

# Care models for mental health in a population of patients affected by COVID-19

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## Abstract

**Objective:** Emergency psychological interventions are needed in patients with COVID-19. During the pandemic, psychological counseling services have been provided using online platforms to address adverse psychological impacts and symptoms in patients and the general population. We investigated the effects of telepsychotherapy on emotional well-being and psychological distress in patients affected by COVID-19.

**Methods:** Forty-five Sicilian patients who had contracted COVID-19 joined “Telecovid Sicilia” from March to June 2020. Participants completed self-assessment questionnaires and psychological testing to measure levels of anxiety, presence of depressive symptoms, and altered circadian rhythm with consequent sleep disorders and psychological distress. Individual telepsychotherapy services were provided for 1 hour, twice a week, for 16 sessions in total.

**Results:** We enrolled 45 patients (42.2% women). We found significant changes between baseline and the end of follow-up in all outcome measures, especially depression ( $\chi^2(1) = 30.1$ ; effect size [ES] = 0.82), anxiety ( $\chi^2(1) = 37.4$ ; ES = 0.91), and paranoid ideation ( $\chi^2(1) = 5.6$ ; ES = 0.35). The proportion of participants with sleep disorders decreased to 84.1% after intervention ( $\chi^2(1) = 58.6$ ; ES = 1.14).

**Conclusion:** A telepsychotherapeutic approach showed promising effects on psychological symptoms, with significantly reduced patient anxiety and depression.

## Keywords

Telepsychotherapy, SARS-CoV-2, psychological distress, health care, telemedicine, COVID-19

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## Introduction

Emergence of the novel coronavirus SARS-CoV-2 has led to the global COVID-19 pandemic, which has threatened the health of millions of people, adversely affecting governments, health systems, and individual quality of life. COVID-19 is highly contagious and can lead to severe respiratory infection. The lives of people globally have been substantially altered, necessitating a stress, coping, and adjustment process at multiple levels.<sup>1</sup> World Health Organization (WHO) guidelines have focused on management from both biomedical and psychological aspects, highlighting the need for emergency psychological interventions in patients with COVID-19. These include direct psychological intervention for patients and indirect intervention for patients' relatives, caregivers, and health care professionals.<sup>2</sup> Several global health care institutions have provided psychological counseling services for affected patients using online platforms.

COVID-19 lockdown restrictions have been associated with increases in the number of psychiatric admissions, particularly among older patients, and long-stay hospitalizations.<sup>3</sup> Studies have highlighted that the mental health of patients with COVID-19 has been poorly considered and managed.<sup>4</sup> Moreover, adverse psychological impacts and psychopathological symptoms among the general population caused by the pandemic must be addressed to develop psychological interventions for all populations and for specific, more vulnerable groups.<sup>5</sup> The psychological context of the pandemic exacerbates preexisting psychiatric conditions and influences symptomatology manifestation. Telemedicine and eHealth can help to alleviate challenges faced in health care services and might be particularly useful in mental health care.<sup>6</sup>

Tele-mental health traditionally involves the provision of remote mental health

care using communications technologies.<sup>7</sup> Scientific evidence shows that the effectiveness of tele-mental health is comparable to traditional face-to-face services.<sup>8</sup> This evaluation also applies to the reliability of assessments, treatment outcomes, and patient satisfaction.<sup>9</sup> The impact of eHealth service use on health care participation, patient involvement, and health status has been reported; however, the data regarding psychological well-being, anxiety, and depression are inconsistent.<sup>10</sup> Little is known regarding the use and outcomes of tele-mental health in psychotherapy.

The purpose of the study was to investigate and describe the effects of telepsychotherapy in a sample population affected by COVID-19 on emotional well-being and psychological distress.

## Methods

### *Study design and population*

This was a quasi-experimental study with a one-group pretest–posttest design. We enrolled Sicilian patients who had contracted COVID-19 in this study. Participants joined the “Telecovid Sicilia” project during the first epidemic wave in Italy, from March to June 2020. All included participants were over 18 years of age. The exclusion criteria were hospitalization, visual or auditory impairment, severe psychiatric syndromes, or cognitive deficits. No included patients were taking psychotropic drugs, and none had recently received psychotherapy.

All participants were offered psychological services. Among the first 100 people included in the platform, 45 chose to receive telepsychotherapy services; the other 65 patients selected telemonitoring and psychological support interviews on request. At baseline (T0), all participants completed self-assessment questionnaires and underwent psychological testing to assess levels of anxiety, the presence of depressive

symptoms, and alteration of circadian rhythm with consequent sleep disorders and psychological distress.

