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Società Italiana di Psichiatria

Editorial

Massimo di Giannantonio

Enrico Zanalda

The possible recrudescence of the COVID-19 in autumn requires the utmost care in applying the rules of prevention that we all know by now: surgical mask, spacing, frequent sanitization, temperature measurement and avoiding crowded places. These precautions must all the more be applied in the facilities of mental health departments. A very recent article in publication in issue 1/2021 of the newspaper of the World Psichiatric Association identify individuals with a recent diagnosis of a mental disorder as being at increased risk for COVID-19 infection, which is further exacerbated among African Americans and women, and as having a higher frequency of some adverse outcomes of the infection including death [1]. Since the beginning of the pandemic, it is believed that people with mental disorders are more likely to become ill than COVID-19. This is due to the unhealthy lifestyle, lack of attention to precautions and the worst physical health conditions compared to the general population. The statistical evidence that these hypotheses are real must be an incentive as psychiatrists to engage in prevention activities. As mental health practitioners we must set an example by always wearing masks, washing our hands frequently, sanitizing workplaces and maintaining precautionary physical distances. We must also avoid meetings of more people in cramped places, especially now that the cold weather will often prevent the windows from being opened. As far as was observed in the Italian mental health departments even in the regions most affected by the first phase of the pandemic COVID+ cases have been registered amongst both staff members (52% of CHMCs), and facility users (52% of CHMCs), although slightly lower rates have been reported for residents living in RFs (less than 40% of RF). As expected, a significantly higher number of cases have been reported in the Northern Italian regions, i.e. areas featuring the highest rates of infection. Mental health services in Italy during the COVID-19 pandemia [2].

As we know, during the pandemic, psychiatry services' activity continued in a reduced way in the first phase, while in the second phase there was a return to a higher level of daily clinical activity than before the beginning of the pandemic. Hospital and outpatient activity resumed at full capacity only semi-residential activity was kept reduced with the resumption of only small groups in attendance. The residential psychiatric facilities that have been equipped with entry and discharge protocols in addition to the regulation of visits and the use of telemedicine tools deserve a separate discussion. The apartment groups, on the other hand, have behaved similarly to civil housing with greater difficulty in enforcing the lock down of some patients.

The prescription of drugs has continued regularly with some facilitation in the reception for the greater use of the electronic prescription whose number could also be communicated in the pharmacy with a text message, in order to avoid as much as possible contacts in the different steps. The long-standing issue of filling in the useless forms required by AIFA for the prescription of antipsychotics in the elderly had been suspended and it would be appropriate that it would not resume. For years we have been forced to fill out every two months health forms for the prescription of antipsychotics in the BPSD of the elderly without any return on what has been monitored until today. If it made sense to do this monitoring for a couple of years, after such a long time and the generation of most of the molecules is not even an economic advantage in this activity. It appears a useless bureaucratic passage that consumes the time of specialists and general practitioners as well as penalizing patients who if they do not have

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the possibility of the specialist's passage are forced to be treated with drugs with greater side effects.
Throughout this fall and next winter, it is worth continuing to use telemedicine tools for counseling and psychotherapy. Where they have been used extensively have proven to be extremely effective tools and are one of the few positive things that the pandemic has brought us. Unfortunately, scientific conferences and training courses should continue remotely in order to reduce travel and contact possibilities. According to the predictions of conference professionals, these restrictions on travel and gatherings will continue for at least the whole of next year 2021. In this sense, the Italian Association of Psychiatry had to move the planned 49 national congress in Genoa by one year and rescheduled it in October 2021 when we hope to convene the national assembly of members. This year 2020 the Italian Society of Psychiatry programs only remote events in compliance with national directives and the health of all members. The general trend of the COVID-19 pandemic will be the yardstick by which the events of 2021 can be planned. According to an estimate by the World Health Organisation, only 10% of the world's population has contracted the disease so far. Therefore, the possible spread of the virus is still a long way off and could affect the next few years until a safe vaccine is found. It is difficult today to predict when we will be able to return to a life without masks. In the meantime we can engage more in scientific activities from home at a distance such as writing articles and meeting remotely. Perhaps also due to the effect of the COVID-19 this year our society's newspaper will come out this year with the periodicity it had set itself from the beginning and which it had not been able to reach until 2020. We would like to thank the members who contribute in this way to the diffusion of our discipline in Italy and in the world. The link of the magazine is sent to the World Psychiatric Association and other national scientific societies with whom we are in contact.

Massimo di Giannantonio & Enrico Zanalda

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Evidence based Psychiatric Care
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A brief description of ISS programme using telephone and tele-psychiatry to cope with psychological effects of lockdown pandemic in Italy

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Summary
In this paper, the Authors describe a structured program which aim is: a) to render the action of Mental Health Department more effective and efficient in contrasting the expected short, medium and long term psychological effects of the epidemic and lockdown, both in the general population and in the first line Health-Workers; b) to prevent, as far as possible, the onset of psychiatric symptoms by means of socio-health integration measures for relevant social needs as psychological risk factors; c) useful for psychiatric follow-up. This program may also prove useful in case of a second wave, as suggested in some studies.

Key words: lockdown pandemic, psychological distress, ISS programme, tele-psychiatry

The SARS-CoV-2 pandemic has seen the strategies of quarantine and social isolation dusted off as the only effective techniques for "suppressing" contagiousness and reducing the prevalence and incidence of infection at the lowest possible rate. The only comparison to be made with the global impact of the current SARS-CoV-2 pandemic on public health is with the 1918 pandemic by H1N1 virus, which occurred in the absence of the advanced and interdependent health, modern welfare and global financial systems of the third millennium.

In Italy we performed in the last three months the lockdown to reduce the contagiousness (R0 < 1), a long period characterized by physical distancing of the entire population, the closure of places of social and productive aggregation such as schools, factories, commercial services and sporting and cultural entertainment centers.

At this time, to avoid return epidemics, some strategies are confirmed, ie physical distancing and closure of activities considered at risk (for instance, cinema, theatre, some sports). Some "special" populations, like for instance elderly people, will experience also emotional isolation; in fact to protect them as the most vulnerable to the virus, they will probably be invited not to hang out with younger relatives.

The social and emotional isolation already experienced and foreseen by the new epidemic control measures had a significant impact on some basic needs of people such as decision-making autonomy, space mobility, the reduction of contact with loved ones, with serious repercussions on the psycho-emotional balance as documented in China.

Since Public Health Impact Assessment have rarely been used, we still know

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little about the relationship among acute epidemic phases, lockdown and medium-long term psychological impact on populations.

Our knowledge derives from experiences only partially comparable to the current epidemic, such as the SARS and MERS epidemics, even if scientific production is rapidly increasing also about the recent experience in Wuhan. However, most data concern the psychological impact of epidemic spread and contagiousness.

The lesson we learned from previous experience about short-term psychological impact of social isolation and quarantine is a dramatic picture. In the 2003 SARS epidemic ("only" 8,000 reported cases and 774 deaths worldwide) there was a 30% increase in suicides in people over 65. The described consequences of physical distancing and quarantine measures included: alcohol and substance abuse, suicide and self-harm attempts, domestic violence, child abuse and increased crime [1-3]. Other factors, of course, played an important role in prolonged quarantine, such as: fear of infection, stigma, inadequate assistance and information [4]. A study carried out in China showed that adults who had stopped working because of the restrictive measures had high levels of psychological suffering, as assessed by the "K6" tool, and poor physical health conditions.

It is conceivable that the lockdown, together with psychosocial factors such as job and role loss, may also have important long-term effects on mental health, leading to psychological and psychiatric problems not very different from those observed during social distancing and quarantine. Psychic distress, anxiety, intense anger up to impulse control difficulty, of different severity depression symptoms up to pictures of PTSD can be expected, much more frequently in the first and second line health workers. Loneliness worsens the psychological distress and often produces severe psychosomatic effects (cardiovascular and immune health). Balive et al. sustain that physical distancing aggravate the feelings of loneliness and could produce negative long-term health consequences.

Other coexisting psychosocial risk factors must be taken into account, such as: financial stress, unemployment, job loss, mourning, perception of an excessive load, loss of role, lack of fixed abode, and breakdown or serious impairment in significant relationships [4].

The restriction of access of users, together with the increased needs for cure of psychological consequences from pandemic outbreak, disrupted the routinely organization of services. Italian services underwent a deep reorganization, taking advantage of the use of telephone, chat and tele-psychiatry, so effectively that these new practices were incorporated into ministerial instructions. Telepsychiatry, a subset of telemedicine, can involve providing a range of services including psychiatric evaluations, therapy (individual therapy, group therapy, family therapy), patient education and medication management. Prior to the pandemic, telepsychiatry had built a strong scientific foundation and real-world evidence base, demonstrating its effectiveness across a range of psychiatric treatments, populations, and settings.

The United Nations suggested that mental health interventions should be delivered remotely, for example quality tele-counselling for frontline health-care workers and people at home with depression and anxiety. Innovative approaches to deliver mental health services are urgently needed to increase access to evidence-based care.

Last but not least, due to several reasons [5], surveillance and monitoring policies are supported and emphasized, above all targeting at anxiety, depression, self-harm, suicidal ideation, suicide and other mental conditions.

For all the premises above, a structured a global on line program featuring routine and reproducible tests and evidence based-treatment should be implemented and strongly recommended in mental health services.

This kind of program should have the following characteristics:

1. practices evidence-based for effective management of the psychological impact of the pandemic on the general population and on subjects at risk;
2. to provide tools and procedures for monitoring and spatiotemporal surveillance of symptoms of mental discomfort and psychiatric disorders related to the pandemic;
3. to promote the mental health of the population through intersectorial actions by encouraging the adoption of correct lifestyles coping techniques of psychosocial problems;
4. applicable also via telephone or internet platform;
5. monitoring schould cover both the general population and the most vulnerable people such as a frontline health workers.

The program proposed by ISS as a report named *Indication for an intervention program of the Mental Health Departments for the management of the impact of the COVID-19 epidemic on mental health* fully respond to these characteristics and we believe would be useful to specifically contrast and monitor the medium-long term effects of lockdown, such as psychological problems stress-correlated, anxiety, depression and DPTS.

The added value of the program presented here will be its capacity to evaluate and distinguish people who meet the criteria for a psychopathological disorder that requires online or direct access to specialist services, compared to those who can benefit from interventions promoting personal well-being or targeting social needs.

