# Assessment of perceived support in the context of emergency: Development and validation of the psycho-social support scale

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**Abstract**
In research and clinical contexts, it is important to briefly evaluate perceived Psychological and Social Support (PSS) to plan psychological interventions and allocate efforts and resources. However, an appropriate brief assessment tool for PSS was lacking. This study aimed at developing a brief and accurate scale to specifically measure PSS in clinical and emergency contexts, with specific, relevant, targeted, and irredundant items. Experienced clinicians developed the perceived Psycho-Social Support Scale (PSSS) and administered it to a clinical sample (N = 112) seeking psychological help during the COVID-19 emergency. A Confirmatory Factor Analysis examined the PSSS internal structure, and a Multiple Indicator and Multiple Causes model investigated its association with the number of sessions and emotional symptoms. The PSSS showed good psychometric properties and the Confirmatory Factor Analysis provided acceptable fit indexes for a unidimensional structure. The Multiple Indicators and Multiple Causes revealed that more sessions and emotional symptoms were associated with lower PSSS scores. The PSSS is a reliable brief tool to measure PS and could be useful to individualize treatments (i.e., number of sessions) to efficiently allocate efforts and resources in clinical contexts and emergencies (e.g., earthquake, COVID-19 pandemic).

**Keywords** Assessment · Perceived psycho-social support · Psychological intervention · Emergency · Psychology · Clinical psychology

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## Introduction

Since 2020, the COVID-19 pandemic had an outstanding psychological impact with pervasive psychological discomfort (Bruno et al., 2020; Xiong et al., 2020) up to severe psychological difficulties (e.g., anxiety and depression) whose prevalence significantly increased over the entire population (Cooke et al., 2020).

Therefore, several individuals contacted the hospital's mental health services seeking psychological help. In this emergency context, psychologists need to provide timely and effective interventions addressing the psychological needs of a large number of people during the health emergency.

Emergency psychology guidelines (WHO, 2020) recommend prompt interventions to relieve and manage discomfort. Effective large-scale psychological interventions in the emergency should properly allocate resources by distinguishing two levels of support depending on the level of individual need (CNOP, 2020).

To do so, vulnerability and protective factors to reduce stress and enhance individual resources should be considered. Among vulnerability and risk factors, some persons experienced traumatic events such as contagion or deaths of loved ones. Additionally, the life-threatening COVID-19 can generate intense negative emotions, such as fear that can intensify anxiety (e.g., of illness, death), which can trigger depressive symptoms (Freeston et al., 2020).

Among the resources and protective factors, the perceived Psycho-Social Support (PSS) is the most relevant. PSS is the subjective perception that psychological and social support are available and effective when needed. According to Wethington and Kessler (1986) and more recent studies (McDowell & Serovich, 2007), perceived PPS may be more important than the actually received support. Indeed, some individuals may display diminished sensibility and responsivity to PSS (due to preexisting conditions such as higher distress and trauma). The literature highlighted that PSS can buffer the adverse effects of stress (Greenberg et al., 2003) also in illness-related contexts (Engel et al., 2021) and that its lack is associated with distress symptoms (Rossi et al., 2022; Zhang et al., 2019). Despite valuable social support from family and friends is a protective factor against stress and traumatic events, during the COVID-19 pandemic, lockdown and social distancing undermined social support, and its lack was significantly associated with distress - highlighting its relevance (Nese et al., 2020; Parola et al., 2022; Ratti et al., 2017; Szkody et al., 2020; Yang & Jiang, 2020).

Thus, PSS is important in predicting adjustment to stressful events, also, it is useful to plan the intervention length (Kataoka-Yahiro et al., 1996). Indeed, according to the Good-Enough-Level (GEL) model, individuals who change faster, will reach a faster satisfactory outcome, and will thus have shorter treatments (Falkenström et al., 2016). Conversely, individuals with lower perceived PSS may need longer and more structured psychological treatments.

Evaluating the ability to perceive PSS is extremely useful for clinicians to plan efficient large-scale emergency interventions by identifying individuals requiring more structured psychological interventions. However, PSS is too often neglected in psychological assessment, most of the studies assessing it by using single-item or ad hoc measures (Engel et al., 2021; Kataoka-Yahiro et al., 1996; McDowell & Serovich, 2007). To date, a brief assessment tool for PSS is lacking.

Of note, one of the most used tools for assessing the positive outcome of an intervention is the so-called "Factor C" or "Positive Change" scale (Anselmi et al., 2015; Michielin et al., 2008) of the *Outcome Questionnaire ('Valutazione Esito')* scale of the *Cognitive Behavioral Assessment Battery* (CBA-OE; Bertolotti et al., 2015; Michielin et al., 2008; Sanavio et al., 2013). Factor C includes some items measuring PSS, but it is a relatively long scale as most of its items pertain to constructs other than PSS (e.g., coping strategies, perception of positive change, depression, distress).

Because Factor C does not uniquely assess psycho-social support, it could be the starting point to build an accurate and brief assessment tool. Moreover, among the relevant strengths and advantages of brief measures, they are suitable for contexts with time-constraint limitations (e.g., emergency) and agile to be easily included in longer assessment batteries and very large booklets together with several other measures.

Thus, an accurate and brief psychodiagnostic assessment tool to precisely assess PSS was lacking - and was particularly needed in the first phase of the COVID-19 pandemic.

### The Present Study

Considering this background, this research aimed to develop and preliminarily validate a brief scale to uniquely assess PSS - in a suitable way for emergency contexts. Factor C was the starting point to develop a more tailored measure of PSS, the Psycho-Social Support Scale (PSSS).

First, the psychometric properties and internal structure of the PSSS were tested. Second, we examined the relationships of the PSSS with other constructs associated with PSS.

Regarding the research hypotheses, higher PSS was expected to be associated with:

*hp#1)* higher personal protective resources (e.g., coping strategies, familiar support, willingness to receive help, accepting reassurance) (Kunzler et al., 2021);
*hp#2)* lower emotional distress symptoms (e.g., anxiety, sadness;

**Table 1** Items of the original scale and those of the new psycho-social support scale in bold

| # | Item | Included in the PSSS |
|---|------|:---:|
| 1 | **I felt helped by others** | ✓ |
| 2 | **I felt understood by others** | ✓ |
| 3 | I felt overwhelmed by difficulties | ✗ |
| 4 | I felt able to react even to difficulties and failures | ✗ |
| 5 | I got the feeling that the worst was over | ✗ |
| 6 | I trusted myself | ✗ |
| 7 | I have seen possibilities for solutions to my problems | ✗ |
| 8 | **I was able to talk to others** | ✓ |
| 9 | I tried to face the difficulties rather than avoid them | ✗ |
| 10 | **Someone helped me solve my personal problems** | ✓ |
| 11 | I am satisfied with the goals I have achieved or am about to achieve | ✗ |

Items included in the new version are highlighted in bold

*hp#3)* fewer clinical sessions are needed to restore an acceptable psychological condition.

