Beurs et al., 2019), with an intent to determine whether a change was clinically meaningful. By using the RCI and CS in conjunction, four levels of participant outcomes were elucidated: (1) Recovery and reliable change; (2) Reliable change, but no recovery; (3) No change; (4) Deterioration (i.e., reliable change in a regressive direction) (de Beurs et al., 2016).

Statistical Analysis

First, pre- and post-test scores were scanned for outliers and boxplots, then assumptions for one-way analysis of variance were checked (ANOVA). Normality and homoscedasticity were tested by visual inspection of QQ-plots and histograms; homogeneity of variances was confirmed with scatterplots of regression standardised results. And multi-collinearity was refuted using a correlation matrix. The number of treatments concluded per month was checked to investigate whether there was a spike in treatment termination around the introduction of the COVID-19 measures in March 2020.

Multivariate analysis of variance (MANOVA) and chi-square (c^2-tests) were used to check for demographic and clinical characteristic disparities between patients with and without complete ROM data. Then ANOVA and c^2-tests were used to determine if there were any differences pertaining to demographics, pre-test severity, functioning, and regarding their diagnoses and comorbidity between the three cohorts. The three cohorts were also checked for any differences concerning their mean duration of treatments, and dropout rates.

Lastly, a repeated measures ANOVA was carried out for each sample, with "time" as the within-group factor, and "group" as the between-group factor. The results of this analysis were used to compare outcomes among the three cohorts. An a priori power analysis indicated that for a small effect size (h^2=0.01) a total sample size of 387 would provide 95% power (G-power; Faul et al., 2009). Therefore, with a sample size of 1000+, it can be assumed that there is sufficient power, and the risk of Type-2 error (i.e., failing to reject the null hypothesis that there is no difference in outcomes amongst the three cohorts) is low. Most germane to this study is the statistic that measures the interaction between group and time: A significant interaction would indicate that there is variability in the course of symptoms over time (i.e., treatment outcomes) between the cohorts. Pairwise comparisons were planned, comparing treatment during COVID-19 through videoconferencing with the other two cohorts (2>3, 1>3). Cohort 3 was expected to show inferior results to cohort 1 and 2, as with the latter cohorts, treatment at least began in-person, and there was an opportunity to build face-to-face therapeutic rapport. As significant pre-test differences between the cohorts might confound the results, demographics, diagnoses, functioning, and treatment duration could be included as covariates in the main analysis. Furthermore, the treatment outcome categories (recovery and reliable change, reliable change, but no recovery, no change, deterioration) were compared using a χ^2-test.

Administrative data regarding the treatment delivery medium was used to assess videoconferencing use for the three treatment cohorts. The percentage of videoconferencing

and the pre-to-post-test difference were calculated as an additional analysis of how videoconferencing may influence treatment outcomes. Our hypothesis of a diminished treatment outcome for videoconferencing therapy would be supported by a significant association between the proportion of in-person contact and outcome. This would be particularly true for cohort 2 (Treatment conducted partially during the COVID-19 lockdown).

Results

Across the three treatment cohorts (treatments performed prior to, partially during, and entirely during the COVID-19 lockdown), therapeutic outcomes were robust, in that there were no significant differences in the treatment outcomes of videoconferencing therapy conducted during lockdowns, as compared to in-person interventions done before the COVID-19 pandemic, or blended treatments that were done in-person before the pandemic and transitioned to videoconferencing during the lockdown.

Table 2 exhibits a comparison of pretest clinical characteristics and ROM response rates for the three B-MHC treatment cohorts. (N=1392). It should be noted that there are differences between the three cohorts regarding dropout rates, as fewer patients concluded treatment prematurely when they were treated entirely in-person prior to the COVID-19 lockdown (10.8%), as opposed to the other two cohorts (Blended treatment=16.3%, Videoconferencing treatment=15.2%). That said, there was no differentiation in ROM response rate regardless of the cohort, and a comparison of patients included, and patients excluded due to ROM non-response did not reveal significant variation. Moreover, at the time of pretest, the cohorts were similar in terms of age, gender, pretest severity of symptomatic distress ($F(2) = 2.84$; $p = .06$), and functioning.

