Telepsychiatry

Psychiatric Consultation through Videoconference Clinical Results

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Integrated **S**ystem for **L**ong distance psychiatric **A**ssistance and **N**on-conventional **D**istributed health **S**ervices - ISLANDS

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Telepsychiatry - Context

- Telepsychiatry can be conceived as an integrated system of mental health care delivery that employs telecommunications and computerized information technology as an alternative to face-to-face conventional modality.
- Videoconferencing is the central technology currently used in telepsychiatry, since it permit live, two-way interactive, full-colour, video, audio and data communication.
- Telepsychiatry, in the form of videoconferencing, has been well received in terms of increasing access to care and user satisfaction
- Questions persist, however, about its effectiveness since there are few clinical outcome studies and because there may also be a positive reporting bias in the literature.

Telepsychiatry – Scenario

Canary Islands (Tenerife ■ – La Gomera ■)

The telepsychiatry service provides psychiatric consultations to individuals after referral from a general practitioner. Telepsychiatry sessions take place every Thursday from 9:00 to 13:00. Emergency access is available from Monday to Friday (8:00 to 15:00). After the teleconsultation, recommendations are provided directly to the patient's GP via email.

Telepsychiatry – Room

Telepsychiatry consultations use videoconferencing equipment (Viewstation 512, Polycom) via 4 ISDN lines (up to 512 kbit/s).

Telepsychiatry – Material and Methods

Outcome Measures including ratings at weeks 0, 4, 8, 12, 16, 20 and 24

- The Symptom Checklist-90 Revised is a standardized multidimensional 90-item self-report symptom inventory covering various dimensions of psychological distress. It utilizes three global distress indexes:
  - Global Severity Index (GSI): Combines the number of symptoms reported and intensity of reported distress to yield the single best descriptor of current mental health.
  - Positive Symptom Distress Index (PSDI): Represents the average level of distress reported for symptoms endorsed.
  - Positive Symptom Total (PST): Reflects the total number of symptoms reported regardless of symptom intensity.
- Clinical Global Impression is a scale used to assess treatment response in all categories of psychiatric patients. The items used were: Severity of Illness and Global Improvement. Item 1 is rated on a seven-point scale (1=normal to 7=extremely ill); item 2 on a seven-point scale (1=very much improved to 7=very much worse)

Telepsychiatry – Material and Methods

Table 1. Sociodemographic and clinical characteristics of the sample

Variable	Category	Number of cases	% of sample	% 24 week CGI–Sev ≤ 2	% 24 week CGI– Imp ≤ 2
Age					
	< 25 years	12	17.1	91.7	100
	25-45 years	37	52.9	67.6	78.3
	45-65 years	16	22.9	50	68.7
	> 65 years	5	7.1	60	80
Gender					
	Male	22	31.4	72.7	86.4
	Female	48	68.6	64.6	77.1
Educational level					
	Can read and write	11	15.8	63.6	81.8
	Primary studies	33	47.1	95.6	78.8
	College	13	18.6	46.1	69.2
	University degree	13	18.6	92.3	92.3
ICD-10 Diagnosis *					
	F1	5	7.1	80	80
	F2	5	7.1	80	80
	F3	23	32.9	47.8	69.6
	F4	31	44.3	77.4	83.9
	F6	6	8.6	66.6	100
CGI – Severity of Illness					
	Moderatelly ill	8	11.4	62.5	62.5
	Markedly ill	61	87.1	68.8	83.6
	Severely ill	1	1.4	0	0
Total		70	100	67,2%	80%

*** ICD-10 Diagnoses**

(F1): Mental and behavioural disorders due to psychoactive substance abuse

(F2): Schizophrenia, schizotypal and delusional disorders

(F3): Mood (affective) disorders

(F4): Neurotic, stress-related and somatoform disorders

(F6): Disorders of the adult personality and behaviour

% 24 week CGI – Sev ≤ 2: Proportion of patients with CGI Severity of Illness score ≤ 2 (1= normal, not at all ill; 2=borderline, mentally ill) at week 24.

% 24 week CGI – Imp ≤ 2: Proportion of patients with CGI Global Improvement score ≤ 2 (1= very much improved; 2= much improved) at week 24.

