

Positive impact of InteGRO, a new salutogenic psychoeducational intervention, in managing covid-19 pandemic and lockdown aftermath

FRANCO VELTRO¹, GIANMARCO LATTE¹, IRENE PONTARELLI¹, CRISTINA PONTARELLI¹, ILENIA NICCHINIELLO¹, LILIA ZAPPONE¹

¹Community Mental Health Center of Campobasso, Department of Mental Health – ASReM, Campobasso, Italy.

Summary. Aim. The covid-19 pandemic/lockdown had a great impact on Severe Mental Illnesses (SMI) on the following variables: adherence to protective measures, infection, Covid-related psychopathology, stress related symptoms exacerbation, social relationship loss and higher mortality risk. InteGRO, a new effective salutogenic-psychoeducational approach, has been designed to help people with SMI manage their life-stress and achieve personal recovery goals through improved social functioning. Positive outcomes after pandemic/lockdown in patients trained with InteGRO and also their opinion about its usefulness are discussed. **Methods.** All above mentioned variables were collected in a 1-year observational study (March 2020-2021) for all patients trained with InteGRO. In April 2021 patients were asked to respond to: an ad hoc semi-structured in-depth telephone interview, the Stress-Scale, the Brief Psychiatric Rating-Scale, the Personal and Social Performance Scale. **Results.** 37 people out of 41 underwent the observational study. The overall outcome was good: one patient with asymptomatic infection, 40/41 vaccinated, a very low (2/37) trend of hospital admissions similar to previous years, very high personal and social functioning as well as low level of stress. In the interview, patients answered they found the InteGRO Training very useful, above all the meetings concerning Defining Goal and Problem-Solving. They often felt their desire to socialize was prompted by InteGRO training. **Conclusions.** These results suggest InteGRO had a good impact on SMI patients to face pandemic/lockdown, with high level of personal and social functioning. They also suggest using structured salutogenic psychoeducational programs in public health services can be useful to promote life-skills to face traumatic events. Further studies are needed to understand the duration of these improvements and outcomes.

Key words. Covid-19 pandemic, effectiveness, group approach, recovery, salutogenic-psychoeducational.

Impatto positivo di InteGRO, un nuovo intervento psicoeducativo salutogenico, nella gestione della pandemia covid-19 e delle conseguenze del lockdown.

Riassunto. Scopo. La pandemia/lockdown covid-19 ha avuto un grande impatto sui disturbi mentali gravi (DMG) rispetto a: utilizzo DPI, contagi, sintomi psicopatologici da covid, esacerbazione dei sintomi stress-correlati, ridotte relazioni sociali e maggiore rischio di mortalità. Lo scopo di InteGRO, un efficace e innovativo approccio salutogenico-psicoeducativo, è aiutare le persone con DMG a gestire lo stress e raggiungere obiettivi di Recovery personale. In questo articolo viene descritto l'esito positivo durante il periodo della pandemia/lockdown dei pazienti che avevano in precedenza ricevuto un training con InteGRO e anche la loro opinione sulla sua utilità. **Metodi.** Studio osservazionale di un anno, marzo 2020/2021. Ad aprile 2021 è stato chiesto ai pazienti di rispondere a un'intervista semi-strutturata telefonica *ad hoc*, alla Scala Goldberg dello Stress, alla Brief Psychiatric Rating Scale, alla Scala PSP per il Funzionamento Personale e Sociale. **Risultati.** Su 41 pazienti, 37 hanno accettato di partecipare allo studio. L'outcome è stato positivo: trend di ricovero basso (2/37) sovrapponibile a quello osservato nella stessa coorte dei pazienti trattati con InteGRO negli anni precedenti, un contagiato asintomatico, vaccinati 40 su 41, buon funzionamento, basso livello di stress. I pazienti hanno risposto all'intervista dichiarando l'utilità degli incontri del training, soprattutto rispetto alla definizione degli Obiettivi, al problem-solving e alla socializzazione. **Discussione e conclusioni.** Questo è il primo studio di efficacia di un programma di prevenzione/promozione della salute nel fronteggiare l'impatto della pandemia/lockdown. I risultati suggeriscono un buon impatto di InteGRO sui pazienti con DMG. Lo studio suggerisce altresì il bisogno di utilizzare nei servizi di salute pubblica programmi strutturati, salutogenici/psicoeducativi per promuovere abilità utili per gestire lo stress quotidiano e quello collegato a eventi traumatici. Sono necessari ulteriori studi per comprendere la durata di questi miglioramenti.