Regarding clinical diagnoses, there were several differences between the treatment cohorts. In the cohorts that were treated partially during and entirely during the COVID-19 lockdown, depressive symptom rates were somewhat less prevalent than the cohort treated prior to the COVID-19 lockdown (42.6%), with the cohort that received a "blended" treatment medially situated (35.4%), and the cohort treated entirely via videoconferencing during the lockdown at the lowest rate (30.1%). Furthermore, anxiety symptoms were reported as somewhat higher for the cohort that was treated in-person before the pandemic and transitioned to videoconferencing during lockdown (25.3%), and the cohort treated entirely via videoconferencing (21.0%), with the cohort treated in-person prior to the pandemic at the lowest rate (19.3%). PTSD symptomatology showed additional variation, with the lowest reports being for the cohort treated prior to the COVID-19 lockdown (10.7%), the medial reports being for the cohort treated partially before and partially during lockdown (14.0%), and the highest reports being for the cohort treated entirely during the COVID-19 lockdown. Concerning comorbidity, all three cohorts were comparatively similar.

With respect to the duration of sessions and treatment length, differences between the cohorts are noted. The cohort treated partially before and partially during the COVID-19

lockdown had the longest Mean treatment duration (*M*=325.6), and highest number of sessions (*M*=67.5); while the cohort treated entirely via videoconferencing had the shortest treatment duration (*M*=224.7), and the fewest number of sessions (*M*=51.4); and the cohort treated prior to the COVID-19 lockdown being medially situated with respect to treatment duration (*M*=279.4), and number of sessions (*M*=54.6).

Table 3 shows the mean and SD for the OQ-SD in *T* scores for the three cohorts, as well as the results for the repeated measures ANOVA. A time effect was found ($F(1,1385) = 617.65$, $p < .001$, partial $\eta^2 = .308$, on average clients improve) but no group effect ($F(2,1385) = 2.58$; $p = .08$, partial $\eta^2 = .004$) and no group-by-time interaction ($F(1,1385) = 0.10$; $p = .91$; partial $\eta^2 < .001$). Furthermore, post hoc pairwise comparisons, contrasting treatments completed during the COVID-19 lockdown with treatment prior to the COVID-19 lockdown and with treatments partially done during the COVID-19 lockdown did not exhibit a difference in outcome between these pairs ($p = .19$ and $p = .87$, respectively).

Table 4

Treatment outcome in the three Basic MHC cohorts relative to the COVID-19 lockdown

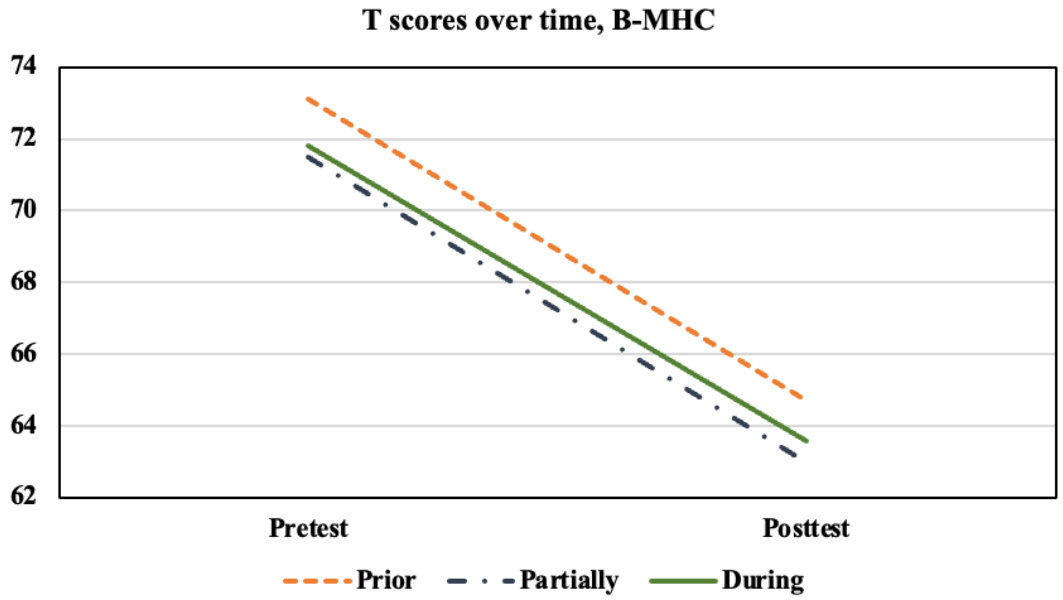
	Relative to COVID-19								
	Prior		Partially		During				
B-MHC	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F*(2,1385)	*p*	*Contrast*
Pretest *T*	73.1	11.2	71.5	10.2	71.8	10.9	0.10	.91	1=3, 2=3
Post-test *T*	64.7	14.4	63.0	12.4	63.6	13.4			
	N	%	*N*	%	*N*	%	χ^2 (6)	*p*	
Recovered	168	23.3	58	25.3	85	19.4	5.92	.43	
Improved	247	34.3	70	30.6	167	38.0			
Unchanged	248	34.4	84	36.7	155	35.3			
Deteriorated	57	7.9	17	7.4	23	7.3			