Telepsychiatry – Material and Methods

Procedure (1)

- We defined "reliable change" in terms of the reliability of the measurement instruments used. We considered that the error variance in a set of scores that is due to the unreliability of the scale is the *standard error of measurement*. Scales that are highly reliable will have a small standard error of measurement. If we know the reliability of the scale (typically measured as Cronbach's alpha) and the standard deviation of the raw scores on that scale we can find the expected standard deviation of the variability of the error scores. The formula for the standard error measurement is:

$SE_{meas} = \sigma_{meas} = SD * \sqrt{1 - r_{11}}$	Where SD = the standard deviation of the measure, and r_{11}= the reliability (typically coefficient alpha) of the measure.

Telepsychiatry – Material and Methods

Procedure (2)

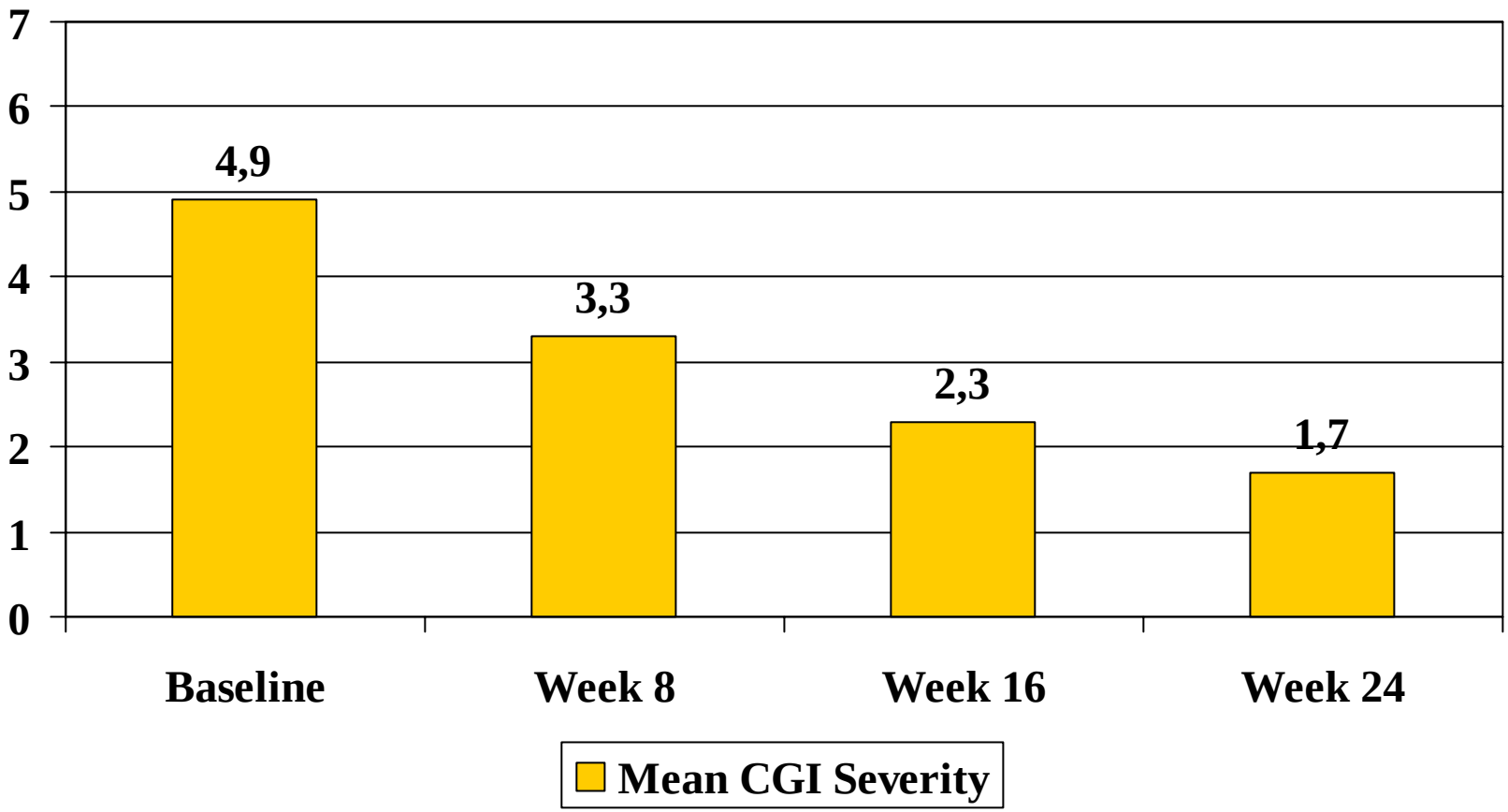
- A Reliable Change Index (RCI) is computed by dividing the difference between the pretreatment and posttreatment scores by the standard error of the difference between the two scores. If the RCI is greater than 1.96, then the difference is reliable, a change of that magnitude would not be expected due to the unreliability of the measure. Conversely, if the RCI score is 1.96 or less then the change is not considered to be reliable, it could have occurred just due to the unreliability of the measure.