The Key features of the ISS program are the following:

- it is structured and refers to evidence based practices;
- it is based on a standardized assessment methodology, by the use of questionnaires applicable in the routine and already used in international contexts to allow data comparison;
- it is sustainable in routine conditions;
- it is manualized to allow reliability and therefore the comparison of results among services;

- it uses a global approach, which considers both the general population and the high-risk population at the same time implementing different intervention methods;
- it includes actions that can be implemented in synergy with voluntary and professional associations, with institutions and with local authorities. Hopefully this synergy should be broad and widespread in a long-term perspective, in order to identify and consolidate prosocial and salutogenic actions and interventions targeted at the general population, interventions to promote social support [6] and peer group initiatives [7];
- it provides: standardized forms to assure reproducibility and completeness in the collection of information; questionnaires for the assessment; forms to help patients exercise skills to cope with problems such as fear, anxiety, anger and insomnia.

Description of the ISS programme

The program incorporates the principles contained in the World Health Organization (WHO) document *Mental health and psychosocial considerations during COVID-19 outbreak* [8], in the document *Managing mental health and the psychosocial aspects of the COVID-19 epidemic*, version 1.5 of the Inter Agency Standing Committee (IASC) (www.auslromagna.it/organizzazione/reti-programmi/psicologia), but above all it incorporates the principles from the West China Hospital model "Recommended psychological crisis intervention response to the 2019 novel coronavirus pneumonia outbreak" [9], taking into account that Italian government applied a "suppression" policy model similarly to the Republic of China. As for the clinical evaluation, the tools most frequently used in scientific literature and Chinese experience were identified. As for psychological interventions, operators are suggested to refer to scientific literature about the treatment of common mental disorders, to NICE guidelines available on https://www.nice.org.uk regarding the treatment of depression, anxiety and stress related disorders. As for the management of psychiatric treatment, we suggest referring to recommendations by professional societies recognized by the Ministry of Research and Education.

The model adopted by China was timely and integrated interventions by non-specialist clinicians, psychiatrists, psychologists and social workers within a working method based on an internet environment. A flexible model has been proposed, adaptable to the various phases of the epidemic, relating to the epidemic "outbreak" period and the immediately following one. In the epidemic outbreak phase, the "psychological" intervention included two simultaneous activities:

1. intervention targeting fear of disease;
2. intervention aiming at adaptation to the situation.

In addition to these two interventions, which required integration with social workers also belonging to voluntary associations, there were interventions for the high-risk population, which includes rescuers and people with particular bio-psycho-social vulnerability exposed to epidemic. The need for collaboration with voluntary associations, professional associations, local bodies and production workers was highlighted, as well as the construction of synergic and intersectoral protocols and procedures to arrange formal and informal intervention networks and to promote self-help groups, including IT-based groups.

Great attention should be paid, in particular, to the consequences of social isolation on older people, in terms of physical and psychosocial health; as highlighted by previous experiences, they are at high risk. Therefore collaboration agreements with voluntary associations are suggested in order to promote socialization and support interventions, and priority collaboration paths with general practitioners and geriatric services.

The Head Office is responsible for preparing the needed material, program preparation, monitoring and coordinating the interventions.

In each Mental Health Center, a Territorial Team for Intervention on COVID-19 related Psychological/Psychiatric Crisis is established (ETI-PsiCO); at least one psychiatrist, one psychologist, one nurse, one psychiatric rehabilitation technician and one social worker will be identified for this purpose.

The intervention lines are aimed at the general population (PG) and the population at risk (PR).

For both lines, the intervention must be intensive:

- **PG**: depending on the problems highlighted, the intervention can vary from a minimum of 3 sessions to a maximum of 9, except for people who will have direct access to the Mental Health Center. Short interventions focused on the problem are mostly suggested;
- **PR**: the intervention, mainly online, will be based on the clinical evaluation of a psychologist or psychiatrist; it may provide direct access to the service and pharmacological therapy if necessary.

Based on the literature regarding:

- **PG**: stress related mental health problems, anxious symptoms and depressive symptoms are expected;
- **PR**: post-traumatic stress disorder related symptoms and more severe anxiety and depression pictures are expected.

FIRST STEP - The contact (day 1)

A dedicated telephone line is activated at the DSM to receive the help call, to collect the general information and the telephone number to be contacted (calls for psychiatric emergencies are obviously not considered here, but are part of the usual service activity).

The operator asks if the person is a frontline health worker. In this case the PR path will be chosen. The privacy policy is communicated and consent to the data processing is requested.

At the beginning, 2 morning hours and 2 afternoon hours are scheduled as a service commitment.

SECOND STEP - General evaluation (day 1)

Telephone interview duration: about 30 minutes.
After receiving the help call, one of the DSM operators calls back, preferably on the same day, to proceed with the collection of information and the evaluation phase. He informs the person and makes it clear that the service will take care of his/her problems, and that indications will be given to deal with them through intensive telephone intervention. He clarifies that the collection of information will be of fundamental importance for this purpose.
For the collection of general information, similar for both lines of intervention, a semi-structured informative and anamnestic interview is used (an example is provided in Appendix A1). If the person is a healthcare professional working on the front line, the interview is led by a psychologist or psychiatrist.

THIRD STEP - First part - Clinical-decisional evaluation (day 2)

Telephone interview duration: about 20 minutes.
PG. We suggest using K10 [10] as first assessment of the presence of mental discomfort and to weigh the anxious and depressive symptoms. In the case of score ≥ 20 and preponderance of anxious symptoms, proceed with further evaluation using a standardized instrument. We suggest the Zung Self-rating Anxiety Scale (SAS) to evaluate the severity level of the anxiety and better plan the intervention. In the case of preponderance of depressive symptoms, the Patient Health Questionnaire-9 (PHQ-9) is suggested. To score the Zung Scale, use the sum of the item scores. A raw score over 40 is the optimal threshold criterion to recognize the presence of anxiety [11].
We recommend to score the PHQ-9 using simply the sum of the scores of the items, since recent extensive meta-analyses of individual data showed that a score higher than 10 is the optimal threshold criterion to maximize sensitivity and specificity in identifying probable depression [12] and provides better results than the use of the diagnostic algorithm [13].
PR This line of intervention is dedicated to formal or informal (voluntary) frontline health workers. A psychologist, or psychiatrist, asks questions that are typically used by emergency psychologists. The questions for rescuers in Appendix A1 can be used. The psychologist or psychiatrist assesses the impact of the event. He/she can refer to the IES-R scale [14]. The operator evaluates anxiety/depression symptoms for clinical use, for example by using the DASS-21 scale [15].

THIRD STEP - Part two - Presentation of intervention to the person (day 2)

Telephone interview duration: about 15 minutes.
PG. The person receives feedback about the evaluation:
1. in the case of K10 with a score lower than 20, the problems are related to mental suffering specifically related to stress. The person is told that his or her psychological problems will be addressed in subsequent telephone sessions within a short program. The suggestions for self-management of anxiety developed by the ISS on the basis of WHO indications are illustrated;
2. in the case of K10 score < 20 and a problem of mild or moderate anxiety, as assessed for example with the Zung scale, the information is returned and the operator communicates that a structured program of 4-5 telephone sessions will be provided, preferably to be carried out on consecutive days by a trained operator identified by the DSM work team. In case of marked or severe anxiety (score ≥ 60, if the Zung scale is used), the person is informed that a more structured internet-based program will be provided or, if the person prefers, direct access to the service is offered;
3. in the case of K10 score ≥ 20 and a mild or moderate depression problem (PHQ-9: 10-19 score), the information is returned and the person is told that a program of 7-8 preferably consecutive telephone sessions will be provided by a specifically trained operator identified by the work team, in accordance with the NICE guidelines for the non-pharmacological treatment of depression. Monitoring is scheduled 1 week after the last interview. In case of severe depression (PHQ-9 score > 19), direct access to DSM is adviced.

PR. The psychologist or psychiatrist informs the person about the evaluation and plans together with him/her the program to be implemented, including the possibility of a direct access to the DSM.

FOURTH STEP - Intervention (next days)

PG. Based on the evaluation of the first 3 steps, the program can continue to: 1) cope with mental distress; 2) anxiety; 3) depression.
1. as for mental discomfort it is useful to focus attention on the problems that can be associated with it. We suggest using a Problem List to detect the type of problems in order to help the person strengthen his/her coping strategies. We advice to start with two emotional literacy sessions on fear and anxiety;
2. as for the anxiety program, two emotional literacy sessions on fear and anxiety, a session for progressive muscle relaxation, a session of conscious breathing, and other cognitive restructuring and monitoring sessions are suggested.
3. as for the depression program, two initial emotional literacy sessions on fear and anxiety and a third one of Problem Analysis are suggested. Based on the Problem Analysis, the choice of intervention is shared with the person.

PR. Acute epidemic period (critical event). When the person is still actively engaged on the front line, telephone sessions are recommended to be led by a specifically trainined psychologist or psychiatrist, based on active and empathic listening, on “grounding” or rooting techniques

(if there are expert operators) or more simply on learning (body and breath-centered) relaxation techniques and cognitive decentration.

PR. Subsequent period of demobilization. The following steps are recommended:

- first phase: psychoeducation;
- second phase: re-elaboration. The operator proceeds with more structured therapeutic interventions which for the "milder patients" can be psychological interventions of emotional self-regulation and mindfulness meditation. For more severe patients, the *Guidelines for remote psychological intervention in favor of the population in the emergency COVID-19*, available on the CNOP website (www.psy.it/gli-psicologi-sul- coronavirus), suggest proven interventions and treatments combining drugs and psychotherapy;
- third phase: psychosocial recovery phase. In accordance with the recent specific literature, interventions to improve social skills (including the adoption of lifestyles to improve physical health) and to better working conditions [9] are needed. Social Skill Training Programs carried out by psychiatric rehabilitation technicians and social support interventions led by social workers are preferred.

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Combined pharmacological and psychosocial interventions in resistant schizophrenic patients: what should be the main outcome? Clinical suggestions from a literature review

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Summary

Background. Treatment response in schizophrenia patients is a multidimensional concept. Remission in schizophrenic patien has been defined as the reduction of symptoms with mild disability, while recovery refers to regaining functioning and social skills. The main goal of schizophrenia treatment seems to be symptomatic remission and this could be the reason why great emphasis is focused on drug treatments. Little is still known about psychosocial interventions in drug-resistant schizophrenic patients. We may wonder about the effectiveness of psychosocial intervention in resistant schizophrenia and the possibility of functional recovery in drug-resistant patients showing just partial clinical remission.