Figure 3 illustrated the decrease in OQ-SD *T* score from pretest to post-test for the three cohorts. There were no significant differences between the three treatment cohorts (i) prior, ii) partially, and iii) during) with respect to proportions of recovered, improved, unchanged, and deteriorated patients (also shown in Table 4) ($\chi^2(6) = 5.92$; $p = .43$). Figure 4 illustrates the aforementioned proportions of outcome categories in a stacked bar chart form. Finally, we examined the correlation between the proportion of videoconferencing sessions and positive treatment outcomes (Delta *T*) both overall ($r = .07$, $p = .014$), and within each cohort (Prior: $r = .03$, $p > .16$; Partially: $r = -.01$, $p > .16$; During: $r = .16$, $p = .001$).

Treatment outcomes were operationalized as the decrease in symptomatic distress measured with the OQ-SD from pretest to post-test. The correlation coefficients revealed only mild associations, with two positive statistically significant associations. Specifically, these associations suggest that a substantial portion of treatment done via videoconference may lead to better treatment outcomes. Overall, the findings indicate that videoconferencing treatment can be an effective modality for reducing symptomatic distress.

Figure 4

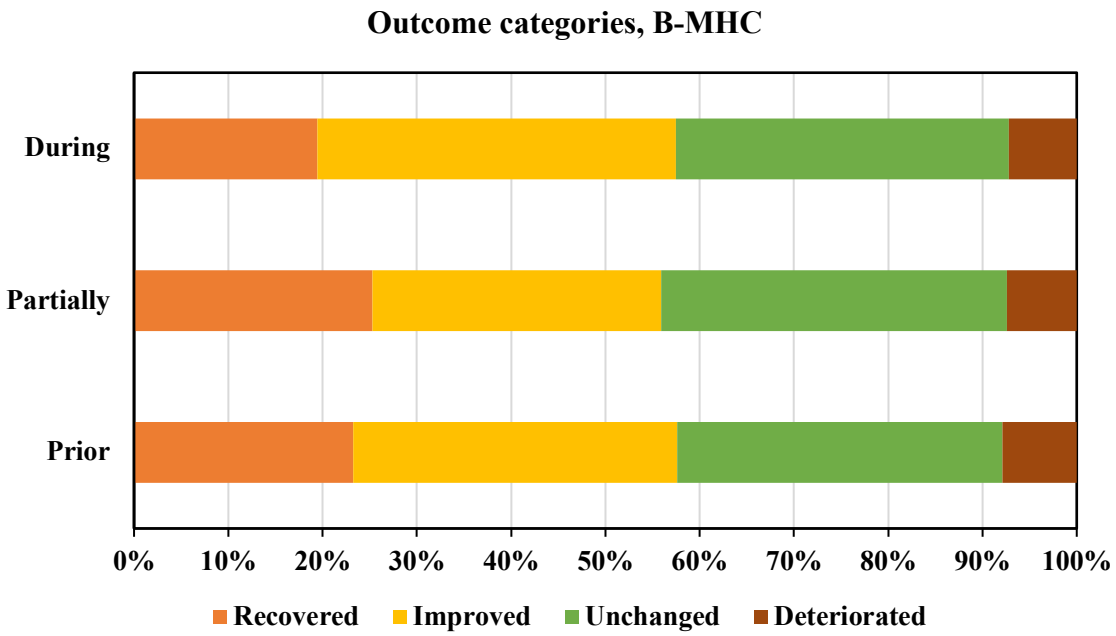
T scores at pretest and post-test



Note. The line graph illustrates the decrease in OQ-SD *T* score from pretest to post-test, across cohorts (Prior, Partially, and During).