Parole chiave. Approccio di gruppo, efficacia, pandemia da covid-19, recovery, salutogenico-psicoeducativo.

Introduction

People with Severe Mental Illness (SMI) have been at particular risk of poor covid-19 outcomes¹ for reasons linked to their life conditions: socioeconomic deprivation², multiple comorbidities such as diabetes, hypertension, chronic obstructive respiratory disease³, educational attainment⁴ and reduced access to care⁵. All these factors were also reported to be associated with increased covid-19 mortality⁶ in Europe, North-America or Asia (*JAMA*) and they likely had a great impact on the prognosis of psychopathology⁷ as well as on the somatic care of people with SMI as shown in previous studies⁸. In the epidemic context, three factors appear very important: educational attainment, reduced access to care and people's adherence to protective measures⁹. Studies consistently concluded that the adherence was markedly more problematic in people with psychosis⁷. This factor, as well as the difficulty in social distancing, could be associated with the higher probability of infection. As a matter of fact, being diagnosed a psychiatric disorder in the year before the covid-19 outbreak was associated with a 65% increased risk of covid-19 (RR 1.65, 95% CI 1.59-1.71; $p < 0.0001$)¹⁰. The awareness that people with SMI have increased mortality, infection and covid-related psychopathological symptom requires enhanced preventive and public health management strategies to meet their health needs. What happened contrasts the 2018 Lancet Commission on global mental health and sustainable development¹¹, which identified mental health as an essential component of universal health coverage. In the vaccination campaign, the United Kingdom was one of the few countries explicitly prioritizing persons with SMI¹². According to Hassan et al.¹³, people with SMI were not protected in an adequate manner. Probably this is not only due to scarce pre-existing resources for mental health, but also to the absence of salutogenic health programs based on digital health technology, to the absence of extensive programs addressed to improve patients' life-skills, and to scarce task-shifting (i.e. training lay health professionals to deliver care in non-specialist settings). However the use of digital technology and of recovery-oriented programs based on empowerment and functioning improving should be the standard of the community mental health services. In the presence of such a widespread pandemic affecting millions of people with SMI, it is becoming urgent to understand what kind of interventions are effective to increase the ability of patients to cope with isolation and social distancing, to increase correct use of protective measures, to develop positive attitudes toward vaccines, and to improve adherence to psychiatric care. This aspect is much more important than the descriptions of the

psychopathological pictures as a consequence of pandemic as we read in the last two years in thousands of papers.

For this reason, we decided to explore the impact of a salutogenic-psychoeducational recovery-oriented approach on the ability of users with SMI to cope with covid-19 pandemic and lockdown.

This effective intervention, named InteGRO¹⁴⁻¹⁶, is designed for users in a phase of relative clinical stabilization, close to the concept of clinical remission¹⁷, with a functioning score over 40 at the PSP¹⁸, without severe cognitive deficits. The approach is salutogenic as it pays attention to promote life skills, to consider stress as a challenge in the context of ordinary life practical, interpersonal and personal problems. It is based on four fundamental modules (definition of Goals, effective communication, emotional perception and problem-solving), each comprising different teaching units. There are also intermodular educational units to facilitate the acquisition of the skills of a single module. A constant monitoring and support for the goals chosen and defined by each participant are carried out. We believe that this approach characterized by salutogenesis in terms of Antonosky's theory¹⁹ and psycho-education as structured by Falloon^{20,21} is the best innovative way to improve functioning in order to facilitate recovery. Antonosky's theory and psychoeducation as conceived by Falloon share themes such as stress theory, coping with stress, health/life, problem solving.