Methods. We report a case of early onset schizophrenia in a young female patient strongly refractory to third-line therapy with clozapine. All data were collected and recorded during the patient engagement in Mental Health Day Service, where Cognitive Remediation Training and family interventions were performed.

Results. After nine months of continuative psychosocial interventions combined to psychopharmacological treatments,our patient performed HoNOSRome, BPRS SAPS and SANS, and satisfied Criteria for Functional Recovery from Schizophrenia, although positive symptoms persistence.

Conclusions. Even when a complete remission is not observed, difficult to treat patients could achieve functional and social outcomes thanks to psychosocial interventions combined with a pharmacological approach that should be more tolerable for them, although less effective against symptoms. It is possible that a good functional recovery,even supposing a partial or in complete remission, could bestow to these patients a good quality of life, that should be the aim of every psychiatric and medical intervention.

Key words: clozapine, aripiprazole, add-on therapy, psychosocial intervention, schizophrenia, psychosis, difficult-to-treat patients, recovery, functional recovery

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Introduction

Treatment response in schizophrenia patients should be a multidimensional concept, including clinical and psychosocial outcomes, work ability and cognitive performance [1,2]. Recovery, referring to patients regaining functioning and participating in social and vocational opportunities, is the ultimate goal of

treatment in schizophrenia [3]. Remission is a necessary but not sufficient step toward recovery [4]: it has been defined not as the complete absence of symptoms but rather as the reduction of symptoms with mild disability [5]. As it is known, antipsychotic monotherapy is the first line treatment for schizophrenia [6], but in clinical practice schizophrenic patients' management is usually based on strategies combining pharmacotherapy and psychosocial interventions, a mixture of medical, social (community and family based intervention), and psychological (especially Cognitive-Behaviour Therapy) interventions aimed at the social integration of the patients [7]. Despite combining strategies, many schizophrenic patients are difficult to treat: they could show drug resistance or inadequate response to psychosocial therapies, they could be non- compliant, aggressive and violent [1]. Around 30% of patients are considered refractory to first-line drug therapy due to uncomplete clinical control of positive and negative symptoms [8]. In these patients at least two trials with different second generation antipsychotic drugs have to be attempted before starting to administer clozapine that remains the most effective drug [9] and the only evidence-based medication for treatment-resistant schizophrenia [6]. Notwithstanding there are few studies about psychosocial interventions in resistant schizophrenia, NICE guidelines had recently added recommendation for psychotherapies and family interventions in association with clozapine [6]. We report a case of early onset schizophrenia in a young female patient with a history of several psychopharmacological trials who has been engaged in our Mental Health Day Service. Although a complete remission had not been observed in this patient, improving in both social and instrumental activities of daily life was obtained. We may wonder about the effectiveness of psychosocial intervention in resistant schizophrenia and the possibility of functional recovery in drug- resistant patients even though the clinical remission is partial.

Materials and methods

We report a case of early onset schizophrenia in a young female patient strongly refractory to therapy. All data were collected and recorded during the patient engagement in Mental Health Day Service. BPRS, SAPS and SANS, and HONoS Rome assessment were performed at baseline and after nine months. Plasma levels of clozapine were tested after one year of continuative drug therapy.

Results

A.A., female, 24 years old, university student, with a history of stressful events, came to the attention of our Mental Health Department after several years of medical care at other centers. The psychotic onset occurred at age 17 with ideas of reference, persecutory delusions, auditory hallucinations of sexual content. Positive symptoms improved after treatment with Risperidone 1 mg/day but she became physically and verbally aggressive. After therapy-interruption aggression persisted and academic performance got worse. Afterwards her illness did not respond to or she did not tolerate haloperidol, bromperidol and olanzapine. In December 2014 her disease got worse and she was hospitalized for insomnia, auditory hallucinations, fatuous affect, disorganized symptoms, sinus tachycardia. After a wash out period, a therapy with Clozapine (250 mg/day) was started with little improvement of symptoms. Severe sedation and psychomotor retardation were observed as side effects. The patient came to our center at the beginning of 2015. In an attempt to manage side effects, Clozapine dosage was reduced to 175 mg/day while Aripiprazole was increased to 30 mg/day [10]. Sodium Valproate granulation (500 mg/day) was added to have a greater improvement in symptoms [11]. Sedation and psychomotor retardation improved and there was no worsening of positive or negative symptoms. During this period a Psychodynamic Psychotherapy was started. Despite some initial difficulties since September 2015 she became compliant and sessions were performed once per week. In February 2015 A. engaged in our Mental health day services participating in unstructured activities which included cognitive interviews. In June 2015 The Health of the Nation Outcome Scale HoNOS [12] translated and adapted into Italian: HoNOS Rome [13] was applied to assess the social functioning of our patient and the caregivers distress. HoNOS scale includes also The FACE core assessment used for the routine measurement of disability and clinical outcomes. In August 2016 she started to participate in structured activities including Cognitive Remediation Training [14] and family interventions [15] with a little improvement in symptoms and in her social activities. In February 2016 due to the persistence of auditory hallucinations we decided to monitor blood levels of clozapine [16]. The clozapine plasma concentration was 170 ng/ml, while according to our lab the therapeutic range for treatment of schizophrenia is 100-700 ng/ml.

HoNOS Rome and FACE core were reassessed showing a better performance than earlier tests. Although remission criteria had been not respected, a global improvement was detected by BPRS, SAPS and SANS. Scores were unsatisfactory in items linked to positive symptoms, especially for auditory hallucinations (scores worse than "mild" in every scale).

Discussion

Our patient was considered strongly refractory to drug therapy. According to NICE guidelines [18], she showed inadequate response to at least two antipsychotic drugs (one of the drugs being a non-clozapine SGA) at the maximally tolerated dose within the recommended therapeutic range, in trials lasting six weeks or more [17,4,6], before starting a clozapine trial [18]). Clozapine shows low interaction with dopaminergic D2- and D3-receptors and high affinity towards serotonergic 5-HT2A, 5-HT2C, 5-HT6,

5-HT7, dopaminergic D4, muscarinergic m1- and alpha-1-adrenergic receptors [19]; it remains the most effective drug in non- responsive patients [9] and the only evidence-based medication for treatment-resistance schizophrenia [6].
Although clozapine is the third and last line therapy, up to 40% of previously treatment-refractory patients do not reach a satisfying functional recovery [20-22] and some patients have poor or partial response during clozapine monotherapy [23]. Moreover, some patients should be considered clozapine-intolerant because of the severity of side effects: reversible (but potentially fatal) agranulocytosis requires interruption for clozapine administration, while sedation, fatigue, psychomotor retardation, sialorrhea, metabolic (weight gain, dyslipidaemia) and cardio-metabolic abnormalities need clozapine dose reduction [23-26].
Furthermore, clozapine may induce obsessive-compulsive syndromes [27,28] and seizures and these condition requires dose reduction or a combination strategy [29,30]. Our patient showed several side effects at the beginning of clozapine trial, which prevented an adequate compliance. In order to improve her clinical and psychological conditions, a combination strategy was applied: aripiprazole was added in order to supplement clozapine anti-dopaminergic properties [31]. The antipsychotic selection was based on some evidence that suggest to add to clozapine a second-generation antipsychotics (such as sulpiride, amisulpride, aripiprazole, ziprasidone and risperidone) [32,21,33] in order to prevent serious extrapyramidal and other side effects produced by the combination with first-generation antipsychotics [34]. Due to clinical trials, case reports and literature reviews [19,34-36] suggesting the efficacy of combined clozapine-aripiprazole treatment, Aripiprazole was selected as add-on therapy in our patient. Pharmacokinetic and pharmacodynamic complementary nature of clozapine-aripiprazole might not cause significant interactions. In fact Aripiprazole is mainly metabolised by hepatic cytochrome P-450 CYP 2D6 and 3A4 isoforms, while CYP 1A2 is the major enzyme metabolising Clozapine [37]. This drug acts as an antagonist of positive symptom-related mesolimbic dopaminergic pathways and, conversely, works as a functional agonist of the mesocortical, negative symptom-associated dopaminergic pathways. Aripiprazole is a D2 dopamine receptor partial agonist that shows a neuroreceptorial profile complementary to clozapine, while its partial agonism at 5-HT1A receptors improves anxiety, negative depressive symptoms and especially cognitive dysfunctions, with interesting results in refractory patients [38]. Furthermore add-on therapy with Aripiprazole allows to reduce clozapine dose and improves side effects [34,39]. In addition to side effects preventing a good compliance, A. showed poor response to clozapine: also with a greater dose of drug (250 mg/day) the improvement in positive symptoms was inadequate. Considering that greater dose causes larger side effects, we preferred to administer lower dose of clozapine (175 mg/day) and to combine psychosocial interventions. In fact, an alternative way to treat schizophrenic patients is based on psychosocial intervention strategies: a mixture of medical, social (community and family based intervention), and psychological (especially Cognitive-Behaviour Therapy) interventions aimed at the social integration of the patients [7]. Although there is little evidence assessing the efficacy of combining pharmacological treatments and psychosocial interventions, for many years psychosocial interventions have been a core features of the management of schizophrenia, regarded as essential and integral part of the treatment [40]. Evidences based on clinical practice suggest that a combination of psychotherapy, family therapy and occupational therapy could enhance the effects of pharmacological treatments [41], especially when used in early psychosis [42], and could be effective in the treatment of resistant schizophrenia [43]. Moreover, the updated edition of the schizophrenia guideline recommends psychotherapies and family interventions in acute episode of schizophrenia and in patients with established schizophrenia [6]. There is little evidence about psychosocial interventions in drug-resistant schizophrenic patients, although many studies confirmed the importance of a combined treatment in schizophrenic population. Short-term benefits of psychosocial intervention have been well demostrated in Lieberman's review of literature about early interventions in first episode psychosis, although there is no evidence about long-term improvement in social/occupational disability due to psychosocial interventions delivered early in psychosis [15]. A recent systematic review had found evidence that CBT reduces symptom severity in early and established psychosis but does not effect relapse rates, while family intervention reduces combined hospital admission and relapse rates [42]. At the same time evidences that family interventions combined with individual CBT increase time to relapse have been found, although no effects on relapse rate could be proved [43]. Moreover, cognitive remediation therapies had been shown to improve cognitive, motivational and emotional difficulties, and real world functioning in patients with schizophrenia [44]: CRT combined with other psychosocial interventions could enhance functional outcomes. As it is known, effects of psychosocial interventions could be appreciated after a long period of observation [15]. This may be the reason why we could not observe a sudden improvement in our patient.
Andreasen's working group consensus defined remission as a score of mild, or better, simultaneously on all items of BPRS, or SAPS and SANS, during a period of at least 6 months [4]. Remission criteria were not respected in our patient nine months later the first access to the Daily Center: SAPS showed scores higher than 2 points (corresponding to "mild") in 9/34 items (Tab. I), SANS scores were higher than 2 in 7/25 items (Tab. II), while BPRS scores were worse than mild in 6/18 items (Tab. III). On the other hand, a global improvement of A. performance was noted by the HONoS Rome assessment (there was an improvement in all the items of the HONoS Rome, with the only exception of "Family members' collaboration")

Table I. SAPS.