Figure 5

Percentage of participants per outcome category



Note. This stacked bar graph presents the percentage of participants per outcome category at post-test (Recovered, Improved, Unchanged, Deteriorated) based on OQ-SD *T* score.

Discussion

Main Findings

This study investigated the efficacy of videoconferencing therapy as compared to in-person treatment for common mental health disorders (depression, anxiety, PTSD) in the B-GGZ sector of Dutch MHC. As evidenced in the data, there were no significant outcome differences between treatments that were provided in-person and treatments provided via videoconferencing. There was also no association found between the number of videoconferencing sessions and the outcome. Therefore, it is equitable to conclude that there was not a diminished treatment outcome for treatments that were conducted via videoconferencing, as compared to in-person treatments, or treatments that commenced in-person but were transitioned to videoconferencing on March 16, 2020.

It should be noted that the results of the pairwise comparison approximated a significant difference, with the cohort treated in-person, prior to the COVID-19 lockdown having somewhat higher scores at pretest and post-test, in comparison to other cohorts. However, when studying the slope of the decrease of symptoms over time, it is apparent that all three cohorts were comparable (see Figure 5), illustrating the equitable effectiveness of treatments across the three cohorts, (treatments performed prior to the COVID-19 lockdown, treatments performed partially during the lockdown, and treatments performed entirely during the COVID-19 lockdown).

The findings for comparable treatment outcomes across cohorts were salient and noteworthy, as the rapid transition from in-person treatment to videoconferencing was not planned for and was unsystematically executed. The imperfect conditions under which the transition occurred were exacerbated by the fact that staff were not trained to use video-conferencing platforms, and there were numerous procedural and policy decisions that needed to be made swiftly. As such, the surveys that were administered to professionals (de Beurs, et al., 2021a) and patients (de Beurs et al., 2021b) indicated that both sets of users experienced challenges in navigating the software. Additionally, it cannot be overlooked that the psychological repercussions of the COVID-19 pandemic extended far beyond the modality for treatment delivery and included an increase in the negative impact on mental health and well-being (Brooks et al., 2020; Fiorillo & Gorwood, 2020). That said, this phenomenon did not appear to negatively impact MHC outcomes for the treatment of common mental health disorders (i.e., depression, anxiety, PTSD), as the outcomes in this study remained stable across the three cohorts. Ultimately, the finding that patients across the three cohorts (i.e., treatments performed prior to, treatments performed partially during, and treatments

performed entirely during the COVID-19 lockdown) did not differ in demographic or clinical characteristics was pivotal to the conclusion that there was not a diminished treatment outcome for patients seen entirely via videoconferencing.

Despite an established growing body of knowledge to the contrary, videoconferencing is still regarded as an inferior psychotherapeutic treatment modality by many patients and professionals, as compared to in-person treatment (Békés et al., 2021). A survey completed at the Arkin Institute, which included both groups, indicated that there is a preference for in-person treatment or blended in-person and videoconferencing treatment following the need for COVID-19 social distancing measures (de Beurs et al., 2021a; de Beurs et al., 2021b), as those surveys found interpersonal contact and information transfer to be inadequate as a result of diminished access to implicit communication and non-verbal cues. Interestingly, (Cataldo et al., 2021), performed a literature review, which contradicted earlier findings, and posited an incongruence in attitudes between patients and professionals when it comes to establishing a therapeutic relationship using the videoconferencing modality. While patients were generally satisfied with their ability to build rapport and establish a relationship with their psychotherapist using videoconferencing, it is professionals who are generally reporting greater difficulty with this aspect of treatment. Moreover, it appears that therapists may differ in their ability to develop a good therapeutic relationship when using videoconferencing, and professional self-doubt may be a factor in this occurrence (Békés et al., 2021). The researchers concluded that therapists' pessimistic views of the quality of the therapeutic relationship in videoconferencing and self-doubt may contribute to their reluctance to use this modality. To further advance the field, future research should examine the role of various therapist factors in their openness to digital interventions, including their age, training (including quality and quantity), prior experience with digital mental health care, professional confidence, and therapeutic orientation. As suggested by Pierce et al. (2020), Glueckauf et al. (2018), and Probst et al. (2021) these factors may play a significant role in determining the willingness of therapists to embrace digital solutions.