Treatments were provided via a web-based platform. All patients were provided with tablets for telecounseling. Telepsychotherapy services comprised individual teleconsulting for 1 hour twice a week, for a total of 16 sessions. All psychologists were trained in relational systemics. Psychotherapeutic sessions was scheduled over a period of 2 months, regardless of the duration of COVID-19 infection. Telepsychotherapy was focused on the management and resolution of psychological symptoms resulting from the COVID-19 pandemic and isolation. The aim of therapy was to facilitate a reduction in psychological distress connected with or exacerbated by the COVID-19 pandemic to help overcome the effects of any traumatic experiences and to acquire emotional skills that will be useful into the post-pandemic period.

The study protocol was approved by the Local Ethics Committee of IRCCS Centro Neurolesi Bonino-Pulejo of Messina (Protocol number 23/2020) and was conducted according to the 1964 Declaration of Helsinki and its later amendments. All enrolled patients provided their written consent to participate in this study.

### *Psychological evaluation*

All participants underwent psychological testing to assess mental health and quality of life. The evaluation included the Symptom Checklist-90-R (SCL-90-R), a self-administered 90-item questionnaire to measure the self-reported severity of psychopathological symptoms. Each item is rated on a 5-point Likert scale ranging from “not at all” (0) to “extremely”(4). In clinical practice, the SCL-90-R is used to assess the severity of patients’ general symptoms. The subscale profile is frequently adopted as an outcome measure in

psychotherapy research and primary care settings. The checklist comprises nine subscales and three global indexes of distress. The nine subscales are as follows: somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism. Seven additional items are used to explore disturbances in appetite and sleep.

The general indexes used include the Global Severity Index (GSI), Positive Symptom Total (PST), and Positive Symptom Distress Index (PSDI). The GSI is the single best indicator of the current severity level of an individual’s illness; the index combines information concerning the number of symptoms reported with the intensity of perceived distress. The GSI is obtained using the scores of the 90 items on the SCL-90-R. The PST reflects the number of symptoms experienced by the respondent, regardless of the level of distress reported; the PST can therefore be interpreted as a measure of symptom breadth. The PSDI assesses the average level of distress reported for symptoms that are experienced; as such, the PSDI can be interpreted as a measure of symptom intensity.

### *Telemedicine devices*

The telemedicine platform comprised three main parts: the software, which provides customized access according to staff category; devices for the detection and transmission of vital parameters; and a secure, cloud-based data storage system hosted on external servers.

### *Statistical analysis*

Because the Shapiro–Wilk test for normality showed that most target variables were non-normally distributed, we performed a nonparametric analysis. Thus, the Wilcoxon signed-rank test was used to compare

continuous variables, and the rank-biserial correlation coefficient was used to assess effect size (ES). When necessary, the chi-square test with continuity correction was used to compare proportions. Continuous variables are expressed as median (first–third quartile) whereas categorical variables are reported using frequency and percentage. A formal power analysis was not performed in advance. However, a sample size of 45 patients would provide a power of approximately 0.98 in all considered scales (at bilateral alpha level 0.05), thereby recognizing a statistically significant medium ES or large ES. Analyses were performed using open source R3.5.0 software (The R Foundation for Statistical Computing, Vienna, Austria). Statistical significance was set at  $p < 0.05$ .

## Results

Forty-five Sicilian patients, aged  $44.2 \pm 14.4$  years (42.2% women), who had contracted COVID-19 were enrolled in this study. According to the scale cutoffs, we found that 97.8% of participants had depression and sleep disorder at baseline, and 68.9% had anxiety. Notably, at T0, 66.7% of participants presented all three disorders. At the end of the telepsychotherapy intervention, the percentage of depressed participants decreased to 68.2% ( $\chi^2(1) = 40.8$ ;