SAPS	T0 (23-06-2016)	T1 (23-03-2017)	Total score difference
Hallucinations			
Item 1: auditory hallucinations	4	4	0
Item 2: voices commenting	4	4	0
Item 3: voices conversing	4	4	0
Item 4: somatic or tactile hallucinations	0	0	0
Item 5: olfactory hallucinations	0	0	0
Item 6: visual hallucinations	0	0	0
Item 7: global rating of hallucinations	4	3	1
Delusions			
Item 8: persecutory delutions	2	0	2
Item 9: delusions of jealousy	0	0	0
Item 10: delusions of guilt or sin	2	0	2
Item 11: grandiose delusions	1	0	1
Item 12: religious delusions	0	0	0
Item 13: somatic delusions	2	0	2
Item 14: delusions of reference	2	0	2
Item 15: delusions of being controlled	1	0	1
Item 16: delusions of mind reading	1	0	1
Item 17: tought broadcasting	1	0	1
Item 18: tought insertion	1	0	1
Item 19: tought withdrawal	1	0	1
Item 20: global rating of delusions	2	0	2
Bizarre behavior			
Item 21: clothing and appearance	4	3	1
Item 22: social and sexual behavior	0	0	0
Item 23: aggressive and agitated behavior	3	0	3
Item 24: repetitive or stereotyped behavior	2	2	0
Item 25: global rating of bizarre behavior	2	2	0
Positive formal tought disorder			
Item 26: derailment	4	4	0
Item 27: tangentiality	4	4	0
Item 28: incoherence	3	2	1
Item 29: illogicality	3	3	0
Item 30: circumstantiality	2	2	0
Item 31: pressure of speech	1	0	1
Item 32: distractible speech	3	3	0
Item 33: changing	0	0	0
Item 34: global rating of positive formal thought disorder	3	3	0
Tot.	66	43	2

(Tab. IV). In fact, in spite of the persistence of auditory hallucinations, A. became able to manage these voices with the help of the Mental Health Daily Service operators. Through the family interventions, a good participation of her parents had been obtained: this allowed us to achieve a better compliance to pharmacological therapy, reducing effects due to discontinuation use of drugs. Despite the persistence of auditory hallucinations, RCT allowed A. to attend her university class with a medium performance. Also daily functioning and social skills improved.

Table II. SANS.

SANS	T0 (23-06-2016)	T1 (23-03-2017)	Total score difference
Affective flattening or blunting			
Item 1: unchanging facial expression	0	0	0
Item 2: decreased spontaneous movements	0	0	0
Item 3: paucity of expressive gestures	0	0	0
Item 4: poor eye contact	0	0	0
Item 5: affective non responsivity	3	1	2
Item 6: inappropriate affect	4	2	2
Item 7: lack of vocal inflections	0	0	0
Item 8: global rating of affective flattening	2	1	1
Alogia			
Item 9:poverty of speech	0	0	0
Item 10: poverty of content of speech	0	0	0
Item 11: blocking	2	0	2
Item 12: increased latency of response	3	0	3
Item 13: global rating of alogia	3	0	3
Avolition/apathy			
Item 14: grooming and hygiene	4	3	1
Item 15: inpersistence at work or school	5	3	2
Item 16: physical anergia	2	0	2
Item 17: global rating of avolition/apathy	5	4	1
Anhedonia/asociality			
Item 18: recreational interests and activities	3	0	3
Item 19: sexual activity	4	0	4
Item 20: ability to feel intimacy and closeness	5	4	1
Item 21: relationships with friends and peers	5	4	1
Item 22: global rating of anhedonia/asociality	5	3	2
Attention			
Item 23: social inattentiveness	5	3	2
Item 24: inattentiveness during mental status testing	4	0	4
Item 25: global rating of attention	5	3	2
Tot.	69	31	38

According to Lieberman [45], our patient satisfied Criteria for Functional Recovery from Schizophrenia: she presented a good illness self-management, she was able to participate in recreational activities organized by the Daily Center or with family's members, she was improving in independent living skills, in relations with family and in academic performance. In order to prove the regular assumption of the drug therapy, according to literature [16,46-54] we tested the plasma levels of clozapine. This exam could be useful also to explore patient metabolism, involved in the sensitivity to the drug. There is no concordance among studies evaluating clozapine plasma levels: no clear therapeutic interval has been established. Some studies suggest plasma levels higher than 350 ng/ml for clozapine resistant patient. Unfortunately this range is linked to an increased rate of side effects [16,46-54]. Clozapine plasma level in our patient was of 170 ng/ml. This level is considered too low to define resistance to clozapine in schizophrenic patient, but we were unable to increase the dose without worsening side effects and causing distress in the patient.

Conclusions

Schizophrenic patients who do not respond or are considered intolerant to drugs could benefit from psychosocial interventions. Nowadays, the mean goal of schizophrenia treatment seems to be symptomatic remission, that is often achievable only through several pharmacological trials. More often drugs could be

Table III. BPRS.

BPRS	T0 (23-06-2016)	T1 (23-03-2017)	Total score difference
Item 1: somatic concern	5	3	2
Item 2: anxiety	6	5	1
Item 3: emotional withdrawal	4	2	2
Item 4: conceptual disorganization	6	5	1
Item 5: guilt feelings	6	5	1
Item 6: tension	6	5	1
Item 7: mannerisms and posturing	4	3	1
Item 8: grandiosity	2	2	0
Item 9: depressive mood	6	1	5
Item 10: hostility	3	1	2
Item 11: suspiciousness	5	3	2
Item 12: hallucinatory behavior	6	6	0
Item 13: motor retardation	4	1	3
Item 14: uncooperativeness	3	1	2
Item 15: unusual thought content	5	4	1
Item 16: blunted affect	3	3	0
Item 17: excitement	3	3	0
Item 18: disorientation	2	1	1
Tot. (?)	79	54	25

Table IV. HoNOS-ROMA.

HoNOS-Roma	T0 (23-06-2016)	T1 (23-03-2017)	Total score difference
Item 1: deliberately self-harm thoughts or behavior	1	0	1
Item 2A: hyperactive, aggressive, destructive and agitated behaviors	2	0	2
Item 3A: abuse of alcohol or drugs or other addictions, such as gambling	0	0	0
Item 4A: memory, orientation, understanding and thought disorganization	3	1	2
Item 5A: problems (organic / physical / somatic)	1	0	1
Item 6A: hallucinations and delusions	3	2	1
Item 7: depressed mood	2	1	1
Item 8A: other psychological symptoms	3	2	1
Item 9A: relationships with the outside world (family members, partners, friends)	3	2	1
Item 10a: social relationships	4	3	1
Item 11: autonomy in everyday life	3	2	1
Item 12A: work, study or other equivalent activities	4	3	1
Item 13: financial and housing conditions	NV	2	
Item 14: family load	3	2	1
Item 15: enviromental opportunities where he/she lives	0	0	0
Item 16: family members' collaboration	1	1	0
Item 17: case management problems	2	1	1
Item 18: patient's ability to cooperate and to define aims and commitment to achieve them	3	2	1
Tot.	37	24	16

intolerable for patients, due to important side effects. Anyway, these difficult to treat patients could achieve functional and social outcomes thanks to psychosocial interventions combined with a pharmacological approach that should be more tolerable for them, although less effective against symptoms. It is possible that a good

Table IV. HoNOS-ROMA.

HoNOS-Roma(FACE)	T0 (23-06-2016)	T1 (23-03-2017)	Total score difference
Item 1: AL- eating disorders symptoms	1	0	1
Item 2: AN-anxiety, phobias and panic	3	2	1
Item 3: DI-dissociative symptoms	2	1	1
Item 4: MA-high mood and ideation	0	0	0
Item 5: OC-obsessive symptoms and compulsions	0	0	0
Item 6: SE-sexual disorders symptoms	NV	2	
Item 7: SO-sleep disorders	3	1	2
Item 8: SS-somatoform symtoms, somatic and hypochondriacal concerns	1	0	1
Tot.	10	6	4

functional recovery, even supposing a partial or incomplete remission, could bestow to these patients a good quality of life, thats hould be the aim of every psychiatri cand medical intervention. This latter should be object of further studies.

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Can mobile apps enhance the impact of evidence-based psychological treatments for youth with mental illness?

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Summary

Recent advances in digital technology and mobile platforms have widely shown the potential to enrich evidence-based psychological treatments by supporting the remote delivery of therapeutic tools to individuals with mental illness. Compared to in-person approaches, mobile apps offer several benefits that are particularly attractive to youths struggling with mental illness. First, mental health apps enable scheduling flexibility and decrease scheduling burden, thus facilitating accessibility and compliance with intervention requirements and ultimately increasing cost-effectiveness. Second, mental health apps can enhance the quality of treatment by incorporating computerized treatments and innovative methods of communication, and by making treatment adaptive and responsive to dynamic, ecologically valid data. Third, mental health apps can be accessed with greater frequency than in-person treatment approaches for brief therapeutic interactions that help consolidate support and maintain inter-session continuity. Fourth, delivering treatment in real-world settings may support the retention, reinforcement and successful generalization of cognitive and behavioral skills. Finally, mental health apps can include opportunities for remote social engagement, like social networking or direct peer-to-peer messaging. The successful development of a mobile intervention for youth experiencing mental illness requires the coordinated activity of clinical researchers with patients, clinicians and the technology sector. The intervention should emerge in response to a symptom dimension or unmet clinical need, which resonates with the patient group it is intended to serve. Finally, building strategic and appropriately formalized academic-industry partnerships can result in long-lasting digital tools that are more easily adopted and disseminated.