$$RCI = (posttest - pretest) / SE_{meas}$$

- In order to evaluate the effect of each factor associated with the success of telepsychiatry, a multivariate logistic regression analysis was carried out.

Telepsychiatry - Results

Figure 1. Mean CGI Severity scores at baseline & weeks 8, 16 and 24



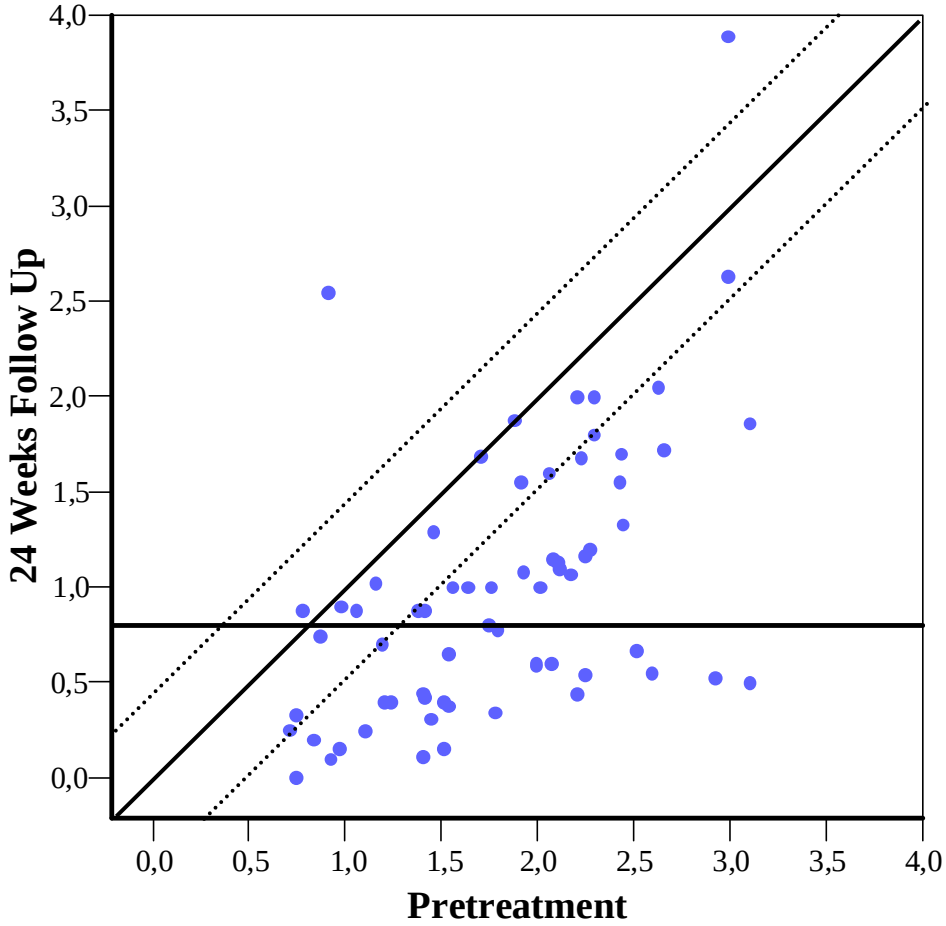
Telepsychiatry - Results

Graphic Representation of Reliable Change Index

- In order to represent graphically the reliable change index in SCL-90R Global Indexes scores we set up 95% confidence bounds around a change score of zero and display the results graphically.
- The horizontal axes show pretreatment scores, the vertical axes show the 24 weeks follow-up scores. The horizontal line represents the +1 SD normative-group cutoff score. Scores below the cutoff score are considered to be within the *normal* range of scores.
- The diagonal line from the lower left to the upper right is the *line of no change*. Data points that fall on the diagonal line are the same at both pretest and at the 24 weeks follow-up.
- Data points in the upper left triangle are higher at follow-up than at pretest, that is, have deteriorated from pretest to follow-up. Data points in the lower right triangle are lower at follow-up than at pretest, that is, they have improved from pretest to follow-up.
- The dotted lines to the left and right of the diagonal line represent the reliable change index band, set at an RCI score of ± 1.96 standard errors of measurement around the line of no change. Individual scores within the RCI band have not shown reliable change while scores outside of the RCI band have shown reliable change.