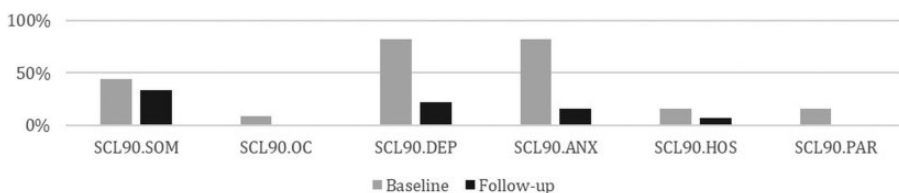
$p < 0.001$ ; ES = 0.93). The proportion of participants with sleep disorder decreased to 84.1% ( $\chi^2(1) = 58.6$ ;  $p < 0.001$ ; ES = 1.14), and no participants reported anxiety, a 100% decline (ES = 0.99). Similarly, we observed a decrease in nearly all subscales of the SCL-90-R, as shown in Figure 1, although the results were only significant for depression ( $\chi^2(1) = 30.1$ ;  $p < 0.001$ ; ES = 0.82), anxiety ( $\chi^2(1) = 37.4$ ;  $p < 0.001$ ; ES = 0.91), and paranoid ideation ( $\chi^2(1) = 5.6$ ;  $p = 0.02$ ; ES = 0.35).

Comparing the test scores at T0 and T1, we observed changes in patient outcomes for all measures, as shown in Figure 2. All these changes were statistically significant, with a large ES (Table 1).

## Discussion

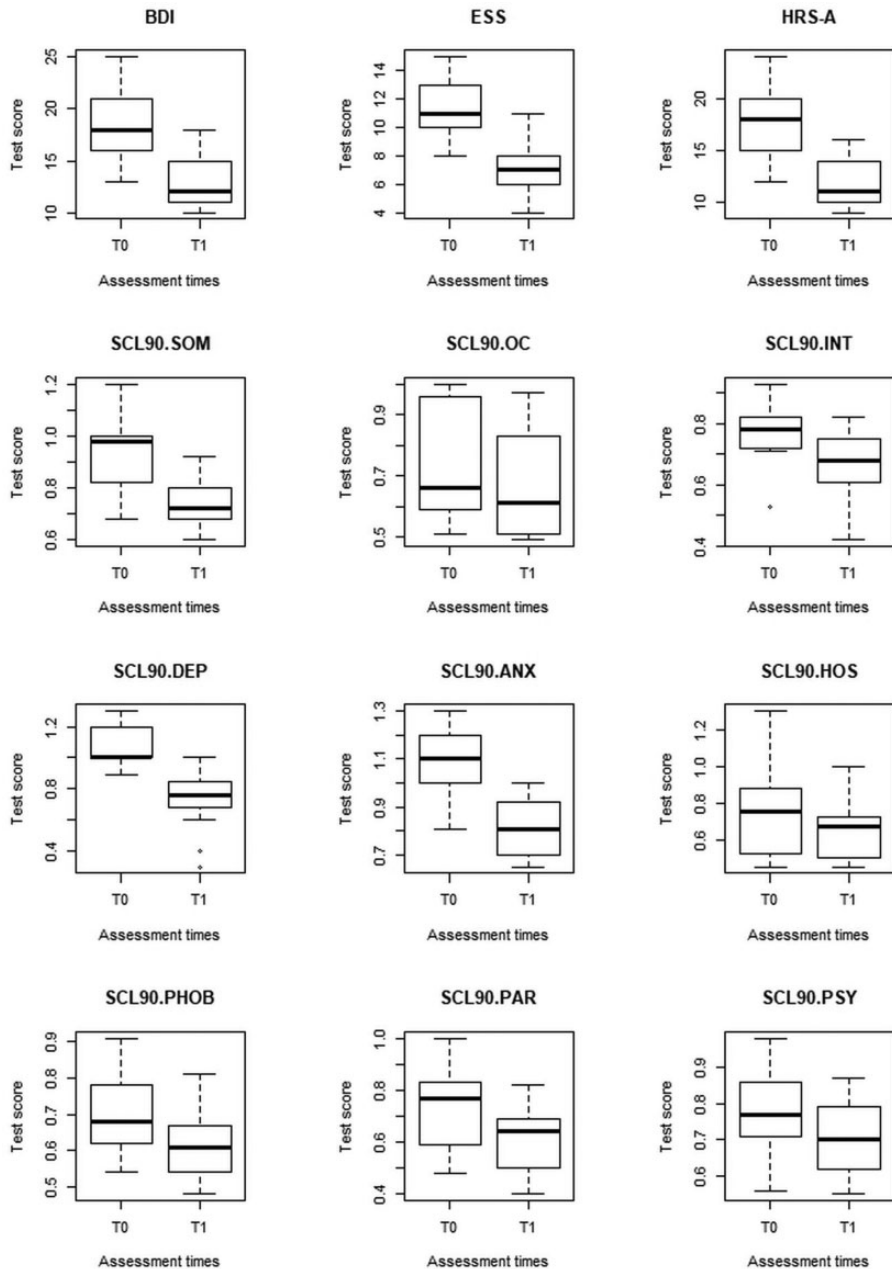
In our study, we investigated the effectiveness of telepsychotherapy in a population affected by COVID-19 in terms of the effects on patients' emotional well-being and psychological distress. Our results showed a general improvement in all psychological and emotional aspects analyzed.