*hp#4)* we expected a positive association between PSS and the satisfaction with the psychological intervention provided.

## Methods

### Development of the Psycho-Social Support Scale

The item pool for the *Psycho-Social Support Scale* (PSSS) was selected starting from the Positive Change (PC) scale of the CBA-OE (Bertolotti et al., 2015; Michielin et al., 2008). The PC scale is made up of 11 items measuring the perception of positive change, coping with difficulties, and getting others' psychological support.

A pool of three expert psychologists of the CBA group and the EPE team independently examined the clinical content of the items of the PC scale to select the ones specifically evaluating the PSS. Items related to other constructs

- experienced difficulties, coping abilities - were discarded. There were no disagreements among judges (Cohen's Kappa for inter-rater agreement = 1). Table 1 shows the items of the original PC scale and the newly developed PSSS.

Table 2 reports the Italian version of the PSSS with the instructions for administration and scoring.

Respondents are asked to 'Read each of the following sentences and mark the answer that best describes how you have felt over the past 15 days, including today.' In line with the original PC, the PSSS items were rated on a 5-point Likert-type scale ranging from 0 to 4 (0 = 'not at all', 1 = 'a little bit', 2 = 'somewhat', 3 = 'a lot', 4 = 'very much'). The total score can be easily computed by summing the items, it ranges between 0 and 16, with higher scores indicating higher PSS.

Then, the newly developed PSSS was administered to participants within a psychological intervention with the following procedure.

### Participants

Participants were consecutively enrolled from the general population living in Emilia Roma gna – a "red" area since February 2020 when COVID-19 violently spread in Italy.

The inclusion criteria were: (I) being a native Italian speaker; (II) seeking psychological help to the the EPE at the Department of Mental Health of the Hospital of Piacenza since the first phase of the COVID-19 emergency; (III) taking part in at least one psychological session. The exclusion criteria were: (IV) lack of consent to use data for research aims and (V) age < 18 years.

### Procedure

Participants were enrolled from people who received psychological intervention during the COVID-19 pandemic. Indeed, the hospital reactivated the pre-existing Equipe for Psychological Emergency (EPE) – n. 30 experienced psychologists and psychotherapists - that conducted the below-described psychological intervention that used the PSSS.

**Table 2** Italian version of the psycho-social support scale

Istruzioni: legga le seguenti frasi e per ognuna segni la risposta che meglio descrive come si è sentito in questo periodo. Faccia riferimento agli ultimi 15 giorni, compreso oggi, e scelga la sua risposta tra queste.

| # | Item | Per nulla | Poco | Abbastanza | Molto | Moltissimo |
|---|------|:---:|:---:|:---:|:---:|:---:|
| 1 | Mi sono sentito aiutato dagli altri | 0 | 1 | 2 | 3 | 4 |
| 2 | Mi sono sentito capito dagli altri | 0 | 1 | 2 | 3 | 4 |
| 3 | Sono riuscito a parlare con gli altri | 0 | 1 | 2 | 3 | 4 |
| 4 | Qualcuno mi ha aiutato a risolvere i miei problemi personali | 0 | 1 | 2 | 3 | 4 |

Per calcolare il totale, sommare i punteggi degli item. Il punteggio massimo è 16

## Psychological Intervention

The intervention was created to be delivered both at distance (e.g., by telephone) and in face-to-face settings. The intervention encompassed the psychological assessment of distress and resources. In a CBT-oriented framework, the intervention used emergency psychology practices (Solomon & Hensley, 2020).

This brief initial intervention (up to 4 psychological sessions) aimed to provide immediate relief from stress and negative feelings, promote bereavement elaboration, and in the '*indication for action*' part identify the needed treatment level (first or second). According to the patient's condition, the clinician conducted a number (from 1 to 4) of individual psychological sessions to restore an acceptable psychological help - patients needing more sessions had more difficulties.

Then, the clinician indicated the treatment level: first level treatment was indicated if the patient did not need further support after the fourth session; second level treatment was indicated if the patient needed further support after the fourth session, resulting in being redirected to the territorial services or psychiatry units.

## Measures

**The Psycho-Social Support Scale (PSSS)** It is a self-report questionnaire to measure the perceived level of PSS. Respondents are asked to mark the answer that best describes how they felt over the past 15 days. The PSSS has 4 items rated on a 5-point Likert-type scale ranging from 0 to 4 (0 = 'not at all', 1 = 'a little bit', 2 = 'somewhat', 3 = 'a lot', 4 = 'very much'). The total score is the sum of the items (range 0–16). Higher scores indicate higher levels of PSS.

**The Level of Satisfaction with the Aid Received** It was measured with a single question from the CBA-OE Factor C, namely *"How helpful do you think our psychological support has been to you?"* with a Likert-type format from 0 (= not at all) to 4 (= very much).

**The Checklist** An ad-hoc semi-structured checklist created by the EPE helped clinicians in the psychological intervention. The checklist (see Appendix for the English and Italian version) has a total of 57 items divided into 3 parts.

Part #1, administered only in the first session with the EPE team, includes:

a. socio-demographic characteristics;
b. psychiatric history (9 items);
c. two open questions about the subjective experience leading to seeking psychological help (i.e., *"Can you tell me what happened to you/your experience?"*, *"What were the reactions experienced at the beginning and during the event (contagion/recovery, news of death)?"*); and personal resources (i.e., *"What or who helped/is helping you cope with the event?"*, *"In the hours and days that followed, what brought you some relief and help?"*, *"Each of us has developed and honed personal strategies over time to reduce stress at critical times in our lives. What strategies have been helpful to you in the past during difficult times?"*).

Part #2 can be used in each session and evaluates:

a) Psychological distress, including:

- *PTSD symptoms*: as the sum of 3 dichotomous (1 = present, 0 = absent) items about avoidance, intrusivity, and hyperarousal.
- *cognitive symptoms:* as the sum of 5 dichotomous items (1 = present, 0 = absent) about problems in memory, concentration, problem-solving, denial defense, sense of unreality, or muffling;
- *behavioral symptoms:* as the sum of 6 dichotomous items (1 = present, 0 = absent) about self-closure/isolation, avoidance, aggression, changes in eating habits, self-medication with substances, sleep difficulties;
- *emotional symptoms:* as the sum of 7 dichotomous items (1 = present, 0 = absent) about helplessness, anger, sadness, anxiety, depression, emotional numbness, and irritability;
- *The severity of depression and anxiety:* as the sum of 2 items scored on a three-point scale (absent = 0, mild = 1, severe = 2) continuum according to the level of impairment caused to the person,

b) Positive resources:

- *resources or protective factors*: as the sum of 4 dichotomous items (present = 1, absent = 0) about coping strategies, absence of socioeconomic stress, willingness to accept psychological help, accepting reassurance;
- *extended social support*: as the sum of 4 dichotomous items (present = 1, absent = 0) about family, friends, religious community, and health professionals.

c) the *type of psychological intervention*: with 9 dichotomous categorical items (1 = used, 0 = not used) about stabilization, normalization, psychoeducation, adaptive coping skills, counseling, bereavement support, referral to another service, COVID-related information, and network intervention.

d) Indications for action and priority of intervention:

– in the *indication for the action* part, the clinician identified the needed treatment level between:

    I.  *first level* - continue with the EPE for the acute phase (maximum 4 sessions);

    II.  *second-level* –medical intervention, referral to the Department of Mental Health and Pathological Addictions (e.g., psychiatry), or other in the short-long term.