Patient Attrition

There was a significant difference in patient attrition for patients seen using blended in-person and videoconferencing, as compared to in-person treatments completed prior to COVID-19 social distancing measures (1.5 more stopped treatment). While the reasons for attrition are unknown, there remains the possibility that some patients were not accommodating of videoconferencing protocols, or that it was more difficult to engage with

certain patients using this modality. Valentine and colleagues reported comparable findings for a patient group with PTSD (Valentine et al., 2020).

Patient attrition occurred largely in the initial stage of treatment, as such, there are no post-test scores for these patients, and they were excluded. Statistical analysis included only the data for patients and cohorts who completed treatment and suggests that findings can be generalised to patients who finish treatment (Tierney & Stewart, 2005).

Participant attrition could also be considered an alternative explanation for the absence of outcome differences between treatment cohorts. Administrative data was examined for a significant increase in attrition around the March 16, 2020, and none was found. A later survey conducted in April/May 2020, indicated that patients were sympathetic to the circumstances that prompted continuing treatment via videoconferencing, and appreciated being able to do so when the COVID-19 lockdown commenced. Some patients considered videoconferencing to be inferior to in-person but understood there was no alternative at the time (de Beurs et al., 2021a).

As an additional point of note, it should be considered that not all patients are able to meet the minimum threshold for digital accessibility to engage in videoconferencing therapy, which may have been a factor in patient attrition for this study. In a population of psychotherapy patients with psychosis in South London, 29% of study participants could not meet the digital requirements for remote therapy, revealing an important consideration for implementing videoconferencing in MHC, or healthcare more generally (Watson et al., 2021). Additionally, clinical psychology researchers throughout Canada reported major limitations to virtual care for refugee and migrant populations, including technological barriers, communication and global mental health issues, and privacy concerns in the first six months of COVID-19 social distancing measures (Benjamen et al., 2021). As such, equitable access to digital hardware and internet access remains a problem, even in high gross domestic product (GDP) countries.

Limitations

While this study has strengths, its primary limitation is its observational design, including its ensuing constraints. Observational studies face challenges to precision and validity (Carlson & Morrison, 2009), and this research is not exempt. In this context, precision refers to a "lack of random error or random variation in a study's estimates." As most observational studies cannot fully exclude confounding variables, random variation due to the measurement of these variables will undoubtedly exist; particularly, as compared to randomised controlled trials (RCTs). For example, in this research only treatments with complete pretest and post-

test ROM data were included. Considering the ROM response rate was approximately 70%, there is the potential for results to be biased by differential selection, either at the pretest or post-test stage. Differential selection refers to the unequal representation of certain groups or individuals in a study, leading to a biased sample. If participants with specific characteristics are more likely to respond to the ROM at the pretest or more likely to stay in the study until post-test, it may influence the results. Consequently, it is important to consider and address the potential for differential selection when interpreting the results of the study. In the case of the study, differential selection, such as the occurrence of only patients with a favourable view towards videoconferencing therapy continuing treatment, could skew the comparison between our study groups. This form of non-random selection poses a challenge to the validity of our results, as it may introduce bias into the sample. As such, it is crucial to consider the potential impact of differential selection when interpreting the findings of this study. However, earlier research indicated that when ROM response is >50%, the biasing effects are limited (de Beurs et al., 2019; Gomes et al., 2016), so this should also be assessed. Furthermore, as the response levels for ROM were relatively similar for the three cohorts, it is unlikely that the absence of differences in outcomes across the treatment modalities can be explained by selective non-response. With respect to the challenge observational studies face in terms of validity, in this context validity refers to a "lack of systemic error." Because the study employed the OQ-45, the symptomatic distress subscale (OQ-SD) highly regarded for its reliability and validity (Lambert et al., 1996), the opportunity for systemic error was largely mitigated. That said, it should not be disregarded that using only patients' self-reports may leave the data open to inadvertent bias. However, this need not be an eventuality, as self-reports do not necessarily lead to overestimated outcomes (Cuijpers et al., 2010). These researchers found that outcome reports tend to be more conservatively estimated by patients rather than by clinicians, in a meta-analysis that compared ratings by clinicians to self-reports by patients. Nevertheless, future studies might benefit from including an assessment of treatment benefit from the mental health professional. Adding to the overall validity of the study, the naturalistic nature of the design improved external validity, defined as, "concerning the extent to which a causal relationship holds over variations in persons, settings, and time" (Bo & Galiani, 2021). As the study's setting could be seen as comparable to settings for other patients in short treatment for common mental disorders in future contexts, inferences from this data could be generalized with relative confidence, when similar procedures are employed. Thus, the naturalistic design of this work ultimately adds to its robustness. Moreover, the pre-post change in patient symptomatology reported in this study is similar to