InteGRO is described in a structured manual²² where all the steps of each meeting are described in detail with written questions and possible users' answers to be rapidly discussed. It includes the modules illustrated in Appendix 1. To date InteGRO is limited among the Severe Mental Illness to patients of diagnostic spectrum of schizophrenia, bipolar and personality disorders regardless of the diagnostic subtypes. As generally known, there are several approaches to facilitate the recovery such as Refocus²³, Wrap²⁴, IMR²⁵ and ART²⁶. Most of these approaches are not comparable with InteGRO which is based on the work with group of users and not focusing the attention to the illness management with the primary outcome on the symptomatology or to the "reparative deficits" treatments. We consider Illness Management and Recovery²⁵ the most similar approach to InteGRO for the following aspects: defining goals, intensive use of problem-solving, stress-management, effective communication, life-style. The difference concerns only the aspect of illness management in the IMR-E manual. InteGRO and E-IMR share also the concept that recovery is a journey characterized by the commitment of the user to become more and more capable and responsible in his life. This condition could be achieved acquiring life skills. As a consequence, according to Mueser²⁵ the milestone con-

cept is the improving of functioning, often used in the specific literature as primary outcome to assure the independence with a minimum support by professionals.

In this study we describe the impact of InteGRO approach on the functioning and the ability of trained users to cope with covid-19 pandemic and lockdown.

Methods

DATA COLLECTING METHODOLOGY

We used a quanti-qualitative methodology. The period considered to collect data for adherence, dropouts, infection, mortality, inpatient admissions, sheltered-residential admissions, escapes from psychiatric residential facilities was March 2020-March 2021 (nb: the pandemic started in Italy in the first days of march 2020; the patient one was diagnosed on February 21st 2020 and the government imposed the national lockdown from March 9th to June 4th. A limited, regional lockdown started again in October 2020 and ended in July 2021). The quantitative assessment of psychopathology, functioning and stress management as well as the qualitative in-depth interviews were carried out during April 2021.

SAMPLE

The sample belong to the catchment area of Community Mental Health Center, very accessible to people that is approximately of 95.000 adult inhabitants of which $\frac{3}{4}$ in urban area with no high population density and $\frac{1}{4}$ in rural area. Users were at the time of InteGRO training committed to undertake a journey towards recovery; they had attended an individual and /or familiar and/or group psychoeducational course; their social functioning was greater than or equal to 40 as assessed by the PSP scale. All patients that were trained with InteGRO before pandemic were reached out by telephone to obtain informed consent and participation to the study. 37 patients underwent the study.

INSTRUMENTS AND VARIABLES

The quantitative approach was based on the collection of many data related to psychopathology, adherence to the care, dropouts, functioning, stress-level, infection, mortality, inpatient admissions, sheltered-residential admissions, escapes from psychiatric residential facilities.

The psychopathology was measured by BPRS²⁷⁻²⁹, a hetero-evaluation scale consisting of 24 items. Each item is assessed on a Likert scale with 7 coding levels ranging from 1 (absent) to 7 (very severe).

Stress was evaluated by the Goldberg & Hillier Scale³⁰, made up of 9 items taken from the well-known and widespread Goldberg tool for investigation in routine conditions, with dichotomous yes-no answers, which evaluates the presence of stress if the score is greater than 5.

The assessment of Personal and Social Functioning was made by means of PSPS¹⁸, a semi-structured interview collecting information from the person with SMI, acquaintances and health workers. It includes four main areas: 1) socially useful activities (including working and studying); 2) personal and social relationships; 3) taking care of appearance and hygiene; 4) disturbing and aggressive behaviours. Total score ranges from 0 (worst possible functioning) to 100 (excellent functioning).

Adherence was measured by a list of 4 items concerning behaviour throughout last year: 1) full adherence to the care; 2) partial adherence (taking pills, not always regular with visits/meeting sessions or telephone call); 3) insufficient adherence (irregular for taking pills or visits/meeting sessions/telephone call for about 50% during the period-time considered); 4) scarce or absent adherence (taking pills and visits/meeting sessions or telephone call for less than 20% during the period-time considered).