– the *priority of intervention* was rated on a three-point scale with:

a. green code: mild symptoms not requiring urgent intervention;
b. yellow code: moderate symptoms requiring monitoring;
c. red code: severe symptoms requiring immediate specialized intervention.

Part #3, administered only in the last session with the EPE team, including the above-described tools:

a) the newly developed *PSSS scale*,
b) the *level of satisfaction with the aid received*.

## Ethics Statement

The research procedure was in line with routine practices applied by the hospital in an emergency, was approved by the Scientific Direction of the Hospital of Piacenza, Italy, and was conducted according to the Helsinki guidelines. All participants were informed about the study aims, voluntarily agreed to participate, and provided informed consent to use their anonymized data for research aims.

## Statistical Analysis

The *R* software was used with the packages '*psych'* (Revelle, 2015), '*lavaan'* (Rosseel, 2012), and '*semPlot'* (Epskamp, 2022). Descriptive statistics displayed the sample demographics and psychological characteristics. Then, the validity of the PSSS scale was studied.

First, the item psychometric properties were examined – skewness, kurtosis, and item-total correlation. Cronbach's α assessed the scale internal consistency (desirable value > .70).

Second, a confirmatory factor analysis (CFA) was conducted to confirm the factor structure of the PSSS.

Third, the Multiple Indicators and Multiple Causes (MIMIC) model – a mixed-modeling technique – investigated the influence of two observed exogenous continuous predictor variables (*number of clinical sessions* with the psychologist and number of emotional symptoms) on the latent variable (PSS) (Kline, 2015). Modification indices (MI) were considered. Finally, the path coefficient between the predictor and the latent factor variable evaluated the impact of the number of sessions on PSS.

For the CFA and the MIMIC, the same estimator and fit indexes were used. Given the response scale, the diagonally weighted least squares (DWLS) estimator was used for its suitability to both Likert and dichotomous scales (Consoli et al., 2020; Manzoni et al., 2021; Milavic et al., 2019; Pietrabissa et al., 2020; Rossi Ferrario et al., 2019).

The following cutoffs indicating 'acceptable' model fit were applied: (a) the Satorra-Bentler $\chi 2$ (S- B$\chi 2$) and (b) the chi-square statistic ($\chi 2$) should be non-statistically significant ($p > .05$); (c) the $\chi 2$ divided by the degrees of freedom ($\chi 2/df$) should have values of 3 or less; (d) the Tucker-Lewis fit index (TLI) and (d) the comparative fit index (CFI) – both TLI and CFI values approximating at least 0.95 indicate good fit; (e) the root mean square error of approximation (RMSEA) with values <0.06 were supposed to demonstrate acceptable model-data fit, and (f) the RMSEA 90% confidence interval (CI) containing 0.05 indicated the possibility of close fit (Browne & Cudeck, 1993); (e) the Standard Root Mean square Residual (SRMR) should be <0.080 (Muthén and Muthén, 1998–2017; van de Schoot et al., 2012; Brown, 2015; Kline, 2015; Hu & Bentler, 1999).

Fourth, regressions (a) investigated the convergent validity of the PSSS on the satisfaction with the received psychological help and (b) explored the predictors (emotional symptoms, level of anxiety, personal resources) – of the PSS (outcome).

## Results

Table 3 describes the characteristics of the sample of 112 individuals seeking psychological help (76% females; mean age = 57.1, SD = 13.29). Most (82.1%) were caregivers of the deceased because of COVID-19, the others had COVID-19 disease isolated at home or in hospital. Most of the sample (94.6%, N = 106) contacted the EPE team by telephone and video call.

Table 4 shows the psychological characteristics of the sample. Despite most people having good personal and social resources, the most common psychological and emotional difficulties were depression, sadness, anxiety, hyperarousal, and denial.

Table 5 shows that most of the psychological interventions required a first level (lower intensity) with one single clinical interview (66,1%, n 74), whilst 33.9% of patients required a second-level intervention (higher intensity) with more than one clinical interview (max 5, mean 2,87 ± 0.97), interestingly 69% of them were caregivers of patients with COVID-19 who were ill or already deceased. 38.6% of the sample reported mild to

**Table 3** Descriptive statistics of the sample ($n = 112$)

| Variable | N (%) |
|---|---|
| Sex | |
| Males | 27 (24.1%) |
| Females | 85 (75.9%) |
| Type | |
| C19 patient | 20 (17.9%) |
| C19 Caregiver | 92 (82.1%) |
| Contact | |
| Self | 19 (17%) |
| Contacted by EPE | 91 (81.3%) |
| Other | 2 (1.8%) |
| Month | |
| March | 28 (25%) |
| April | 68 (60.7%) |
| May | 12 (10.7%) |
| June | 4 (3.6%) |
| Setting | |
| At distance | 106 (94.6%) |
| In presence | 6 (5.4%) |
| Previous mental health treatments | |
| Yes | 22 (29.6%) |
| No | 90 (80.4%) |

**Table 4** Psychological characteristics of the sample ($n = 112$)

| Variables | $n$ (%) |
|---|---|
| PTSD symptoms | |
| Avoidance | 4 (3.6%) |
| Intrusivity | 11 (9.8%) |
| Iperarousal | 12 (10.7%) |
| Emotional difficulties | |
| Helplessness | 48 (42.9%) |
| Anger | 22 (19.6%) |
| Anxiety | 48 (42.9%) |
| Depression | 38 (33.9%) |
| Emotional numbness | 11 (9.8%) |
| Sadness | 83 (74.1%) |
| Irritability | 13 (11.6%) |
| Severity of symptoms | |
| Mild anxiety | 52 (46.4%) |
| Severe anxiety | 60 (54.6%) |
| Mild depression | 48 (42.9%) |
| Severe depression | 64 (57.1%) |
| Resources | |
| Coping | 87 (77.7%) |
| Family support | 68 (60.7%) |
| Availability for help | 74 (66.1%) |
| Cognitive difficulties | |
| Memory difficulties | 11 (9.8%) |
| Focusing difficulties | 40 (35.7%) |
| Problem-solving difficulties | 16 (14.3%) |
| Denial | 13 (11.6%) |
| Sense of unreality | 45 (40.2%) |
| Behavioral difficulties | |
| Self-closure, isolation | 21 (18.8%) |
| Avoidance | 12 (10.7%) |
| Aggressivity | 3 (2.7%) |
| Changes in eating behaviors | 14 (12.5%) |
| Substance use | 7 (6.3%) |
| Sleep difficulties | 39 (34.8%) |
| Priority of intervention | |
| Low | 70 (62.5%) |
| Mild | 39 (34.8%) |
| High | 3 (2.7%) |
| Support | |
| Family | 95 (84.8%) |
| Friends | 42 (37.5%) |
| Religion | 11 (9.8%) |
| Health professionals | 16 (14.3%) |
| Satisfaction with the EPE aid | 2.82 (.68) |

high severity of psychological and mental health difficulties requiring a more structured psychological intervention. The most used psychological intervention was psychological support in its several facets, always with empathetic and warm management of emotions and cognitions. Psychological support was focused on bereavement, from its communication up to favoring grief elaboration.