According to recent studies, the risk of contracting and dying from COVID-19 infection have led to generally worse mental health outcomes during the pandemic. Indeed, greater worry about COVID-19 is associated with poorer



**Figure 1.** Proportions for subscales of the Symptom Checklist-90-R (SCL-90-R), excluding those with null percentage.

SCL-90 SOM (Symptom Checklist-90 somatization); SCL-90 OC (Symptom Checklist-90 obsessive–compulsive); SCL-90 DEP (Symptom Checklist-90 depression); SCL-90 ANX (Symptom Checklist-90 anxiety); SCL-90 HOS (Symptom Checklist-90 hostility); SCL-90 PAR (Symptom Checklist-90 paranoid ideation).



**Figure 2.** Box plot comparing test scores at baseline (T0) and follow-up (T1).

BDI (Beck Depression Inventory); ESS (Epworth Sleepiness Scale); HRS-A (Hamilton Anxiety Rating Scale); SCL-90 SOM (Symptom Checklist-90 somatization); SCL-90 OC (Symptom Checklist-90 obsessive-compulsive); SCL-90 INT (Symptom Checklist-90 interpersonal sensitivity); SCL-90 DEP (Symptom Checklist-90 depression); SCL-90 ANX (Symptom Checklist-90 anxiety); SCL-90 HOS (Symptom Checklist-90 hostility); SCL-90 PHOB (Symptom Checklist-90 phobic anxiety); SCL-90 PAR (Symptom Checklist-90 paranoid ideation); SCL-90 PSY (Symptom Checklist-90 psychoticism).

**Table 1.** Statistical comparisons between clinical outcomes at baseline and follow-up.

Scale	Baseline median (first–third quartile)	Follow-up median (first–third quartile)	p-value (Wilcoxon signed-rank test)	Effect size
BDI	18.0 (16.0–21.0)	12.0 (11.0–15.0)	<b>&lt;0.001</b>	0.617
ESS	11.0 (10.0–13.0)	7.0 (6.0–8.0)	<b>&lt;0.001</b>	0.618
HRS-A	18.0 (15.0–20.0)	11.0 (10.0–14.0)	<b>&lt;0.001</b>	0.618
SCL-90 SOM	0.98 (0.82–1.00)	0.72 (0.68–0.80)	<b>&lt;0.001</b>	0.616
SCL-90 OC	0.66 (0.59–0.96)	0.61 (0.51–0.83)	<b>&lt;0.001</b>	0.618
SCL-90 INT	0.78 (0.72–0.82)	0.68 (0.61–0.75)	<b>&lt;0.001</b>	0.617
SCL-90 DEP	1.00 (1.00–1.20)	0.76 (0.68–0.85)	<b>&lt;0.001</b>	0.616
SCL-90 ANX	1.10 (1.00–1.20)	0.81 (0.70–0.92)	<b>&lt;0.001</b>	0.589
SCL-90 HOS	0.75 (0.52–0.88)	0.67 (0.50–0.72)	<b>&lt;0.001</b>	0.553
SCL-90 PHOB	0.68 (0.62–0.78)	0.61 (0.54–0.67)	<b>&lt;0.001</b>	0.617
SCL-90 PAR	0.77 (0.59–0.83)	0.64 (0.50–0.69)	<b>&lt;0.001</b>	0.617
SCL-90 PSY	0.77 (0.71–0.86)	0.70 (0.62–0.79)	<b>&lt;0.001</b>	0.616

Significant values are in bold.

BDI (Beck Depression Inventory); ESS (Epworth Sleepiness Scale); HRS-A (Hamilton Anxiety Rating Scale); SCL-90 SOM (Symptom Checklist-90 somatization); SCL-90 OC (Symptom Checklist-90 obsessive–compulsive); SCL-90 INT (Symptom Checklist-90 interpersonal sensitivity); SCL-90 DEP (Symptom Checklist-90 depression); SCL-90 ANX (Symptom Checklist-90 anxiety); SCL-90 HOS (Symptom Checklist-90 hostility); SCL-90 PHOB (Symptom Checklist-90 phobic anxiety); SCL-90 PAR (Symptom Checklist-90 paranoid ideation); SCL-90 PSY (Symptom Checklist-90 psychoticism).

mental health.<sup>11</sup> Online psychotherapy (telepsychotherapy) has been the focus of international research during the COVID-19 pandemic.<sup>12,13</sup> This global public health emergency has placed greater emphasis on telemedicine and telecare, forcing all health professionals, including psychologists, to adapt to using new tools.