Key words: mobile health, digital psychiatry, intervention development, digital mental health, adolescence

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Conflict of interest
The Authors declare no conflict of interest.

Introduction

The opportunities presented by the rapid expansion of mobile technology for delivering new models of care in people experiencing mental illness have stimulated a surge of interest and pervasively revolutionized the field of treatment development and delivery in mental health [1,2]. In particular, recent advances in software development, communication technology, and health care delivery now offer the unique opportunity to supplement and radically enhance the impact of Evidence-Based Treatments (EBT) for youth with mental illness, including Cognitive Behavioral Therapy, or CBT, Dialectical Behavior Therapy

(DBT), Mindfulness-Based Cognitive Therapy (MBCT), and Acceptance and Commitment Therapy (ACT) [3]. Youths are particularly amenable to using mobile apps to seek information, support, and treatment. With 81.4% of youth with mental illness owning a mobile phone [4], Mental Health Apps (MHA) today allow users to engage with treatment entirely remotely, anytime, anywhere, on their own schedule. Several lines of evidence now indicate that youth with mental illness already use mobile apps to manage their clinical conditions, and that these are acceptable across a range of educational level and clinical characteristics [5]. Most research targeted youth disorders with high prevalence, i.e. depression and anxiety [6,7]. However, several MHA have been developed to target a wide variety of symptoms and/or dimensions, including insomnia, eating disorders and body image disorders, trauma self-harm and suicide prevention, as well as psychotic illnesses and substance-related disorders [8].

It is widely acknowledged that delivering EBT through MHA offers advantages, including ready accessibility, standardized delivery of therapeutic concepts, time flexibility, cost-effectiveness, and convenience [9-12]. Importantly, MHA can help overcome many limitations of in-person psychological EBT, thus promoting the systematic application of skills in the natural environment of patients, and ultimately facilitating the generalization of treatment to real-world settings [13]. As the field proliferates, however, unique challenges emerge [14]. Although several MHA have been shown acceptable and feasible for youth with mental illness, and have demonstrated the potential to improve clinical and functional outcomes [15,16] the majority of these interventions has been evaluated through small and brief pilot studies [17], raising doubts around their impact over longer durations, in more heterogeneous patient groups.

A rush to implementation has been arguably counterproductive for the longer-term adoption of apps by patients and clinicians. However, clinical researchers are fully equipped to lead the development of MHA by identifying specific clinical dimensions or areas of unmet clinical need, for which parameters and key variables can be systematically measured and characterized. The aim of this commentary is to highlight the unique benefits brought by mobile technology into the field of treatment development for youth with mental illness, and to summarize guidelines for researchers and clinicians interested in studying or implementing MHA with their young patients.

State of the art

Access

The increasing ubiquity, affordability and ownership of smartphones among youth with mental illness can help overcome some of the barriers inherent to the delivery of in-person psychological EBT. For example, youth with mental illness is known to be reluctant to use traditional health care services and to experience distress during face-to-face encounters [18,19]. Mobile technology presents the opportunity to enable remote engagement and delivery of care. Similarly, treatment can be delivered through MHA to patients who seek treatment but are unable to come into the clinic, those who live in rural or under-resourced areas where EBT requiring trained therapists- are not available [20], and those who hesitate to approach traditional mental health settings because of stigma, which often interferes with help-seeking behaviors [21]. In sum, MHA may improve access, expand reach, and ultimately address the disparities in healthcare provision in underserved populations, including members of ethnic minorities and individuals living in low-resource settings [22].

Engagement

Psychological EBT often have a high scheduling burden, usually requiring multiple weeks of participation and regular in-person clinic visits. This time commitment can be untenable for young individuals who have to take time off from school for appointments [23], those who study, are employed, have other responsibilities to manage, or are without transportation. The remote delivery of EBT through MHA enables scheduling flexibility and decreases time burden, thus improving accessibility and compliance with intervention requirements, resulting in an increase in cost-effectiveness [24].

Measurement

The portable nature of mobile devices allows for the remote, real-time, and high-resolution capture of clinical and functional variables in ecologically valid settings. Data collection can happen both actively – through self-rated Ecological Momentary Assessments (EMAs) – and passively – using sensors to sample objective markers of social, emotional and cognitive states, with negligible user burden. Of course for active tools such as EMAs need to be acceptable, they need to me meet certain criteria, including: 1) able to be self-administered; 2) short, possibly taking less than a minute; 3) with standardized instructions that are simple and understandable; and 4) easily interpretable for the end-user. Although EMAs and sensors have been shown to increase accuracy, minimize retrospective bias and highlight context-specific relationships of symptoms or behaviors [25], only a few studies to date have used these methods to capture specific manifestations of neuropsychiatric illnesses [26-28].

Treatment generalization

As a matter of fact, psychological EBT for youth with mental illness do not take place within an ecologically valid context, despite exposure (i.e., repeated confrontation of stress-provoking situations without escape/avoidance) [29]

being often one of their founding principles. This is problematic, as the inability to behave as desired in real-world situations is the primary reason why most young individuals seek treatment, and is of critical importance in the clinical presentation of various illnesses, and in diagnostically determining their presence/absence [30]. By feeding back data collected through MHA to the patient and their clinical teams in real time via digital dashboards, it is possible to make EBT responsive to the dynamic, real-time, ecological data in many ways [25]. First, making data available to patients is in and of itself a great opportunity to promote self-management. Second, without requiring local infrastructures, clinicians obtain a thorough characterization of a patient's clinical status and real-world functioning, which can be used to guide the timely delivery of personalized, potentially preventative, care, and to assess its efficacy [31]. Third, although research overall demonstrates positive effects of many psychological EBTs on clinical and real world-functioning functional outcome measures [32-34], not many studies to date routinely collect ecological data to measure the generalization of clinic-based EBT–that is, the application of acquired skills in real-world settings. In sum, MHA have the potential to bridge the translational gap and provide clinicians and patients with a cost-effective assessment tools that could inform strategies to radically transform the delivery of psychological EBT.

Self-guided computerized treatments

Personalized knowledge related to illness management, behavioral techniques, and cognitive remediation are all good examples of EBT that have been digitized and provided dynamically using self-guided modules in the context of MHA [16,35,36]. For example, psychoeducational material that explains the underlying processes central to various forms of mental illness, systematically reinforce skills for real-world role performance, and provides personalized feedback has been successfully deployed across samples of youth with mental illness, and shown to augment the efficacy of existing EBT [37]. Similarly, computerized cognitive remediation – a treatment that leverages implicit learning mechanisms to promote more adaptive processing styles for cognitive and affective stimuli – has been successfully integrated into MHAs and shown to improve cognitive abilities and functional outcomes in various neuropsychiatric conditions [38].

Peer-to-clinician interactions

Providers of psychological EBTs are often restricted in their ability to connect with patients in between sessions. This in turn can limit the capacity for patients to directly apply under supervision the skills learned during the sessions within their real-life scenarios. Methods such as 1:1 Instant Messaging (IM) can be embedded in the intervention to extend the reach of the clinician and facilitate remote communication. Besides consolidating therapeutic alliance and maintaining inter-session continuity, IM is known to be a very effective means to provide patients with opportunities, encouragement, and reinforcement for using the behaviors and skills learned in the clinic and for receiving the appropriate rewards [25,39]. Taken together, these elements are likely to bolster content delivery and support the retention of skills in real-world settings [39]. Although the provision of around-the-clock communication support has potential to improve the impact of psychological EBTs and even prevent relapse or suicide, it also introduces practical and ethical dilemmas, such as extended availability and liability issues for involved mental health professionals. To mitigate these concerns, specific regulations and protocols for safety are being currently developed [14].

Peer-to-peer support

Youth with mental illness are interested and willing to engage in online peer-to-peer interactions, a form of social interaction that has been described as one of the most transformational features of the Internet [40]. Online support groups, forums, and chat rooms help youth with mental illness establish new relationships, maintain relationships, and reconnect with people, and are important venues for disclosing personal experiences, challenging stigma, reducing the feeling of isolation and building hope, cultivating support through reciprocity and exchange, sharing coping strategies, or seeking and sharing information related to symptoms and medications [41,42]. However, online peer-to-peer interactions can pose numerous risks, including cyberbullying [43], addictive behaviors [44], greater social withdrawal and avoidance [45], increased anxiety, low self-esteem, psychological distress, and depression [46-48]. By means of direct peer-to-peer 1:1 or group IM [13], the reach of peer-support can now be feasibly integrated into MHA and extended beyond the clinical setting, becoming an important source of nonprofessional support [49]. The shortage of peer-based MHA is presumably attributable to a lack of knowledge about how to develop a social network for clinical use and, in particular, about which structural elements (identifiability, privacy, and moderation) and user characteristics (symptoms, cognitive abilities, motivation, and insight) are associated with more positive outcomes. However, a recent review on MHAs that have enabled peer-to-peer support among youth with mental illness found that, as long as the digital environment is secure and online interactions are regularly monitored and moderated by trained professional, the benefits of online peer-to-peer support seem to outweigh the concerns [50].

Developing and testing an app for youth with mental illness

How do we optimize the process of designing effective digital solutions in a timely, cost-effective manner? Which clinical dimensions do we target? How do we create

clinical interventions that adapt to a shifting technological landscape, while retaining their core functionality? The goal of this section is to offer some of the lessons learned throughout the process of developing and testing digital health tools in patients with psychiatric illnesses [16,51,52].

Development

MHA are likely to be adopted for long-term use only if they provide intrinsic value for the user in managing their condition, or improve critical aspects of their functioning and well-being. Engaging key stakeholders (patients, clinicians, research experts, and designers) to participate in user testing, interviews, simulations, and mock-ups during iterative, is critical to building MHA that are acceptable and likely to be disseminated successfully on a large scale [13]. Additionally, establishing interdisciplinary collaborations that harness the expertise of clinicians, patients, data scientists, software engineers and user experience designers is critical in ensuring that an intervention meets scientific and technical standards. Fostering trusted, multidisciplinary networks greatly enhances the development process. However, traditions of scientific independence, difficulties in sharing implicit knowledge and organizational barriers can form obstacles to collaboration. Employing "team science" principles [53] – scheduling meetings and initiatives to promote interdisciplinary dialogue, and ultimately the formation of a collective knowledge base – can help to align objectives and nurture effective collaborations. Before any work begins, it is essential that agreement is reached between collaborators on issues of payment, academic credit, authorship, intellectual property, and data ownership, storage and security. Finally, a key objective for the field is developing MHAs which are affordable and acceptable for extended use, and allow interoperability between mobile operating systems in order to maximize the reach and generalizability of the intervention. It is preferable to rely on existing mobile platforms that are in general use, provided they meet the needs and goals of the study, are secure, and compliant with ethical and clinical governance structures [16]: advantages include a significant reduction in costs and the possibility to promptly test the feasibility and acceptability of the technology in the clinical population. However, researchers have very little control over the development process, and may need to adapt the intervention to the rapidly changing features of the digital tool, in turn creating problems with consistency of study procedures and replicability of findings.