## Psychometric Properties and Validation of the PSSS

Table 6 shows the item properties of the PSSS, all the items showed skewness and kurtosis values within the normal range (between $-1$ and $+1$) and thus are considered acceptable to prove normal univariate distribution. Cronbach's alpha for the total scale was .776, indicating good internal reliability.

**CFA** A CFA verified how well the data fit the single-factor model with the DWLS estimator. The statistical non-significance of $\chi^2$ ($\chi^2 = 2.104$, df $= 2$, $p = .349$) shows an acceptable fit of the data to the model as well as the $\chi^2$/df $= 2.48$. The fit indices considered CFI $= 1$, TLI $= 1$, RMSEA $= 0.022$ (95%CI: 0.000–0.191; $p = .445$), SRMR $= 0.038$ are acceptable. Table 7 shows the item factor loadings.

## MIMIC

Further insights into the structure of the model were tested. A MIMIC model was fitted to test the heterogeneity

of the population in the latent factor (i.e., PSSS) in relation to a different *number of psychological sessions* and a different *number of emotional symptoms*. The MIMIC, with path coefficients between the covariates and the

**Table 5** Psychological interventions: levels and types

| | First level | Second level | Total |
|---|---|---|---|
| Users | | | |
|   Patients | 8 | 12 | 20 |
|   Caregivers | 66 | 26 | 92 |
| Type of intervention | | | |
|   Support | 12 | 9 | 21 |
|   Normalization | 8 | 6 | 14 |
|   Psychoeducation | 10 | 6 | 16 |
|   Stress reduction coping strategies | 10 | 2 | 12 |
|   Bereavement communication and support | 30 | 11 | 41 |

First level: $n = 74$; second level: $n = 38$

**Table 6** Psychometric properties of the items of the psycho-social support scale

Descriptive statistics

| | Mean | SD | Skewness | Kurtosis | ITC | α without |
|---|---|---|---|---|---|---|
| PSSS total score | 9.20 | 2.59 | −0.274 | 0.122 | – | – |
| Item #1 | 2.36 | 0.826 | −0.460 | 0.567 | .717 | .694 |
| Item #2 | 2.20 | 0.804 | −0.479 | −0.413 | .679 | .715 |
| Item #3 | 2.28 | 0.750 | 0.017 | −0.232 | .497 | .799 |
| Item #4 | 2.37 | 0.900 | −0.193 | 0.341 | .567 | .774 |

*ITC* Item total correlation

**Table 7** Item factor loadings (λ) and explained variance ($R^2$) of the CFA and MIMIC models

| CFA model | | | | MIMIC model | | | |
|---|---|---|---|---|---|---|---|
| | λ | $R^2$ | p value | | λ | $R^2$ | p value |
| Item #1 | 0.939 | 0.881 | <.001 | Item #1 | 0.921 | 0.871 | <.001 |
| Item #2 | 0.856 | 0.733 | <.001 | Item #2 | 0.834 | 0.736 | <.001 |
| Item #3 | 0.609 | 0.371 | <.001 | Item #3 | 0.571 | 0.370 | <.001 |
| Item #4 | 0.668 | 0.447 | <.001 | Item #4 | 0.672 | 0.500 | <.001 |
| | | | | #Int. | −0.223 | | <.001 |
| | | | | #Emo. | −0.234 | | <.001 |

Note: *CFA* Confirmatory Factor Analysis, *MIMIC* Multiple Indicators and Multiple Causes Model, #Int. = number of clinical sessions; #Emo. = number of emotional symptoms

factor, examined the impact of the number of sessions and the number of emotional symptoms on the latent variable of PSS. The MIMIC showed acceptable model-data fit indexes according to the suggested cut-offs: $\chi^2 = 6.525$, df = 8, $p = .589$; $\chi^2/df = 1.581$, CFI = 1, TLI = 1.002, $RMSEA = 0.000$ (90%CI 0.000–0.097, $p = .753$, $SRMR = 0.043$. The covariate had an estimated beta on the latent factor of −0.223 for the *number of sessions* (standard error = 0.067, $p = .001$) and of - .234 for the *number of emotional symptoms* (std. err. .055, $p = .001$). Table 5 shows the factor loadings. Figure 1 shows the MIMIC model structure. The path coefficients in Fig. 1 represent the effect of a covariate on the PSSS, holding constant the other covariates (Kline, 2015). Covariates accounted for about 17.7% of the variance in PSSS scores.

## Convergent Validity of the PSSS

The convergent validity of the PSSS was tested with the Pearson's correlation coefficient calculated between the PSSS and the perceived satisfaction with the psychological intervention. The correlation was positive and statistically significant (r = .216, $p = .02$).

## Factors Predicting Psycho-Social Support

The linear regression model investigating which psychological factors were associated with perceived PSS explained 23.4% of the variance ($R^2adj = .234$, F (4.109) = 9.63, $p < .001$). The results showed that both a higher *number of emotional symptoms* (β = −0.16, t (109) = −3.86, $p < .001$)