Telepsychiatry - Results

Figure 2. Graphic Representation of Reliable Change Index in GSI



Reliable deterioration are those cases in the upper right triangle, outside of the band of no reliable change.

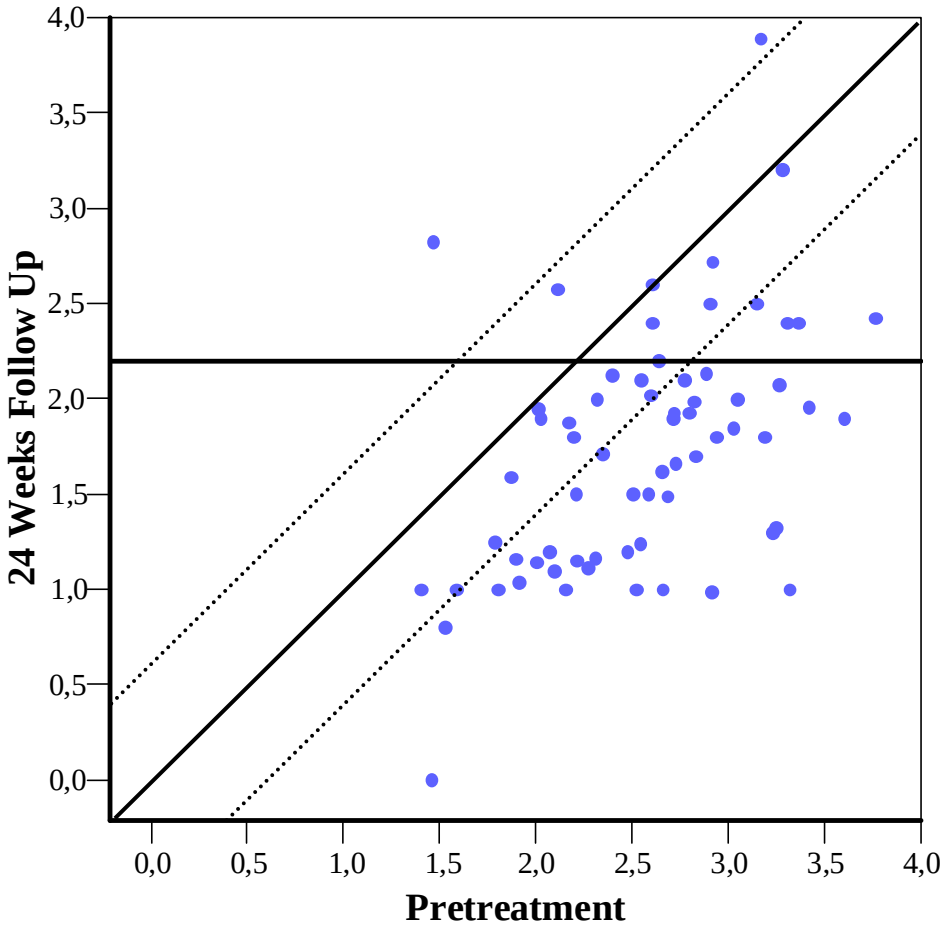
Uncertain change are those participants within the band of no reliable change.

Reliable improvement - not recovered are individuals to the right of the band of no reliable change and above the 1 SD cutoff score.

Reliable improvement recovered are individuals to the right of the band of no reliable change and below the 1 SD cutoff score.

Telepsychiatry - Results

Figure 3. Graphic Representation of Reliable Change Index in PSDI



Reliable deterioration are those cases in the upper right triangle, outside of the band of no reliable change.