Testing

To date, several MHA for youth with mental illness have shown promise in improving several outcomes, including symptoms, quality of life, social connectedness and support, socialization, perceived stress and empowerment [7,8,54]. However, study methodology and trial reporting are generally poor. Further, validated assessments and appropriate clinical trial procedures that encompass follow-up periods need to be consistently implemented across studies. Given that the rapid developments in the available technology may make the original product obsolete and uncompetitive by the time the trial is over, traditional RCTs may not be the most effective way to test the efficacy of MHAs. Instead, well-conducted, properly powered clinical trials that incorporate novel analytical methods and designs – including sequential, multiple assignment, randomized trial (SMART) methods or stepped-wedge research designs – may be more useful in determining the efficacy of MHA [55,56].

Conclusions

Each point discussed above relates to the production, delivery and evaluation of mental health apps for youth with mental illness. The field of mobile mental health research will certainly continue to face many challenges including: 1) understanding new types of data; 2) transitioning from studies of feasibility to those of effectiveness; 3) integrating MHA existing clinical infrastructure; 4) ensuring privacy and security; and 5) promoting equity in access to mental health services and hopefully reducing disparities in mental health outcomes. To address these issues, we cannot encourage enough a closer collaboration between academic and industry to fuse the advantages of supported technologies with the collection and interpretation of clinical-quality data. As technology progresses, new opportunities will arise to develop, deliver, and evaluate apps for youth with mental illness. We believe that, in this rapidly evolving landscape, apps that will continue to thrive are those meeting clinical and scientific standards, capable of integrating seamlessly into the user's everyday life in the long term, and ultimately valued by patients and clinician.

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Depression and gender: towards tailored medicine

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Summary

Since puberty, depressive disorder is about 2 times more frequent in women. the gender prevalence gap begins in adolescence, decline and remain stable in adulthodd and then recurred in later life with a second peak in perimenopausal period. Moreover depression in women has clinical and course peculiarities. A general consensus sees a multifactorial etiology for gender differences in depression. Sociological studies emphasize the role of poverty, violence and gender inequality. Biological theories focus on genetic predisposing factors and hormonal status. The most widely accepted model is the "stress and vulnerabilty" model according to which genetic vulnerability (biological factor) influences temperament (affective vulnerabilty) which shoul lead to negative cognitive styles (cognitive vulnerability) increasing the risk of depression. Finally, there are known gender differences in drug pharmacokinetics as well as specific drug response profiles based on gender.

Key words: depression, gender, etiopathogenetic hypotheses, life stages in women

Introduction

A World Health Organization study on "depression and other mental disorders" published in 2017 revealed that around 300 million people worldwide are suffering from depression, with an increase of over 18% between 2005 and 2015 [1]. In fact, WHO classified depression as the world's leading cause of disability after cardiovascular disease.

Epidemiological studies on samples from different countries show that, since puberty, depressive disorder is about 2 times more frequent in women [2]. In a review by Ferrari AJ et al., the global 12-month prevalence of major depression was 5.8% in women and 3.5% in males [3]. In Italy 5.5% of the population suffers from major depression, with a clear female prevalence in a 2:1 ratio [4]. According to the recent ESEMeD (European Study of the Epidemiology of Mental Disorders) study, in Italy the lifetime prevalence of MD and dysthymia is 11.2% (14.9% in women and 7.2% in men). In the 1970s, Myrna Weissman was the first to review the evidence for differing rates of depression between the sexes [5]. In an article, Hankin et al. [6] noticed that gender difference in depression first began to emerge between the ages of 13 and 15 and then become even more significant between ages 15 and 18. Salk et al. (2017) [7] conducted two meta-analyses, each including more than 1.7 million subjects, taking into consideration not only the categorical diagnosis of major depression but also the dimension of "depression symptoms". The estimate of the weighted mean effect size for the gender difference in major depression was OR = 1.95, whereas the estimate for the gender difference in depression symptoms was Cohen's d = 0.27. The

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study also confirmed that the gender prevalence gap begins in adolescence, earlier than previously reported in the literature (OR = 2.37 at age 12). The gap then declined and remained stable in adulthood, and then recurred in later life with a second peak in the perimenopausal period.
A general consensus sees a multifactorial etiology for gender differences in depression [8], but the difficulty in defining precise pathophysiological mechanisms can be partly attributed to the heterogeneity of clinical samples. Generally, the sample is recruited taking into account DSM or ICD diagnostic criteria. According to DSM 5, the diagnosis of major depressive disorder (MDD) requires the presence of at least 5 of 9 possible symptoms during the same 2-week period and includes: 1) anhedonia; or 2) depressed mood, or both. Other criterion symptoms include: 3) insomnia or hypersomnia; 4) changes in appetite or weight; 5) changes in psychomotor status; 6) fatigue or loss of energy; 7) worthlessness or guilt; 8) diminished concentration or indecisiveness; or 9) suicidal thoughts or behaviors. Using these criteria, it is possible to have an extremely high number of combinations (up to 227), configuring clinical pictures which are also very different from each other but equally diagnosed as MDD [9]. This sample heterogeneity can explain, at least in part, sometimes inconclusive or contradictory results from different studies.
This review aims to report the most recent literature data on the possible causal factors underlying the different gender prevalence of depression, the different clinical presentation and response to drug therapy in the perspective of precision medicine.

Materials and methods

A systematic search of articles on Pubmed, using as sarch terms “gender and depression” “gender and treatment response” “epidemiology of gender and depression”, has been carried out from 1977 to today. We selected articles that recruited a sample of patients defined as depressed according to DSM and ICD 10 classifications, with or without comorbidities.

Etiopathogenetic hypotheses

Sociological theories

Sociological studies emphasize the role of poverty, violence and gender inequality [10]. The woman is often in a disadvantaged socio-working position, with even lower incomes on equal working conditions. It is most often exposed to violence and mistreatment, often in the domestic environment, which negatively affect not only mental health, but also physical health in a global sense. It has been estimated that complicances deriving from abuse are greater than those deriving from diabetes or hypertension. The lifetime prevalence of violence against women fluctuates between 16 and 50%; one in five women are subjected to an attempted rape or to a rape during lifetime.
Another fact is the higher frequency of mobbing phenomena reported by women with respect to men [11]. A possible explanation could be that women tend to live social and work relationships with greater affective and emotional participation than men, thus increasing their exposition to reasons of suffering. Interestingly, married women are more affected by depression than men, who are more vulnerable in a single condition (WHO 2002). A study that included 18 countries in the WHO World Mental HEalth Surveys [12] found no significant gender gap in major depression in high or medium-low income countries, suggesting that economic development does not explain the variability of cross-national gender differences [4]. Instead, Salk et al. [7] showed larger gender differences in depression in wealthier countries (OR = 2.00) compared to low- to middle-income countries (OR = 1.82). According to some authors there is a basic bias, which consists in the greater aptitude of women to ask for help, thus explaining the finding of higher prevalence of depression in the female sex. However, in the light of scientific evidence, such hypothesis alone cannot justify this epidemiological difference [13].
Hyde JS et al. support the “stress and vulnerability” model, which seems to be the most widely accepted interpretation [8]. It integrates biological, cognitive and affective factors and tries to provide a model for understanding the gender differences in depression observed in childhood. Simplifying, genetic vulnerability (biological factor) is presumed to influence temperament (affective vulnerability), which in turn should lead to negative cognitive styles (cognitive vulnerability), causing an increased risk of depression in adulthood.

Biological theories

Biological vulnerability includes both genetic predisposing factors and hormonal factors.
As for genetic factors, recent studies have analyzed gene expression, finding that over 6,500 genes are expressed differently in men and women in several tissues and organs, and most of them are not directly related to reproduction and sexuality [14]. As expected, the differences in expression were very marked in breast, musculoskeletal and subcutaneous adipose tissues. But what happens in depression? a significant gender difference was found in the role of the serotonin transporter in modulating affective disorders. The s allele of 5-HTTLPR seems to be differently associated with an increased risk of depression, depressive symptoms, anxiety traits and symptoms (instead, in men the same allelic pattern appears to be associated with aggressiveness and conduct disorders). These differences begin in adolescence and are not consistent among the elderly, suggesting a modulatory role of hormonal fluctuations [15]. The polymorphism of the