previous ROM reporting from B-MHC (van Mens et al., 2018) and other sectors of Dutch Mental health care (de Beurs et al, 2016, 2018, 2019). Therefore, this ROM data may represent normative outcomes for treatments delivered in commonplace psychiatric clinics in the Netherlands, and potentially other regions, for patients with mild-to-moderate depression and anxiety disorders.

Another limitation of this observational study was the unprecedented societal context in which it was conducted, specifically the COVID-19 pandemic. This presented a critical confounding factor that cannot be ignored. It is likely that mental health patients, as well as the general population, experienced increased psychological stress during the early days of the pandemic, especially during the initial lockdowns when the data was collected. According to Robillard et al. (2021), the COVID-19 crisis led to a significant increase in depression, anxiety, and suicidal ideation. Moreover, patients and mental healthcare professionals were further basseted in conducting therapy at home. One survey demonstrated that many professionals complained about a lack of privacy and distractions from family members not going to work or school (de Beurs et al., 2021b). Thus, the confluence of depression and anxiety-inducing factors, such as fear of the unknown, social-distancing and the resulting isolation, may themselves contribute to diminished treatment effects, irrespective of the treatment delivery modality. While the observational design of this study allowed for ecologically valid data collection, it also presents a challenge in isolating the effects of the COVID-19 pandemic crisis from the effects of switching to videoconferencing treatment. The potential influence of other events or circumstances between the first and second measurements, known as 'history' (Kaya, 2015), poses a threat to the study's internal validity. However, the findings showed highly similar outcomes across all treatment groups. Therefore, while it remains possible that the COVID-19 crisis may have influenced the results, it is not a rival explanation for the findings, as there were not any significant differences in treatment effectiveness observed between the groups.

Another limitation of this study is the use of only one digital treatment modality (videoconferencing with live contact between patient and professional), when multiple other digital modalities are currently in use in the Netherlands. As B-MHC frequently employs self-directed eMental Health platforms in conjunction with asynchronous supervision and support from a mental healthcare professional, and this was not investigated in this study, the findings here are limited to the investigated modality of videoconferencing and cannot be generalized to the broader treatment modality of eMHC.

While this study provides valuable insights into the effectiveness of videoconferencing psychotherapy, the quasi-experimental and uncontrolled design is a noteworthy limitation. As a result, future research should investigate the comparative efficacy of in-person vs. videoconferencing psychotherapy using a randomized controlled trial (RCT) design to establish a more causal relationship between treatment modality and treatment outcomes. In addition, other variants of eMental Healthcare should be investigated using a controlled design to increase our understanding of the effectiveness of these interventions.

It is worth noting, however, that observational research has its own strengths that are not fully met by RCTs. RCTs are considered the gold standard of efficacy research due to their high internal validity. However, they may have somewhat less external validity because not every eligible patient will want to participate in a trial involving randomization. In contrast, observational studies have high external validity because they reflect treatments delivered in real-world clinical practice, but at the expense of diminished internal validity as it is difficult to isolate the effects of treatment from other confounding variables.

Therefore, it is important to consider the strengths and limitations of different study designs when planning future research on eMental Healthcare, and to choose a design that is most appropriate for the research question at hand.