**Fig. 1** Plot of the MIMIC model with the number of clinical sessions and the number of emotional symptoms as exogenous variables on the PSSS. *Note:* #Int. = number of clinical sessions; #Emo. = Number of emotional symptoms
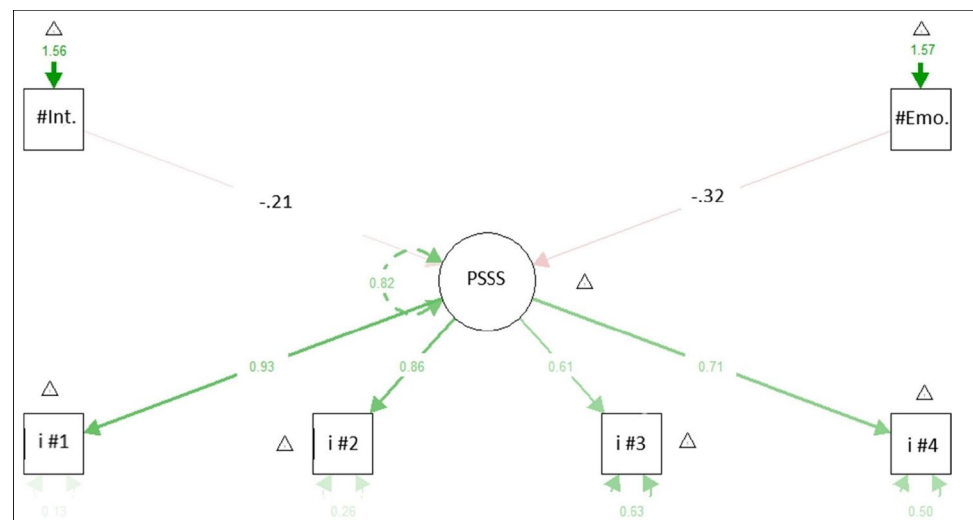


and higher *anxiety* levels (β = −0.58, t (109) = −2.78, p < .001) were associated with lower PSSS scores. Furthermore, a higher *number of personal resources* was significantly associated with higher PSSS scores (β = 0.33, t (109) = 4.38, p < .001).

## Discussion

The main aim of this study was to develop a new brief scale to uniquely assess PSS in a suitable way for time-constrained contexts (e.g., emergency, hospital, easily fatigued subjects).

The results showed that the PSSS is a reliable and efficient brief scale with good psychometric properties. The internal reliability of the PSSS was very good (Cronbach α = .80) - calculated only with 4 items. The PSSS demonstrated a unidimensional factorial structure supported by acceptable fit indexes in the CFA. Interestingly, the MIMIC model revealed that the *number of psychological sessions* and the *number of emotional symptoms* both had a negative association with the PSS. As in line with research hypotheses, lower levels of PSS are related with experiencing more negative emotions and needing more clinical sessions to feel better. This result is in line with clinical practice in which more efforts (more sessions) are dedicated to the users with higher psychological difficulties and the most critical emotional situations.

Moreover, the PSSS showed interesting associations with some important psychosocial factors and clinical indicators. As expected, the PSS measured with the PSSS was positively associated with higher *personal and social resources*, confirming their protective role. Conversely, higher *emotional difficulties* and higher *anxiety levels* were associated with lower PSS – indeed, during the pandemic, isolated and alone people are more prone to experience lower PSS, captured by the PSSS

(Usher et al., 2020). Feeling low perceived support by others (e.g., PSSS) – regardless of the actually received support (McDowell & Serovich, 2007) – may discourage one to seek further support, thus intensifying the emotional symptoms.

Furthermore, the convergent validity of PSSS was good, as expected it showed a statistically significant and positive association with perceived satisfaction with the psychological intervention. This result supports the fourth research hypothesis and it is in line with previous literature reporting that *'patients most in need of support are the ones less satisfied with the support received'* (Turner et al., 1993). Again, according to the evidence-based literature and the Good-Enough-Level (GEL) model, patients who change faster, will reach a faster satisfactory outcome, and will thus have shorter treatments (Falkenström et al., 2016).

### Implications

The above findings have interesting implications for research practice because the PSS is the first Italian brief tool to measure the perceived PSS, it can be easily integrated into longer assessment batteries, thus reducing the burden and fatigue for participants, allowing to save time – or assess more constructs in the same time.

Regarding the implications for clinical practice, within a broader assessment – the PSS may be useful for clinicians to plan further clinical interventions by effectively allocating resources - precious operators and time - in emergency contexts. Indeed, lower levels of PSS indicate that a person could need more time and effort from health professionals to reach an acceptable level of psychological health, thus individuals with lower PSSS may be those to dedicate more time and resources. Moreover, the described assessment procedure could be used also in other contexts with constrained time-resource ratios (e.g., emergency,

public services), and having previously measured the PSS contributes to efficiently planning the clinical path because patients needing further psychological support can be transferred to other services (e.g., psychiatry units).

Moreover, given that the perceived support is usually overestimated rather than underestimated (McDowell & Serovich, 2007), a low level of PSS should be carefully considered. Differently, higher levels of PSS indicate that a person would need less time to feel better, thus allowing clinicians in scheduling better their time and dedicate it to other people in need. This information is extremely useful to allocate and divide resources in emergency contexts with several practical constraints due to the higher patients' affluence and the limited number of psychologists.

Concerning the intervention phase, the associations of the PSSS with both protective and vulnerability factors were in the expected direction, once more highlighting the importance of promoting the resources and buffering the vulnerabilities influencing PSS. For instance, improving social relationships has positive consequences for individuals, becoming more open and sensible to others' presence and help. Again, reducing clinical symptomatology (e.g., PTSD, anger) improves the overall disposition to positive changes, thus developing resilient outcomes (Panzeri et al., 2021a). Indeed, scientific literature on psychosocial determinants of health (Kivimäki et al., 2020) shows the mutual interaction between social context factors (health crisis, socioeconomic crisis) and individual and collective psychological factors (stress levels, adaptive strategies, behaviors, etc.). Importantly, this interaction can have repercussions on both psycho-physical health, by leading to elevations of distress levels, impairing psychological well-being, and compromising the social and occupational functioning levels. Moreover, the PSSS may be a suitable tool to be integrated into the preliminary assessment of psychological interventions aimed at favoring the adaptation to a stressful condition (e.g., illness), as well as the cognitive reframing of negative views, and acceptance of the situation (Cattivelli et al., 2018; Giuntoli et al., 2019; Rossi et al., 2021).

## Limitations

This study is not free of limitations that should be considered to disclose fruitful hints for future research. The sample size ($n = 112$), despite sufficient to estimate the statistical parameters, could be enlarged to improve the parameters' stability. Also, the prevalence of females (76%) did not allow performing measurement invariance and the sample mainly consisted of caregivers actively seeking psychological help. Future studies may try to overcome these points related to the sample characteristics and will extend the validity and generalizability of these results by applying the PSSS also to other

populations and in other illness-related contexts. Given the exceptional situation, it was not possible to administer a full battery of assessment tools, so a brief and irredundant checklist was used to save time. Finally, a cross-sectional research design was used because of the fast and time-limited emergency intervention, future longitudinal studies should monitor the evolution of PSS over time in response to a more structured psychological therapy. Despite the soundness of the methodology, the cross-sectional study design does not allow to detect causal relationships among constructs that would require an experimental and/or longitudinal research design.

## Future Research

Future studies may employ the PSSS in other emergency contexts, with different populations, such as the general population not seeking psychological help, young adults, healthcare workers, and at-risk frail patients, who have also shown to suffer the impact of a large-scale emergency such as the COVID-19 pandemic (Balestroni et al., 2020; Panzeri et al., 2021b, c; Parola, 2020; Rossi & Mannarini, 2019; Rossi Ferrario & Panzeri, 2020).