promoter region of the 5-HT transporter gene ("short", s allele - and "long", l allele) leads to a different functioning of the serotonin transporter and to a different response of ACTH to stress.
A metanalytic study [16] was carried out on gene expression of depression across 3 specific brain regions: dorsolateral prefrontal cortex, subgenual anterior cingulate cortex and basolateral amygdala. In the comparison of differential gene expression in men and women with major depression, 633 of 706 transcripts were present only in men and 809 of 882 only in women. Only 73 genes (21+ 52) were expressed differently in depressed patients (compared to healthy controls), men and women. Of these, however, 52 were expressed in the opposite direction (up/down regulated) in males and females. Therefore, only 21 genes were implicated with the same "polarity" in male and female depressed patients.
Regarding the influence of hormonal profile, the correlation between fluctuations of female sex hormones and windows of vulnerability for depression is evident [17]. The woman has windows of vulnerability for depression in puberty, in the premenstrual phase, in the postpartum and in perimenopause, assuming a critical role of sex hormones. The brain is one of the major targets of sex hormones. Estrogens, in particular, play a complex role at CNS level: they modify the permeability of the blood brain barrier, selectively increase brain flow and the availability of glucose and oxygen, act on neurotransmitter synthesis and release, on the expression of receptors and stimulate neuronal plasticity [18,19].
The hippocampus, for example, has a central role in mood regulation and higher cognitive functions, and shows a high expression of estrogen and progesterone receptors. The administration of these hormones increases the density of dendridic spines and modulates the activity of a series of neurotransmitters through various mechanisms: interactions with receptors, transporters and enzymes involved in their synthesis [17]. Among the various interactions we can mention, for example, the upregulation of the expression of AMPA and NMDA receptors, the reduced function of the 5-HT1A receptor, and the reduced expression and activity of SERT [18]. These interactions are important, because the activity of excitatory synapses in the hippocampus is associated with depression, and is in turn influenced by the action of antidepressants and serotonergic signaling [20].
The prefrontal cortex (PFC) is the area responsible for cognitive processing of impulses: it affects the emotional tone and the reward circuit, as well as the ability to control a stressor or the pleasantness of a stimulus [21]. Estrogen levels are related to the activation of PFC and the modulation of emotional processing and fear extinction. For example, estrogen therapy used in menopause increases PFC activation [22].
The nucleus accumbens (NA) is a key area in the etiology of depression and regulates the reward circuitry. Depressed patients have reduced volume in NA and impaired ability to activate the reward circuitry [23]. Gender dimorphism was found in this area. The dendridic spine density remains homogeneous along the rostral/caudal part of NA in males, whereas in females there is a gradient with an increase in spine synapse density in the more caudal regions [24]. In general, dopaminergic tone is chronically higher in males and this leads to a downregulation of its activity: therefore, when the release of dopamine is stimulated, the relative increase is less in males than in females. In addition, in males there is a greater expression of DA-ergic receptor at the mesolimbic level. In fact, estrogens cause a downregulation of D2 receptor in female striatum [25].

Role of life stages in women

As further confirmation of the influence of hormonal fluctuations on mood in the woman's life stages, **pregnancy**, **childbirth**, **puerperium** and perimenopause are high risk factors for the onset of affective disorders, as shown by several scientific studies. In many women the severity of depressive symptoms worsens in the premenstrual phase [26]. In the STAR*D study, 66% of women reported worsening symptoms at this stage [27]. In addition, this was associated with longer depressive episodes and shorter relapse latency. It is estimated that in our country over 90,000 women suffer from depressive disorders and anxiety in the perinatal period (pregnancy, puerperium and the twelve months following childbirth). About 16% of women are affected in the period of maternity, from 10-16% to 14-23% in pregnancy, and from 10-15% to 20-40% in the postpartum period. These are very rough estimates, because symptoms are frequently underestimated by both patients and clinicians and only in about half of the cases the disorder is recognized and given adequate treatment.
Cohen et al. [28] examined the impact of the transition to menopause on depressive symptoms in 460 women without a history of major depression in the age range 36-45. During the three years of follow-up, the menopause group, especially women with hot flashes, was twice as likely to develop significant depressive symptoms as women who remained premenopausal; mood disorders occurred in 9.5% of pre-menopausal women and in 16.6% of perimenopausal women. All these studies have used rigorous, standardized criteria to make psychiatric diagnoses, and their results lend strong support to the hypothesis of an increasing vulnerability for a major depressive episode that occurs at the time of menopause.
In addition to the onset of "de novo" depression, perimenopause is a risky phase also for depression relapses. In this stage of life, mood disorders and insomnia are reported in about 75% of women and this is associated with an increase in suicidality.
A recent branch of research has focused attention on inflammatory and autoimmune processes in women as vulnerability factors for depression and themselves as phenomena with a clear female prevalence [29]. Talking about inflammation leads to talking about immunity and

autoimmunity. In women there is a greater population of innate immune system cells and a more intense response to inflammatory processes, with greater production of pro-inflammatory cytokines. This is associated with a lower incidence of bacterial infections and greater response to vaccines. Various published studies demonstrate the correlation between proinflammatory cytokines and depression. The hypothesis supported for example by Rainville [30] is that a stronger immune reaction in females leads to a higher incidence of autoimmune diseases. At the same time, a correlation was found between autoimmune diseases and mood disorders in females.
Furthermore, there are a series of biological effects induced by gender difference, which include: the effects of genes located on sex chromosomes, of gonadal steroids during development, of sex hormone exposure during life, as well as the effect of parental stress before birth [31,32]. All these effects have an impact on the subsequent development of depressive symptoms and the different regulation of stress in males and females.

Clinical aspects of depression as a function of gender

In addition to the evidence of higher prevalence, depression in women has clinical and course peculiarities which make specific etiopathogenetic factors plausible [33]. Atypical symptoms such as hypersomnia, hyperphagia and mood hyperreactivity are more frequent, as well as greater vulnerability to stress and longer duration of episodes, higher relapse and chronicity rates [34,35]. Seasonality also seems more frequent. Regarding the age of onset, some studies report an earlier onset of depression in women [36]. Compared to men, suicide attempts are more frequent, but are less lethal [37]. Comorbidity with anxiety disorders is very frequent, whereas men more often experience substance and/or alcohol abuse [38,39]. In womens, somatic symptoms, asthenia/fatigue, symptoms of pain and changes in sleep profile and appetite are more represented. Hyperphagia and craving for carbohydrates can be seen as strategies for emotional regulation and stimulation of endogenous endorphin system [40]. With regards to coping strategies, women tend to have internalizing modalities, men externalizing modalities. Rumination, chronic negative circumstances or strain, and a low sense of mastery have each been found to be more common in women [41]. Finally, there is a greater inheritance for MDD in women, suggesting greater genetic vulnerability [42].

Different response to drug treatment

There are known gender differences in drug pharmacokinetics (absorption, bioavailability, distribution and elimination), but generally no particular dosage adjustments are required between males and females. However, there are some variables that need attention. An example is the greater percentage of adipose tissue in women: given their lipophilic nature, antidepressants have affinity for adipose tissue and therefore have greater volume of distribution in women [43]. Women have less acid secretion and slower gastric emptying. Gastric motility is often slowed down by female sex hormones, reducing the clearance of antidepressants. The physiological changes that occur during the menstrual cycle can influence gastric emptying, reduce acid secretion and transit time, thus influencing drug absorption and elimination. For example, during premenstrual phase a reduction in circulating levels of antidepressants such as desipramine, trazodone and nortriptyline has been demonstrated [44]. During pregnancy, liver metabolism increases, protein binding decreases and intestinal motility increases, therefore it is necessary to increase antidepressant dosage, especially in the second trimester. Furthermore, oral contraceptives can alter liver circulation, affect metabolism and plasma levels of some drugs. Estrogens have an inhibitory effect on some microsomal enzymes, increasing blood levels of the drugs metabolized by these enzymes.
Concerning the different response to drug therapy, the hypothesis of a gender difference in the response to imipramine was postulated a few decades ago [45]. A meta-analysis of 35 studies published between 1957 and 1991 confirmed that men respond better to imipramine than women [46]. Another study found that women, especially with atypical depression and panic disorder, respond better to IMAO, whereas men respond better to tricyclics (TCA) [47]. Kornestein et al. [36] showed a better response of women to sertraline than imipramine, and vice versa for men. In addition, men responded to imipramine much faster than women (8 weeks vs 10 weeks). Another interesting observation was that premenopausal women responded more to sertraline than imipramine, while in postmenopause the response was similar. Furthermore, dropouts were greater in women during treatment with imipramine and in men with sertraline. Another study in favor of SSRI *vs* TCA in women [48] showed a better response to paroxetine than imipramine. An explanatory hypothesis of these evidences could be that women more frequently have atypical forms of depression and comorbidity with anxiety disorders, and therefore have better responses to SSRi or IMAO, whereas men have a prevalent neurovegetative component, that responds more to TCA [49]. Another hypothesis is that female sex hormones interfere with the drug response: in fact, various studies demonstrated the interaction between estrogens and serotonergic activity [50]. A double-blind study carried out in 2,045 patients with depression investigated the different response to SSRIs or venlafaxine based on age and gender. Overall, the 8-week response was higher for venlafaxine than SSRi, probably for the dual mechanism; no gender difference in response was identified. Likewise, no significant gender difference was seen for SSRi. A subsequent analysis took into consideration the group of female patients by dividing the sample based on age (greater or less than 50 years as an approximate indicator

Tabella I. Factors that may contribute to gender differences in antidepressant efficacy [52].

• Liver metabolism
• Physiological and hormone level changes during puberty, menstrual cycle and menopause
• Body fat and volume of distribution
• Gastric emptying, acid production and splanchnic blood flow
• Plasma volume, protein binding and enzymatic activity
• Drug clearance
• Adherence
• Side effect profile
• Interactive effects of estrogen and serotonin on brain
• Function of brain monoamines

of pre- and post-menopausal phase). The results showed that younger women responded better to SSRi than older women, whereas venlafaxine was more effective in older women [51]. The effect of hormone replacement therapy (HRT) on the response to antidepressant therapy was also studied: it was found that HRT did not increase the response to venlafaxine, while improving the response to SSRI (remission rate of 35% in those treated with both SSRI + HRT, compared to 27% in those treated with SSRI alone) (Tab. I).

Conclusions

Despite the evidence reported above, there are still significant difficulties in changing clinical practice and particularly in influencing health policies, even if the panorama was enriched last year of the birth of the first women's Macedonio Melloni hospital in Milan.

Much has moved in recent years to study health topics and issues that mainly concern women (oncological, cardiological, neurodegenerative, autoimmune, sexual, reproductive, climacteric, metabolic and psychic diseases). Foundations such as ONDA (the Health Observatory of Women and Gender) continue to develop, raise awareness of and promote gender health culture, as well as to stimulate scientific and clinical research.

In this context, our experience of the Study Center for the Prevention and Treatment of Depressive Disorders in Women, started over 15 years ago, has allowed us to develop a unique and experienced model of prevention of perinatal depression with a newly-establishing Mother-Baby unit. The Center is also active in the areas of Premenstrual Syndrome, Premenstrual Dysphoric Disorder and Perimenopause, as well as of depressive and anxiety disorders.

In the field of clinical diagnostics and treatment, much still remains to be done to ensure that therapies are highly individualized and personalized (tailored), overcoming the tendency, also present in psychiatry, of overly standardized therapeutic settings, not really inclined to the complexity and articulation of specific factors of the disorders.

It is necessary to collect more and more specific clinical and treatment data and promote the research and awareness of health workers, institutions and population to give a boost to this indispensable and unavoidable cultural change, that will allow greater recognition of the effectiveness of treatments in the perspective of improving health.