Conclusion

The prevailing results of this study, investigating the effectiveness of conventional psychotherapy treatment via videoconferencing for common mental health disorders, using an observational design indicate that videoconferencing may be an acceptable alternative to in-person treatment for psychotherapy patients. Concerns from both patient and professional groups, that psychotherapy treatment via videoconferencing may result in inferior outcomes, as opposed to in-person treatment outcomes, are not corroborated by the ROM data from this research. Furthermore, the adverse treatment conditions throughout the COVID-19 pandemic, under which videoconferencing treatment took place, did not lead to diminished treatment outcomes either. Therefore, a partial or total absence of personal contact, a reduction in implicit communication and non-verbal cues, and a decrease in expectations about the effectiveness of videoconferencing treatment were not associated with diminished treatment outcomes, nor were the COVID-19 conditions themselves.

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Appendix A
Outcome Questionnaire (OQ-45)

Outcome Questionnaire (OQ™-45.2)

Instructions: Looking back over the last week, including today, help us understand how you have been feeling. Read each item carefully and mark the box under the category which best describes your current situation. For this questionnaire, work is defined as employment, school, housework, volunteer work, and so forth. Please do not make any marks in the shaded areas.

Name:_____ Age:____yrs.

ID#_____ Sex M☐ F☐

Session #_____ Date__/__/____

	Never	Rarely	Sometimes	Frequently	Almost Always	SD	IR	SR
1. I get along well with others.	☐4	☐3	☐2	☐1	☐0		IR	
2. I tire quickly.	☐0	☐1	☐2	☐3	☐4			
3. I feel no interest in things.	☐0	☐1	☐2	☐3	☐4			
4. I feel stressed at work/school.	☐0	☐1	☐2	☐3	☐4			SR
5. I blame myself for things.	☐0	☐1	☐2	☐3	☐4			
6. I feel irritated.	☐0	☐1	☐2	☐3	☐4			
7. I feel unhappy in my marriage/significant relationship.	☐0	☐1	☐2	☐3	☐4			
8. I have thoughts of ending my life.	☐0	☐1	☐2	☐3	☐4			
9. I feel weak.	☐0	☐1	☐2	☐3	☐4			
10. I feel fearful.	☐0	☐1	☐2	☐3	☐4			
11. After heavy drinking, I need a drink the next morning to get going. (If you do not drink, mark "never")	☐0	☐1	☐2	☐3	☐4			
12. I find my work/school satisfying.	☐4	☐3	☐2	☐1	☐0			SR
13. I am a happy person.	☐4	☐3	☐2	☐1	☐0		IR	
14. I work/study too much.	☐0	☐1	☐2	☐3	☐4			SR
15. I feel worthless.	☐0	☐1	☐2	☐3	☐4			
16. I am concerned about family troubles.	☐0	☐1	☐2	☐3	☐4			
17. I have an unfulfilling sex life.	☐0	☐1	☐2	☐3	☐4			
18. I feel lonely.	☐0	☐1	☐2	☐3	☐4			
19. I have frequent arguments.	☐0	☐1	☐2	☐3	☐4			
20. I feel loved and wanted.	☐4	☐3	☐2	☐1	☐0		IR	
21. I enjoy my spare time.	☐4	☐3	☐2	☐1	☐0			SR
22. I have difficulty concentrating.	☐0	☐1	☐2	☐3	☐4			
23. I feel hopeless about the future.	☐0	☐1	☐2	☐3	☐4			
24. I like myself.	☐4	☐3	☐2	☐1	☐0		IR	
25. Disturbing thoughts come into my mind that I cannot get rid of.	☐0	☐1	☐2	☐3	☐4			
26. I feel annoyed by people who criticize my drinking (or drug use). (If not applicable, mark "never")	☐0	☐1	☐2	☐3	☐4			
27. I have an upset stomach.	☐0	☐1	☐2	☐3	☐4			
28. I am not working/studying as well as I used to.	☐0	☐1	☐2	☐3	☐4			SR
29. My heart pounds too much.	☐0	☐1	☐2	☐3	☐4			
30. I have trouble getting along with friends and close acquaintances.	☐0	☐1	☐2	☐3	☐4			
31. I am satisfied with my life.	☐4	☐3	☐2	☐1	☐0		IR	
32. I have trouble at work/school because of drinking or drug use. (If not applicable, mark "never")	☐0	☐1	☐2	☐3	☐4			SR
33. I feel that something bad is going to happen.	☐0	☐1	☐2	☐3	☐4			
34. I have sore muscles.	☐0	☐1	☐2	☐3	☐4			
35. I feel afraid of open spaces, of driving, or being on buses, subways, and so forth.	☐0	☐1	☐2	☐3	☐4			
36. I feel nervous.	☐0	☐1	☐2	☐3	☐4			
37. I feel my love relationships are full and complete.	☐4	☐3	☐2	☐1	☐0		IR	
38. I feel that I am not doing well at work/school.	☐0	☐1	☐2	☐3	☐4			SR
39. I have too many disagreements at work/school.	☐0	☐1	☐2	☐3	☐4			SR
40. I feel something is wrong with my mind.	☐0	☐1	☐2	☐3	☐4			
41. I have trouble falling asleep or staying asleep.	☐0	☐1	☐2	☐3	☐4			
42. I feel blue.	☐0	☐1	☐2	☐3	☐4			
43. I am satisfied with my relationships with others.	☐4	☐3	☐2	☐1	☐0		IR	
44. I feel angry enough at work/school to do something I might regret.	☐0	☐1	☐2	☐3	☐4			SR
45. I have headaches.	☐0	☐1	☐2	☐3	☐4			
						+	+	
						Total=		