## Strengths

Among the strengths of this study, this research provided the PSSS, a brief and effective tool – that literature was lacking - to uniquely measure the PSS without administering not relevant items, thus it is an appropriate and useful tool for the particular emergency context. Regarding the methodological strengths, this study relied on strong methodology.

The CFA is a well-rooted and precise method to validate measurement tools, further, the MIMIC model revealed that exogenous factors (number of clinical sessions, number of emotional symptoms) were associated with the PSSS scores, disclosing the interest above-discussed implications for clinical settings (e.g., planning interventions). Indeed, those patients with lower levels of PSS and higher emotional symptoms required more sessions.

Moreover, this study described the large psychological distress experienced in the COVID-19 emergency and the need for an effective psychological assessment and intervention that can be used also in other circumstances.

Interestingly, these findings are especially relevant for informal caregivers, since most of the sample were caregivers of patients with COVID-19. Caregivers are too often neglected despite the burden they have to carry (Panzeri et al., 2019; Rossi Ferrario & Panzeri, 2020; Sambasivam et al., 2019). Additionally, during the exceptional first phase of COVID-19 emergency, caregivers suffered because of forced separation

from patients, communication difficulties, and grief elaboration (e.g., high rate of death, funeral ban) (Panzeri & Rossi Ferrario, 2020; Rossi Ferrario et al., 2021; Stroebe & Schut, 2021).

## Conclusions

In conclusion, overall this study shows that the PSSS is a brief scale to measure the PSS and can be easily integrated into longer assessment batteries, thus lowering the risk of administering redundant questions to the subject. The PSSS can be useful to plan further psychological treatments and effectively allocate resources in time-constrained settings. Moreover, this research highlights the importance to adapt psychological assessment and measurement tools to specific contexts.

**Supplementary Information** The online version contains supplementary material available at https://doi.org/10.1007/s12144-022-03344-z.

**Data Availability** Restrictions apply to the availability of these data to ensure the privacy of the participants. The data can be requested to the first Author.

### Declarations

All procedures performed in studies involving human participants were following the ethical standards of the the institutional research committee of the the Hospital of Piacenza, Italy, and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

**Ethics Statement** The research procedure was approved by the Scientific Direction of the Hospital of Piacenza and was in line with the routine practices applied by the Hospital in emergency. Also, the Ethic Code of Italian Psychologists was respected as well as the Helsinki agreement. All participants were informed about the study aims, they voluntarily agreed to participate and provided verbal informed consent to use their anonymized data for research aims.

**Patient Consent Statement** All participants voluntarily provided their consent to participate in this study.

**Permission to Reproduce Material from Other Sources** There are no materials reproduced from other sources.

**Clinical Trial Registration** This is not a clinical trial, all procedures were in line with the routine of the hospital.

**Informed Consent** Informed consent was obtained from all individual adult participants included in the study.

**Conflict of Interest** The authors declare they have no conflict of interest.

**Competing Interests** The authors have no financial or non-financial interests that are directly or indirectly related to the work submitted for publication.

## References

Anselmi, P., Vidotto, G., Bettinardi, O., & Bertolotti, G. (2015). Measurement of change in health status with Rasch models. *Health and Quality of Life Outcomes, 13*(1), 1–7. https://doi.org/10.1186/s12955-014-0197-x

Balestroni, G., Panzeri, A., Omarini, P., Cerutti, P., Sacco, D., Giordano, A., Pistono, M., Komici, K., & Rossi Ferrario, S. (2020). Psychophysical health of elderly inpatients in cardiac rehabilitation: A retrospective cohort study. *European Journal of Physical and Rehabilitation Medicine, 56*(2), 197–205. https://doi.org/10.23736/S1973-9087.20.05970-5

Bertolotti, G., Michielin, P., Vidotto, G., Sanavio, E., Bottesi, G., Bettinardi, O., & Zotti, A. M. (2015). Metric qualities of the cognitive behavioral assessment for outcome evaluation to estimate psychological treatment effects. *Neuropsychiatric Disease and Treatment, 11*, 2449–2460. https://doi.org/10.2147/NDT.S86855

Brown, T. A. (2015). *Confirmatory factor analysis for applied research* (2nd edn.). New York: The Guilford Press.

Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. *Sociological Methods & Research, 21*(2), 230–258. https://doi.org/10.1177/0049124192021002005

Bruno, G., Panzeri, A., Granziol, U., Alivernini, F., Chirico, A., Galli, F., Lucidi, F., Spoto, A., Vidotto, G., & Bertamini, M. (2020). The Italian COVID-19 psychological research consortium (IT C19PRC): General overview and replication of the UK study. *Journal of Clinical Medicine, 10*(1), 52. https://doi.org/10.3390/jcm10010052

Cattivelli, R., Castelnuovo, G., Musetti, A., Varallo, G., Spatola, C. A. M., Riboni, F. V., Usubini, A. G., Tosolin, F., Manzoni, G. M., Capodaglio, P., Rossi, A., Pietrabissa, G., & Molinari, E. (2018). ACTonHEALTH study protocol: Promoting psychological flexibility with activity tracker and mHealth tools to foster healthful lifestyle for obesity and other chronic health conditions. *Trials, 19*(1). https://doi.org/10.1186/s13063-018-2968-x.

Consiglio Nazionale Ordine degli Psicologi. (2020). *Linee di indirizzo per l'intervento psicologico a distanza a favore della popolazione nell'emergenza Covid-19*. https://d66rp9rxjwtwy.cloudfront.net/wp-content/uploads/2020/04/LINEE-DI-INDIRIZZO-PER-LINTERVENTO-PSICOLOGICO-A-DISTA

NZA-A-FAVORE-DELLA-POPOLAZIONE-NELLEMERGE NZA-COVID-19-1.pdf. Accessed 30 January 2021.

Consoli, S., Rossi, A., Thompson, L. Y., Volpi, C., Mannarini, S., Castelnuovo, G., & Molinari, E. (2020). Assessing psychometric properties of the Italian version of the heartland forgiveness scale. *Frontiers in Psychology, 11*, 1–9. https://doi.org/10.3389/fpsyg.2020.596501

Cooke, J. E., Eirich, R., Racine, N., & Madigan, S. (2020). Prevalence of posttraumatic and general psychological stress during COVID-19: A rapid review and meta-analysis. In *psychiatry research* (Vol. 292, p. 113347). Elsevier Ireland ltd. https://doi.org/10.1016/j.psychres.2020.113347

Engel, K., Homsi, M., Suzuki, R., Helvie, K., Adler, J., Plonka, C., & Zimmermann, E. (2021). Newly diagnosed patients with inflammatory bowel disease: The relationship between perceived psychological support, health-related quality of life, and disease activity. *Health Equity, 5*(1), 42–48. https://doi.org/10.1089/heq.2020.0053

Epskamp, S. (2022). *Package "semPlot"* (1.1.5). https://github.com/SachaEpskamp/semPlot. Accessed 30 April 2022.