For what concerns qualitative approach we used an ad hoc semi-structured in-depth telephone interview. For all items the participants were asked in-depth questions, for example: "How do you think these strategies helped you in...", "Why do you think this aspect is related to the approach...", "When do you think this fact happened...", "What kind of problems was managed...", and "in Which Way...?".

STATISTICAL ANALYSIS

For all variables with parametric distribution the average \pm sd was calculated; for all variables with non-parametric distribution the median and range were calculated. Pair-wise correlations were assessed by means of Spearman coefficients. Cronbach's alpha reliability coefficient was calculated for the in-depth telephone questionnaire. SPSS 21.0 software (SPSS Inc., Chicago, IL, USA) for macOS was used for statistical analysis.

Results

DATA ANALYSIS: QUANTITATIVE

The evaluation involved 37 subjects (19 males, 18 females) out of the 41 that were trained with the InteGRO approach. Four patients asked not to be involved in the study. However, we noticed that they were in psychological and physical wellbeing, without developing covid-19 or SARS-CoV positivity.

Among the 37 participants, 23 had a diagnosis of psychotic disorder, most of them schizophrenia; 8 had a diagnosis of bipolar disorder; 6 had a diagnosis of personality disorder.

The mean age of subjects was 42.5 ± 11.0 (min=20; max=61). 28 patients were “single” (76%), 3 “engaged” (8%) and 6 “married” (16%). 31 users were “unemployed” (84%), 6 “employed” (16%).

At the beginning of the pandemic there were 2 “patients admitted” (5%) in psychiatric ward, the same number of the patients admitted in the year before pandemic, no patients admitted in Sheltered residential facilities or Group Apartment, no imprisonment, no escape from residential facilities. 2 patients were discharged from residential facilities.

All patients regularly took drug therapy. No significant medication adjustments to optimize symptoms were observed in the pandemic period since patients were clinically stabilized close to clinical remission criteria. The change of medication was relevant just for patients admitted to the psychiatric ward. However, for all patients with personality disorders the main treatment was psychotherapy, less intensive in the period of lockdown but assured by remote with intensive psychological support for 1 patient for one month. 5 out of 7 patients with bipolar diagnosis and 1 out of 2 patients with Schizoaffective Disorders received weekly psychological support for the maximum period of 6 months before pandemic and biweekly in the pandemic period, by remote during lockdown. No patients attended occupational rehabilitation programs.

36 patients accepted vaccine. One did not accept vaccine. Only one patient tested positive for covid-19, after the first-dose, without significant clinical impairments.

22 patients showed full adherence to psychiatric care (59%), 11 were partially adherent (30%), 4 had insufficient adherence (11%). No patients with scarce or no adherence and no dropouts were observed.

The BPRS median was 37 (range 24-63). The average PSP score was 61.01 ± 8.05 (range 45-80). The Stress scale scored 1.2 (range 1.0-1.9).

We found the following correlations: Diagnosis *with* Civil Status ($r=.47$; $p<.001$); PSP *with* Occupational status ($r=.52$; $p<.001$), civil status ($r=.51$; $p<.001$); Social network *with* age ($r=-.38$; $p<.02$) and occupational status ($r=.38$; $p<.02$).

DATA ANALYSIS: QUALITATIVE

29 patients (78%) stated they often thought of InteGRO training when coping with pandemic/lockdown problems. 6 patients (16%) stated that they sometimes thought of InteGRO and only 2 patients (6%) declared they never thought of the training. 94% of sample recognized that generally the most useful training sessions