Figure 1. The Outcome Questionnaire. (Copyright 1996 by American Professional Credentialing Services. Reprinted by permission.)

Appendix B
Global Assessment Scale (GAF)

The Global Assessment of Functioning (GAF)

Source: *Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition

• **100-91:**	Superior functioning in a wide range of activities, life's problems never seem to get out of hand, is sought out by others because of his or her many positive qualities. No symptoms.
• **90-81:**	Absent minimal symptoms (e.g. mild anxiety before an exam), good functioning in all areas, interested and involved in a wide range of activities, socially effective, generally satisfied with life, no more than everyday problems or concerns (e.g., an occasional argument with family members).
• **80-71:**	If symptoms are present, they are transient and expectable reactions to psychosocial stressors (e.g., difficulty concentrating after family argument); no more than slight impairment in social, occupational, or school functioning (e.g., temporarily falling behind in school work).
• **70-61:**	Some mild symptoms (e.g., depressed mood and mild insomnia) OR some difficulty in social, occupational, or school functioning (e.g., occasional truancy, or theft within the household), but generally functioning pretty well, has some meaningful interpersonal relationships.
• **60-51:**	Moderate symptoms (e.g., flat and circumstantial speech, occasional panic attacks) OR moderate difficulty in social occupational, or social functioning (e.g., few friends, conflicts with co-workers).
• **50-41:**	Serious symptoms (e.g., suicidal ideation, severe obsessional rituals, frequent shoplifting) OR any serious impairment in social, occupational, or school functioning (e.g., no friends, unable to keep a job).
• **40-31:**	Some impairment in reality testing or communication (e.g., speech is at times illogical, obscure, or irrelevant) OR major impairment in several areas, such as work or school, family relations, judgment, thinking, or mood (e.g., depressed man avoids friends, neglects family, and is unable to work, child frequently beats up younger children, is defiant at home, and is failing at school).
• **30-21**	Behavior is considerably influenced by delusions or hallucinations OR serious impairment in communication or judgment (e.g., sometimes incoherent, acts grossly inappropriately, suicidal preoccupation) OR inability to function in almost all areas (e.g., stays in bed all day, no job, home, or friends).
• **20-11**	Some danger of hurting self or others (e.g., suicide attempts without clear expectation of death, frequently violent, manic excitement) OR occasionally fails to maintain minimal personal hygiene (e.g., smears feces) OR gross impairment in communication (e.g., largely incoherent or mute).
• **10-1**	Persistent danger of severely hurting self or others (e.g., recurrent violence) OR persistent inability to maintain minimal personal hygiene OR serious suicidal act with clear expectation of death.
• **0**	Inadequate Information.