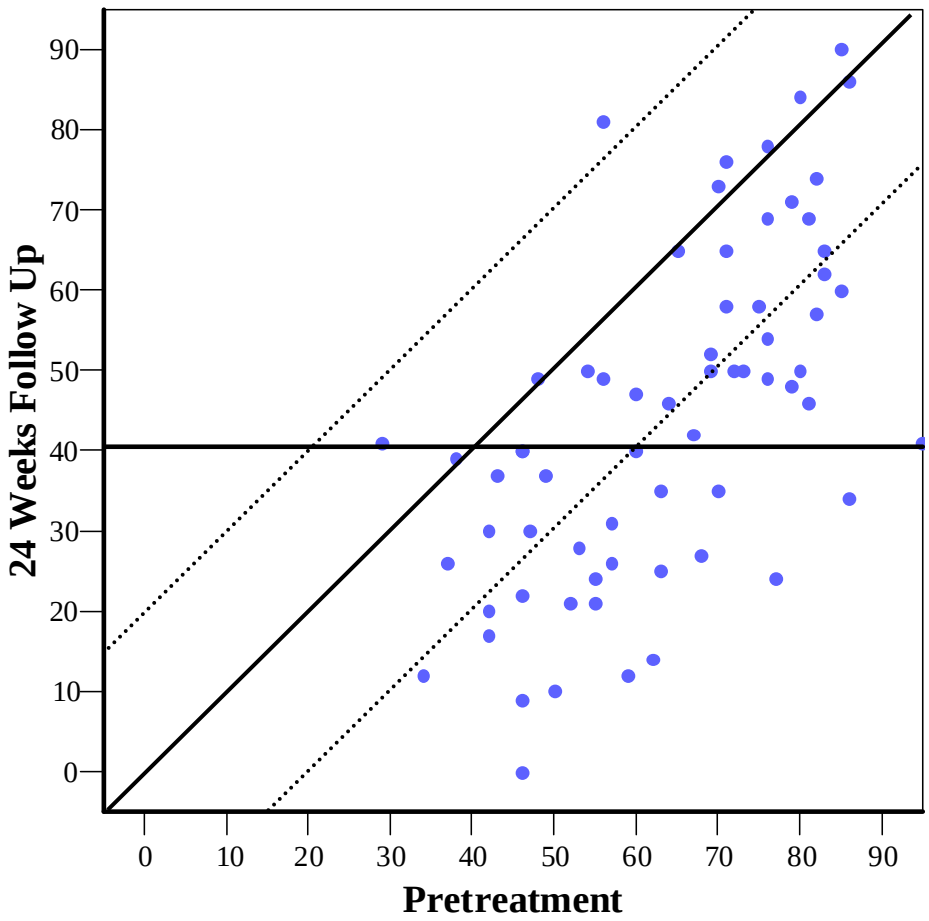
Uncertain change are those participants within the band of no reliable change.

Reliable improvement - not recovered are individuals to the right of the band of no reliable change and above the 1 SD cutoff score.

Reliable improvement recovered are individuals to the right of the band of no reliable change and below the 1 SD cutoff score.

Telepsychiatry - Results

Figure 4. Graphic Representation of Reliable Change Index in PST



Reliable deterioration are those cases in the upper right triangle, outside of the band of no reliable change.

Uncertain change are those participants within the band of no reliable change.

Reliable improvement - not recovered are individuals to the right of the band of no reliable change and above the 1 SD cutoff score.

Reliable improvement recovered are individuals to the right of the band of no reliable change and below the 1 SD cutoff score.

Telepsychiatry - Results

Table 2. Reliable Change Index Summary Statistics

(*n* = 66)	Reliable deterioration		Uncertain change		Reliable improvement - not recovered		Reliable improvement- recovered		% Moved from above cutoff score at pretest to below cutoff score at follow-up	
Measure	***n***	**%**	***n***	**%**	***n***	**%**	***n***	**%**	***n***	**%**
SCL-90R GSI	2	3	15	22,7	19	28,8	30	45,5	35 of 66	53
SCL-90R PSDI	2	3	19	28,8	4	6	41	62,1	54 of 66	82
SCL-90R PST	1	1,5	30	45,4	11	13,5	24	39,6	30 of 66	45,5

Telepsychiatry - Conclusion

- Telepsychiatry showed to be an effective mean of delivering mental health services to psychiatric outpatients living in remote areas with limited resources.
- The clinical efficacy of this health care alternative was not conditioned by gender, age, educational level, ICD-10 diagnosis, initial severity of illness or the presence of antecedents of previous psychiatric disorders and treatments.