were problem-solving, communication skills and the sense of social relationships. Out of this 94%, the 60% found the social relationships topic the most useful. However, when invited to choose the specific training session, they identified Problem-solving and defining goals (43%). Regarding the pandemic/lockdown, patients thought that InteGRO Training was “useful” or “very useful”: 1) to better understand problems of people they know (81%); 2) to better interact with the General Practitioner (38%); 3) to better interact with the professional psychiatric staff (70%); 4) to better understand personal health conditions (68%); 5) to better reach personal goals (76%). In the same period patients found InteGRO also “useful” or “very useful” to better cope with: 1) practical problems (81%); 2) interpersonal problems (73%); 3) personal problems (78%); 4) stress (70%). Regarding the pandemic/lockdown, patients considered the InteGRO approach “useful” or “very useful”: 1) to support personal wellbeing (84%); 2) to prevent personal psychological distress (60%); 3) to prevent psychiatric relapse (51%); 4) to ameliorate relationships with household members (73%); and with friends/co-workers/other relatives (78%); 5) to improve personal functioning (65%). About InteGRO Training satisfaction, in a range from 1 (not at all) to 10 (Fully satisfied), 17 patients (46%) rated 10 and 95% rated more or equal 7. About the usefulness of InteGRO Training, in a range from 1 (not at all) to 10 (completely useful), 17 patients (46%) rated 10 and 92% rated more or equal 7. Patients were also asked if they would suggest the training to other patients; 36 (97%) replied “yes”, 3 of them for 2-3 meeting sessions.

Internal Consistency of the whole in-depth telephone questionnaire was assessed by Cronbach’s Alpha Coefficient, reporting a value of .846.

We found the following correlations: Int 2.1 with FPS ($r=.33$; $p<.05$); Int2.2 with adherence ($r=-.64$; $p<.001$) and relapses ($r=.41$; $p<.05$); Int 2.3 with FPS ($r=.42$; $p<.02$); Int 2.4 with FPS ($r=.36$; $p<.05$); Int 3.2 with civil status ($r=.37$; $p<.05$); Int 3.2 with FPS ($r=.54$; $p<.001$); Int 4.5 with FPS ($r=.36$; $p<.05$); Int 6 with Social network ($r=.33$; $p<.05$); Int 7 with civil status ($r=.35$; $p<.05$).

We also would like to report some of the users’ statements about the usefulness of the InteGRO training. For instance, the most used sentence when describing the role of the training in coping with pandemic was: “since we spend more time in family I have often thought how important effective communication skills are in order to ameliorate my relationship with relatives and in order to look at family as the best environment to support my life”. Another side of the same topic was “the possibility to better communicate unpleasant feelings and above all anger in an appropriate way, without aggressivity”. The topic of problem-solving was also emphasized: “The pandemic and lockdown gave me the opportunity to di-

discover problem-solving to cope with stress and daily difficulties". Other similar sentences were "I always think of the InteGRO training about the importance of being active because the training taught me to define goals and to monitor them as well as to better communicate with other people".

Discussion

Bearing in mind that people with SMI «often have accumulations of risk factors»³¹, the results highlight an interesting impact of InteGRO training on the majority of outcome indicators.

The first result concerns data about vaccination (97%), infection (3%), no admission and no mortality for covid. As a reference, it is useful to consider that in Liguria and Veneto regions, where SMI patients were assigned a vaccination priority, in February 2021 3.5% were vaccinated. In UK, the country that gave priority to SMI to be vaccinated, in the recent study Hassan et al.¹³ reported that those with mood disorders were significantly more likely to be vaccinated against covid-19 and that those with schizophrenia or related psychotic disorders «were significantly more likely to have a record of having declined vaccination for covid-19». The same authors underlined that previously in UK vaccination rates among people with SMI were significantly lower than people without SMI³². Also in Israel, the country which also launched an intensive and massive vaccination campaign, lower odds of vaccination among people with schizophrenia were observed³³. Thus, people trained in InteGRO have been very active in searching for vaccination. In previous studies people favorable toward getting vaccination were mainly older, male, married, and employed subjects with a high income^{34,35}. We can notice that most of these variables are very different from our sample. The results we observed could be explained as a strong self-determination toward vaccination prompted by InteGRO. Giuliani et al.³⁶ stated that «in cases of positive vaccination intentions [...] the most commonly cited reason was a social/ethical duty to protect one's community, followed by reasons referring to a desire for self-protection, a belief in the efficacy of the vaccine, a desire to "have one's life back", and a general attitude of trust in science». People decide recovery-journey because they desire to live a self-directed life, they wish to "have one's life back", the true concept of recovery, and have a general attitude of trust in services. The latter point is confirmed by the answers of in-depth interview as you can read later. For the same aspect Gyamfi et al.³⁷ showed that most users share this point of view: «recovery service offered to consumers was effective to help them acquire independent living skills». This point of view belongs to recovery as well as to the positive attitude towards vaccination. The motivation to be vaccinated