It is interesting to note that in terms of setting policies, even traditional institutions are reassessing their positions. In psychotherapy, the setting comprises both a physical and mental space. The physical space involves the room in which therapy takes place, as well as the time. The mental space is, above all, the shared ground upon which the exchange of thoughts between therapist and patient takes place.<sup>14</sup> The important question for both patients and therapists has been whether online psychotherapy is as efficacious as therapy in a traditional setting.

Together with our findings, several studies have now demonstrated the effectiveness of

telecounseling.<sup>15–17</sup> Studies report that many people have chosen this option during the pandemic so as to continue psychotherapy and receive psychological support to manage stress as well as symptoms of depression and anxiety.<sup>18</sup> Telepsychotherapy has some limitations, but psychologists agree that in terms of the cost–benefit, online counseling is an excellent tool for treatment. Similar to our findings, Cardinale et al. showed that levels of stress and emotional distress improve after online psychological intervention.<sup>19</sup>

As suggested by our results, telepsychotherapy can be very useful for the management of anxiety related to the pandemic or to provide continuity in mental health treatment that has already begun. In particular, telecounseling allows for the possibility of maintaining the therapeutic relationship between psychotherapist and patient. In general, our data show that people in quarantine tend to report greater stress levels than others who are not in isolation. The



predominant emotional issues are fear, worry about contracting the virus and the possibility of infecting others, as well as anxiety about performing daily activities (such as buying food and basic necessities).

At the time of our study, during the first wave of the COVID-19 epidemic in Italy, we found prevalence rates for depression and anxiety that were higher than most reported in the literature.<sup>20</sup> This is probably owing to the small sample size, as well as the study period and setting, at a time when there was little information about the new virus and in a country where the fear of contagion or even death was strong among the general population. Italy was one of the most adversely affected countries at the start of the COVID-19 pandemic.

Recent studies have shown that symptoms of anxiety and stress-related symptoms may be owing to uncertainties caused by the COVID-19 pandemic, such as those involving work or the economy, as well as family problems.<sup>20</sup> Loneliness associated with changes in lifestyle, long periods spent at home, and the sudden interruption of daily life can also lead to increased sadness and depressive symptoms, frustration, and irritability owing to the inability to perform one's usual daily activities. Other problems reported by patients include difficulty falling asleep and in performing activities of daily living, and greater social exclusion.

The WHO has clearly expressed the need to accompany COVID-19 safety measures with support for psychological well-being to help people cope with the stress generated by this crisis.<sup>21</sup> Therefore, it is critical to follow international guidelines, and the Italian Ministry of Health has emphasized the importance of psychological support interventions for people affected by COVID-19. In line with previous data, the results of our study demonstrate the importance of early intervention and the use of psychotherapy in individuals affected by COVID-19 to mitigate

possible adverse consequences on mental health and quality of life.

Clinicians delivering telepsychotherapy have reported concerns about their ability to be authentically and emotionally connected with their clients, as well as their ability to be as effective as they would if providing mental health services in a traditional therapy setting.<sup>22,23</sup> However, research has proven the efficacy of this modality, which enables psychotherapists and patients in separate locations to see each other and interact synchronously in real-time. Our study findings are also supported by experimental studies showing that the perceived distance between two interacting individuals modulates the empathic reaction between them, which is a key ingredient in all psychotherapeutic interventions.<sup>24,25</sup>

This study has some limitations, such as the absence of a control group and the pretest–posttest study design, which preclude the possibility to attribute the observed changes exclusively to the study intervention. Indeed, changes might be affected by outside events such as time (e.g., correlated with reductions in COVID-19 symptomatology or with a “natural” adaptation).

In our study, a telepsychotherapeutic approach showed promising effects on the psychological symptoms of our population of patients with COVID-19, with significant declines in anxiety and depressive symptoms. Future research should evaluate patients with COVID-19 during follow-up to monitor psychological well-being after receiving telepsychotherapeutic intervention.


### **Declaration of conflicting interest**


The authors declare that there is no conflict of interest.

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