Falkenström, F., Josefsson, A., Berggren, T., & Holmqvist, R. (2016). How much therapy is enough? Comparing dose-effect and good-enough models in two different settings. *Psychotherapy, 53*(1), 130–139. https://doi.org/10.1037/PST0000039

Freeston, M., Tiplady, A., Mawn, L., Bottesi, G., & Thwaites, S. (2020). Towards a model of uncertainty distress in the context of Coronavirus (COVID-19). In *Cognitive Behaviour Therapist* (Vol. 13). Cambridge University Press. https://doi.org/10.1017/S1754470X2000029X.

Giuntoli, L., Marchetti, I., Panzeri, A., Spoto, A., Vidotto, G., & Caudek, C. (2019). Measuring cognitive vulnerability to depression: Further evidence on the factorial and predictive validity of negative cognitive style. *Journal of Behavior Therapy and Experimental Psychiatry, 65*(April), 101479. https://doi.org/10.1016/j.jbtep.2019.04.005

Greenberg, N., Thomas, S. L., Iversen, A., Unwin, C., Hull, L., & Wessely, & S. (2003). Do military peacekeepers want to talk about their experiences? Perceived psychological support of UK military peacekeepers on return from deployment. *J Ment Health Downloaded from Informahealthcare, 12*, 565–573. https://doi.org/10.1080/09638230310001627928

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: conventional criteria versus new alternatives. *Structural Equation Modeling, 6*, 1–55. https://doi.org/10.1080/10705519909540118

Kataoka-Yahiro, M. R., Portillo, C. J., Henry, S., & Holzemer, W. L. (1996). Physical and social correlates of perceived psychological support among hospitalized AIDS patients. *Journal of Advanced Nursing, 24*(1), 167–173. https://doi.org/10.1046/j.1365-2648.1996.14923.x

Kivimäki, M., Batty, G. D., Pentti, J., Shipley, M. J., Sipilä, P. N., Nyberg, S. T., ... & Vahtera, J. (2020). Association between socioeconomic status and the development of mental and physical health conditions in adulthood: a multi-cohort study. *The Lancet Public Health, 5*(3), e140–e149.

Kline, R. B. (2015). *Principles and Practice of Structural Equation Modeling*.

Kunzler, A. M., Röthke, N., Günthner, L., Stoffers-Winterling, J., Tüscher, O., Coenen, M., Rehfuess, E., Schwarzer, G., Binder, H., Schmucker, C., Meerpohl, J. J., & Lieb, K. (2021). Mental burden and its risk and protective factors during the early phase of the SARS-CoV-2 pandemic: Systematic review and meta-analyses. *Globalization and Health, 17*(1). https://doi.org/10.1186/S12992-021-00670-Y

Manzoni, G. M., Rossi, A., Pietrabissa, G., Mannarini, S., Fabbricatore, M., Imperatori, C., Innamorati, M., Gearhardt, A. N., & Castelnuovo, G. (2021). Structural validity, measurement invariance, reliability and diagnostic accuracy of the Italian version of the Yale food addiction scale 2.0 in patients with severe obesity and the general population. *Eating and Weight Disorders, 26*, 345–366. https://doi.org/10.1007/s40519-020-00858-y

McDowell, T. L., & Serovich, J. M. (2007). The effect of perceived and actual social support on the mental health of HIV-positive persons. *AIDS Care - Psychological and Socio-Medical Aspects of AIDS/HIV, 19*(10), 1223–1229. https://doi.org/10.1080/09540120701402830

Michielin, P., Vidotto, G., Altoè, G., Colombari, M., Sartori, L., Bertolotti, G., Sanavio, E., & Zotti, A. M. (2008). Proposta di un nuovo strumento per la verifica dell'efficacia nella pratica dei trattamenti psicologici e psicoterapeutici. *Giornale Italiano Di Medicina Del Lavoro Ed Ergonomia, 30*(1 SUPPL. A). https://www.researchgate.net/publication/228820195. Accessed 30 January 2021.

Milavic, B., Padulo, J., Grgantov, Z., Milić, M., Mannarini, S., Manzoni, G. M., Ardigò, L. P., & Rossi, A. (2019). Development and factorial validity of the psychological skills inventory for sports, youth version – Short form: Assessment of the psychometric properties. *PLoS One, 14*(8), e0220930. https://doi.org/10.1371/journal.pone.0220930

Muthén, L. K., & Muthen, B. (2017). *Mplus user's guide: Statistical analysis with latent variables, user's guide*. Muthén & Muthén.

Nese, M., Riboli, G., Brighetti, G., Sassi, V., Camela, E., Caselli, G., Sassaroli, S., & Borlimi, R. (2020). Delay discounting of compliance with containment measures during the COVID-19 outbreak: A survey of the Italian population. *Journal of Public Health: From Theory to Practice*. https://doi.org/10.1007/s10389-020-01317-9

Panzeri, A., & Rossi Ferrario, S. (2020). Supporting rehabilitation patients with COVID-19 during the pandemic: Experiences from a technology-based psychological approach. *CEUR Workshop Proceedings: Second Symposium on Psychology-Based Technologies - Psychobit, 2730*.

Panzeri, A., Rossi Ferrario, S., & Vidotto, G. (2019). Interventions for psychological health of stroke caregivers: A systematic review. *Frontiers in Psychology, 10*(Article 2045), 1–16. https://doi.org/10.3389/fpsyg.2019.02045

Panzeri, A., Bertamini, M., Butter, S., Levita, L., Gibson-Miller, J., Vidotto, G., Bentall, R. P., & Bennett, K. M. (2021a). Factors impacting resilience as a result of exposure to COVID-19: The ecological resilience model. *PLoS One, 16*(8), e0256041. https://doi.org/10.1371/journal.pone.0256041

Panzeri, A., Komici, K., Cerutti, P., Sacco, D., Pistono, M., & Ferrario, S. R. (2021b). Gender differences and long-term outcome of over 75 elderlies in cardiac rehabilitation: Highlighting the role of psychological and physical factors through a secondary analysis of a cohort study. *European Journal of Physical and Rehabilitation Medicine, 57*(2), 288–297. https://doi.org/10.23736/S1973-9087.21.06484-4

Panzeri, A., Rossi Ferrario, S., & Cerutti, P. (2021c). Psychological differences among healthcare Workers of a Rehabilitation Institute during the COVID-19 pandemic: A two-step study. *Frontiers in Psychology, 12*, 1–11. https://doi.org/10.3389/fpsyg.2021.636129

Parola, A. (2020). Novel coronavirus outbreak and career development: A narrative approach into the meaning of Italian university graduates. *Frontiers in Psychology, 11*, 2255. https://doi.org/10.3389/FPSYG.2020.02255

Parola, A., Fusco, L., & Marcionetti, J. (2022). The parental career-related behaviors questionnaire (PCB): Psychometric properties in adolescents and young adults in the Italian context. *Current Psychology, 1*, 1–11. https://doi.org/10.1007/S12144-022-02764-1/TABLES/4

Pietrabissa, G., Rossi, A., Borrello, M., Manzoni, G. M., Mannarini, S., Castelnuovo, G., & Molinari, E. (2020). Development and validation of a self-determination theory-based measure of motivation to exercise and diet in children. *Frontiers in Psychology, 11*(June), 1–16. https://doi.org/10.3389/fpsyg.2020.01299

Ratti, M. M., Rossi, A., Delli Zotti, G. B., Sarno, L., & Spotti, D. (2017). Social support, psychological distress and depression in hemodialysis patients. *Psicologia Della Salute, 1*, 112–122. https://doi.org/10.3280/PDS2017-001006

Revelle, W. (2015). Package "psych" - procedures for psychological, psychometric and personality research. In *R Package* (2.2.3; pp. 1–358). https://personality-project.org/r/psych/. Accessed 30 January 2021.