protected patients against SARS-CoV-2: no covid-19 symptomatic people, no admission to hospital for covid-19, no death. The reported 1.65 excess risk «was not related to any specific psychiatric diagnostic category, and was similar regardless of whether the diagnosis was made within 1 or 3 years, and whether or not the known physical risk factors for covid-19 were present»¹⁰. The higher risk is not related to other factors like housing and economic circumstances. These results are consistent with another recent case-control study³⁸. Furthermore, mortality in our sample is zero while it is reported that «patients with severe mental health disorders had the highest ORs for risk of mortality (adjusted OR: 1.67 [95%CI, 1.02-2.73])»³⁹ and this association was stronger for psychotic disorders (2.05, 1.37-3.06). Problems about using protective measures like masks have been described, particularly in SMI people^{40,9}. This kind of problems was not observed in our sample.

Regarding the association between psychopathology and pandemic in people with SMI, there are some doubts about the worsening of symptoms, because two studies reported no association at all⁴¹; anyway, the methodology was quite controversial.

The majority of studies report an increase in stress-related symptoms in subjects with pre-existing psychiatric disorders which favored relapse⁴². Social isolation was associated with increase in paranoia and worst outcome⁴³. Iasevoli et al.⁴⁴ found that patients with SMI were four times more likely to perceive higher pandemic-related stress than controls, which in turn facilitated relapses⁴². In our sample the trend for relapses during the pandemic, two per year, was similar to the previous year and the average of total BPRS score was very low as well as the level of stress; the median was 1.2, close to the absence of stress, coded as 1 in the scale. Another indicator of well-being is the functioning, which was assessed by one of the most reliable scales, the PSPS, scoring 61, which corresponds to "manifest", but not marked difficulties in one or more general areas, which do not disrupt functioning and the capacity to deal with the activities of the expected role. There was not worsening of functioning, as the average of functioning before pandemic was 59.19±8.87. During pandemic, patients could not be included in the rehabilitative active program, but they underwent usual outpatient visits or remote clinical "control".

At the same time the results of in-depth interview are very interesting. They represent the evidence that the InteGRO training was recognized by the patients in a recovery-journey like a sort of traveller-guide. In fact, almost all patients (94%) in some way thought of the InteGRO units during pandemic/lockdown. They also spontaneously reported that above all problem-solving was useful. In addition, patients had the perception to perform better at reaching goals and in the

relationships with psychiatric staff and other people. Defining goals and becoming able to achieve them is a key point during a pandemic because people live more isolated, they are scared of meeting friends, relatives, professionals, neighbors and so on. In fact being in lockdown involves losing daily routines and has a substantial effect, especially in SMI individuals. Instead, by InteGRO training, people felt to be encouraged to meet other people in an appropriate way, with protective measures and physical, but not social, distancing. We do not have direct or explicit comparisons in literature about this effect. Groarke et al.⁴⁵ wrote that «recent evidence in the context of COVID-19 reports high levels of distress», which we did not find in our sample. The similar concepts were noticed in Holmes et al.⁴⁶. Another component of success is the general characteristic of InteGRO approach based also on the positive psychology. According to Giusti et al.⁴⁷ «positive cognition was correlated with a sense of well-being and could represent an important resilient resource for a better adjustment to stressful situations». Finally, we would like to remark the importance of combination of Problem solving and psychoeducation approaches, which, as described recently, may have an «impact on clinical and functional outcomes, by providing patients long-lasting resources to manage daily life more effectively»⁴⁸. Then, the good Functioning of users can be explained by the whole component of the approach as well as by the effect of Problem-Solving as many InteGRO meetings are dedicated to Problem-Solving Training, focusing on personal problems related to the life of patients. The improvement may also be associated with the cognitive flexibility, a key-cognitive component of PS as shown in the previous studies¹⁴⁻¹⁶. Also this study support the original idea of Falloon⁴⁹ that the «problem solving training may be associated with substantial clinical and social benefits for people with major mental disorders». The interaction of cognition, life and social functioning in this field also belongs to the recent experimental theory of Sarathy about the Real World Problem Solving⁵⁰.

Conclusions

The recent events about pandemic and lockdown have stressed the concept that a “purely pathogenetic model” for disorders in mental health is quite limited and reductive. In mental health services, targeting a symptom or focusing on psychopathology is only a partial response to the problems in real life. People with SMI need a holistic approach, addressed to a person and founded on the salutogenetic model, which emphasizes the resources of a person to help them better cope with problems and new and unpredictable events that may arise suddenly and overcome

their life. The pandemic and lockdown highlight and confirm the importance of recovery-oriented services and salutogenic programs. The results of our study support this statement. InteGRO training is a new, effective and promising approach aimed at facilitating goal of recovery above all functioning^{14,15} also in the long-term¹⁶. This investigation shows how useful this approach has been to cope with pandemic and lockdown.

As far as we know this is the unique evidence in the international literature about a preventive active intervention to cope with covid-19 and its consequences, whereas most papers described only the pictures of psychopathological syndromes, not useful in our mind to understand what we need to help people with SMI facing pandemic and lockdown.

The main limitations of the study are the absence of a control sample and the generalizability concerning the qualitative results because of the difficulty of conducting a rigorous reliable qualitative narrative analysis.

Ethics approval and consent to participate: the need of ethical approval was exempted by local ethical committee of “Azienda Sanitaria Regionale del Molise” N. 950/21. The informed consent to be assessed by clinician, as usual in the clinical routine, was obtained from all patients. All methods were carried out in accordance with relevant guidelines and regulations.

Consent for publication: not applicable.

Availability of data and materials: The datasets generated and/or analysed during the current study are not publicly available because data are currently under analysis for further publication but are available from the corresponding author on reasonable request.

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Authors' contributions: FV, G.L., I.P., wrote the manuscript; FV, G.L. and C.P. made data analysis and statistics; I.N. and L.Z. prepared the figure and references and contributed to discussion and conclusions. All authors reviewed the manuscripts.

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Appendix 1

| InteGRO Meetings (IM) | |
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| IM1 | Presentation of the Intervention |
| IM 2-12 | Defining a Pleasant Goal and a Personal Goal |
| IM 3-5,10-15 | Emotional literacy: the Joyful, the Sadness, the Fear, the Shame and the Anger |
| IM 6-7 | Problem solving for Practical Problems: Teaching session, Training Session |
| IM 8-9 | Communication Skills: Expressing pleasant feelings and make positive request, Active listening |
| IM 11 | Problem Solving for Interpersonal Problems: expanding the social network |
| IM 13 | Jumping to conclusions |
| IM 14,26 | Review Meeting |
| IM 16-21 | Understanding your mind and the other's mind (included the recognition of Anger) |
| IM 22 | Communication Skills: Expressing unpleasant feelings |
| IM 23 | Training about Self-control of anger and aggressiveness |
| IM 24-25 | Calm your mind: breathing with awareness |
| IM 27 | Effective communication and conversation |
| IM 28-32 | Problem Solving for Personal Problems: Problem Analysis, How to deal with a personal problem, How to deal with an emotional crisis, I wish to meet new people, How to improve physical wellbeing |
| IM 33-36 | Booster Session (4 Biweekly, 3 Monthly, 3 Three-Monthly) with use of Problem Solving |

Indirizzo per la corrispondenza:
 Dr. Franco Veltro
 Community Mental Health Center of Campobasso
 Department of Mental Health - ASReM
 Via Ugo Petrella 1
 86100 Campobasso, Italy
 E-mail: francoveltro@gmail.com