Rosseel, Y. (2012). Lavaan: An R package for structural equation modeling. *Journal of Statistical Software, 48*(2), 1–36. https://doi.org/10.18637/jss.v048.i02

Rossi Ferrario, S., & Panzeri, A. (2020). Exploring illness denial of LVAD patients in cardiac rehabilitation and their caregivers: A preliminary study. *Artificial Organs, 44*(6), 655–660. https://doi.org/10.1111/AOR.13630

Rossi Ferrario, S., Panzeri, A., Anselmi, P., & Vidotto, G. (2019). Development and psychometric properties of a short form of the illness denial questionnaire. *Psychology Research and Behavior Management, 12*, 1–13. https://doi.org/10.2147/PRBM.S207622

Rossi Ferrario, S., Panzeri, A., Cerutti, P., & Sacco, D. (2021). The psychological experience and intervention in post-acute COVID-19 inpatients. *Neuropsychiatric Disease and Treatment, 17*, 413–422. https://doi.org/10.2147/NDT.S283558

Rossi, A., & Mannarini, S. (2019). The Italian version of the attitudes toward seeking professional psychological help scale – Short form: The first contribution to measurement invariance. *TPM Testing, Psychometrics, Methodology in Applied Psychology, 26*(1), 93–100. https://doi.org/10.4473/TPM26.1.5

Rossi, A. A., Marconi, M., Taccini, F., Verusio, C., & Mannarini, S. (2021). From fear to hopelessness: The buffering effect of patient-centered communication in a sample of oncological patients during covid-19. *Behavioral Sciences, 11*(6), 87. https://doi.org/10.3390/bs11060087

Rossi, A. A., Marconi, M., Taccini, F., Verusio, C., & Mannarini, S. (2022). Screening for distress in oncological patients: The revised version of the psychological distress inventory (PDI-R). *Frontiers in Psychology.* https://doi.org/10.3389/fpsyg.2022.859478

Sambasivam, R., Liu, J., Vaingankar, J. A., Ong, H. L., Tan, M.-E., Fauziana, R., Picco, L., Chong, S. A., & Subramaniam, M. (2019). The hidden patient: Chronic physical morbidity, psychological distress, and quality of life in caregivers of older adults. *Psychogeriatrics, 19*(1), 65–72. https://doi.org/10.1111/psyg.12365

Sanavio, E., Bertolotti, G., Bettinardi, O., Michielin, P., Vidotto, G., & Zotti, A. M. (2013). The cognitive behavioral assessment (CBA) project: Presentation and proposal for international collaboration. *Psychology, Community & Health, 2*(3), 362–380. https://doi.org/10.5964/pch.v2i3.61

Solomon, R. M., & Hensley, B. J. (2020). EMDR therapy treatment of grief and mourning in times of COVID-19 (coronavirus). *Journal of EMDR Practice and Research, 14*(3), 162–174. https://doi.org/10.1891/EMDR-D-20-00031

Stroebe, M., & Schut, H. (2021). Bereavement in times of COVID-19: A review and theoretical framework. *Omega Journal of Death and Dying, 82*(3), 500–522. https://doi.org/10.1177/0030222820966928

Szkody, E., Stearns, M., Stanhope, L., & McKinney, C. (2020). Stress-buffering role of social support during COVID-19. *Family Process*, famp.12618. https://doi.org/10.1111/famp.12618

Turner, H. A., Hays, R. B., & Coates, T. (1993). Determinants of social support among gay men the context of AIDS. *Journal of Health and Social Behavior*, *34*, 37–53. https://www.jstor.org/stable/pdf/2137303.pdf. Accessed 30 January 2021.

Usher, K., Bhullar, N., & Jackson, D. (2020). Life in the pandemic: Social isolation and mental health. *Journal of Clinical Nursing.* https://doi.org/10.1111/jocn.15290

van de Schoot, R., Lugtig, P., & Hox, J. (2012). A checklist for testing measurement invariance. *European Journal of Developmental Psychology, 9*(4), 486–492. https://doi.org/10.1080/17405629.2012.686740

Wethington, E., & Kessler, R. C. (1986). Perceived support, received support, and adjustment to stressful life events. *Journal of Health and Social Behavior*, *27*(March), 78–89. https://www.jstor.org/stable/pdf/2136504.pdf. Accessed 30 January 2021.

WHO. (2020). Mental Health and Psychosocial Considerations During COVID-19 Outbreak. January, 1–6. Working group on Mental Health and COVID-19 emergency. (2020). Guidance for the first level telephone intervention aimed at personalized information and empowerment of the general population within the COVID-19 emergency. https://www.iss.it/documents/20126/0/Rapporto+ISS+COVID-19+30_2020+%281%29.pdf/20168934-f197-9339-d59a-742cc3af0a47?t=1590415615198

Xiong, J., Lipsitz, O., Nasri, F., Lui, L. M. W., Gill, H., Phan, L., Chen-Li, D., Iacobucci, M., Ho, R., Majeed, A., & McIntyre, R. S. (2020). Impact of COVID-19 pandemic on mental health in the general population: A systematic review. *Journal of Affective Disorders, 277*, 55–64. https://doi.org/10.1016/j.jad.2020.08.001

Yang, F., & Jiang, Y. (2020). Heterogeneous influences of social support on physical and mental health: Evidence from China. *International Journal of Environmental Research and Public Health, 17*(18), 6838. https://doi.org/10.3390/ijerph17186838

Zhang, C., Yang, L., Liu, S., Ma, S., Wang, Y., Cai, Z., Du, H., Li, R., Kang, L., Su, M., Zhang, J., Liu, Z., Zhang, B., BaHammam, A. S., & Duong-Quy, S. (2019). Survey of insomnia and related social psychological factors among medical staff involved in the 2019 novel coronavirus disease outbreak. Article, *11*, 1. https://doi.org/10.3389/fpsyt.2020.00306