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Features of a migrant sample in the Psychiatry Ward, Novara, Italy: focus on language proficiency

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Summary

Objectives. Migrants may experience barriers, including language, in the access to psychiatric care and this may result in a higher rate of utilisation of emergency services. The aim of this paper is to describe real-world data of a sample of migrants admitted to our Psychiatry Ward, with a specific focus on language proficiency.

Materials and methods. We included migrant patients admitted to the Psychiatry Ward of the Maggiore della Carità Hospital (Novara, Italy) from January 1st, 2016, to December 30th, 2019. We recorded personal data, anamnestic data, data about current inpatient admission, data related to migrant status. Patients were assessed at admission (T0) and discharge (T1) with two outcome scales (Health of the Nation Outcome Scales - HoNOS and Clinical Global Impression - CGI). Italian-Language Proficiency (LP) (comprehension and spoken) was assessed for each patient.

Results. 145 migrant patients were admitted to our Psychiatry Ward, in most cases after an access to the Emergency Room (74.48%); 26.21% were compulsory admissions; patients' mean hospital stay was 10.39 days. The main diagnosis at discharge, according to ICD9 criteria, were Schizophrenia (33.10%), Personality disorders (18.62%) and Neurotic or stress related disorders (17.24%). After the assessment of LP, patients were subdivided in two subgroups: high LP (HLP, N = 68) and low LP (LLP, N = 77). These two subgroups presented differences in diagnosis, therapy, educational level, employment status, reason for migrations, necessity for cultural mediator, number of years in Italy and scores at the outcome scales both at T0 and T1.

Conclusions. The present preliminary findings support the expected importance of LP among immigrant psychiatric inpatients. Further investigations are needed to deepen knowledge on this topic.

Main implications: the present work supports the importance of migrants' mental health in the real-world setting. In particular, psychiatrist working in acute settings should be prepared to manage migrant patients and to collaborate with cultural mediators in order to make a correct diagnosis and to implement adequate treatment interventions. The importance of language proficiency should not be overlooked because it may represent a significant barrier, influencing access to healthcare services, therapeutic adherence and clinical outcome.

Key words: migrants, language proficiency, transcultural psychiatry, acute psychiatric patients

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Conflict of interest
The Authors declare no conflict of interest.

Introduction

Healthcare professionals are working in a world which is becoming increasingly multi-cultural, therefore, in the last years, interest has raised regarding migrants' healthcare needs and use of resources, also in the field of mental health. Compared to natives, migrants may show higher rates of mental disorders and, at the same time, a lower use of mental health services [1-4]. While culture certainly plays a role in the presentation of psychiatric illnesses, in migrant populations biological, psychological and social factors are involved as well in the differences in incidence and prevalence of psychiatric disorders. Migrants and refugees of all ages may have complex stories of war, torture, critical migratory journeys: pre-migration trauma is predictive of mental disorders, but the post-migration context can play a relevant role regarding mental health, as well [5,6]. For instance, migrants have been reported to be more vulnerable than natives to psychosis, post-traumatic stress disorder (PTSD) and suicidal behaviours. Despite these facts, migrants may experience many obstacles in the access to healthcare services and this may result in a higher rate of utilisation of emergency services which are frequently the first place for help-seeking, also for non-urgent reasons. The Emergency Room may be the place where the first contact with a mental health professional has place, and migrants may be admitted to the Psychiatry Ward in the General Hospital in an urgent or coercive way, because of acute or severe psychopathological conditions[7,8]. Psychosocial approaches targeting the life conditions of migrants, refugees and asylum seekers should start since the early phases of care, avoiding the achievement of an emergency condition [5,9].

One of the barriers to healthcare is language knowledge [10], which is especially important for mental health care, since diagnosis as well as treatment greatly rely on interpersonal verbal communication. Poor language proficiency (LP) may limit migrants' cultural and social adaptation in the host country and may also contribute to risk for, or manifestations of, psychiatric disorders [11-15]. On the other hand, poor LP may reduce the likelihood of migrants' access to health services [15,16], and leads to misdiagnosis, because it may hinder clinicians' understanding of the patients' speech and overall situation. Finally, language barriers may lead even to a wrong use of the psychopharmacologic treatment[11]. For all these reasons, the need for a close collaboration among clinicians and cultural mediators and/or interpreters should be emphasized [17-19].

Many unaccomplished clinical needs still remain in this field, which warrants more research to deepen the understanding of these complex topics, and to help in the assessment and care of patients with different cultural backgrounds. Therefore, this paper aims to describe real-world data about the clinical and socio-demographic features of a sample of migrants admitted to our Psychiatry Ward, with a specific focus on the issue of language proficiency.

Materials and methods

The study sample included migrant patients admitted to the Psychiatry Ward of the Maggiore della Carità Hospital, Novara, Italy, from January 1st, 2016, to December 30th, 2019. No inclusion or exclusion criteria were adopted. Data were retrieved from clinical charts and clinical assessments; with more detail, the following information was recorded for each patient: personal data (gender, age, country of origin, marital status, children - if any, educational level, housing status, working status, religion, social support); anamnestic data (family history of psychiatric disorders; personal history of comorbidities, substance or alcohol abuse, previous hospitalizations; psychiatric history in the country of origin, being in charge of Italian psychiatric services and/or social services); data about current inpatient admission (number of days spent in the psychiatry ward, compulsory or voluntary treatment, type of access to the hospital, comorbidity with substance abuse, diagnosis at discharge according to ICD 10 criteria, pharmacological therapy); data related to migrant status (reasons for migration, years spent in Italy, residency permit, the necessity of a cultural mediator during hospitalization).

Furthermore, patients were assessed at admission (T0) and discharge (T1) with the Health of the Nation Outcome Scales (HoNOS) and Clinical Global Impression (CGI). The CGI scale was developed by the National Institute of Mental Health (NIMH) to allow, in clinical trials, a brief clinical evaluation of the patient's overall functioning before and after treatment [20]. The HoNOS scale was created in 1993 in England as part of the Royal College Research Unit's "Health of the Nation" project for the evaluation of the results of mental disorder treatment in adults; the Italian version was validated in 2001 [21].

Last, Italian Language Proficiency (LP) (comprehension and spoken) was assessed for each patient: two different psychiatrists rated level of language knowledge on a Likert scale ranging from 1 (very poor knowledge) to 10 (very good knowledge); in case of discrepancy, this was resolved through discussion with a third psychiatrist, to reach a shared score. Based on the LP median scores, patients were then divided into two subgroups: Low Language Proficiency (LLP), with a score equal to or below the median, and High Language Proficiency (HLP), with a score above the median. Quantitative data were presented as mean values, while categorical data as absolute frequencies and percentages. Comparisons between the LLP and HLP groups were performed with the Mann Whitney test, while categorical data were compared using the Fishers' exact test. The level of statistical significance was set as $\alpha = 0.05$. Software used for statistical analysis was GraphPad Prism 6.

The work has been performed in accordance with the principles of the 1983 Declaration of Helsinki; the need for a local ethics board permission was waived as the study was observational and included nothing beyond standard clinical practice and routine assessments.

Results

During the study period, 145 migrant patients (9.96% of the 1456 total psychiatric inpatient admissions) were admitted to our Psychiatry Ward: N = 37 (25.51%) in 2016, N = 34 (23.44%) in 2017, N = 39 (26.89%) in 2018 and N = 35 (24.13%) in 2019.

Personal data

The sample included N = 73 (50.34%) males and N = 72 (49.66%) females; overall, the sample mean age was 37.69 years (age range: 16-81 years, standard deviation: 13.02). Patients' Countries of origin were grouped as follows: European Union (N = 52; 35.86%); North Africa (N = 20; 13.79%); Southern-Central Africa (N=19; 13.10%); Europe (no European Union) (N = 14; 9.65%); North America (N = 11; 7.59%); Middle East (N = 11; 7.59%); Central America (N = 10; 6.89%); Western Africa (N = 6; 4.13%); East Asia (N = 1; 0.69%); Central Asia (N = 1; 0.69%).

Regarding marital status, N = 71 (48.96%) patients were unmarried, N = 54 (37.24%) married, N = 20 (13.79%) divorced or widowers; N=76 (52.41%) patients had children. The distribution for educational level was the following: N = 71 patients (48.96%) had a primary school licence, N = 45 (31.03%) a secondary school one and only N = 13 (8.96%) had a degree; this information was not available for N = 16 patients (11.03%).

Most patients (N = 102; 70.34%) lived in their own home, while N = 24 (16.55%) lived in therapeutic communities, N = 13 (8.96%) were homeless and N = 6 (4.14%) lived in the house where they worked as a caregiver. In the Country of origin, N = 101 (69.65%) patients were employed or students; this information was missing for N = 24 patients (16.55%). Nonetheless, at the time of hospitalization, N = 75 (51.72%) patients were unemployed even though most of them (N = 118; 81.38%) had previously been employed or students in Italy.

Regarding practised religion, most patients were Catholic Christian (N = 62; 42.76%) and Muslim (N = 37; 25.52%); a minority of cases were Orthodox (N = 10; 6.89%), Hindus, Buddhists, Jews (only one patient each), N = 12 patients (8.27%) were atheist. This information was not available for N = 21 patients (14.48%). More than half of patients (N = 89; 61.38%) had a family or friends support network at their arrival in Italy: this information was missing for 20 patients (13.79%).

Anamnestic data

Only N = 25 patients (17.24%) reported a family history of psychiatric disorders (this datum was unknown for N = 12,8.27%). Comorbidity with medical illnesses were reported by N = 34 patients (23.45%). There was a history of drug or alcohol abuse and at least one previous psychiatry ward admission in N = 59 (40.69%) patients and N = 74 (51.03%) patients, respectively. Most patients (N = 106; 73.10%) had no previous psychiatric history in their countries of origin. N = 77 (53.1%) and N = 33 (22.76%) patients were already treated in Italy by Psychiatric Services and by Social Services respectively; N = 26 patients (17.93%) were treated by both.

Data about current inpatient admission and inpatient treatment

Admission to the Psychiatry Ward happened after access to the Emergency Room in most cases (N = 108; 74.48%); following a psychiatric outpatient visit at the Community Mental Health Centre for N = 20 patients (13.79%); after transfer from another hospital in N = 13 cases (8.96%); and N = 4 (2.76%) in other ways (for instance, sent by their psychiatrist). Admission was on a compulsory basis for N = 38 patients (26.21%), and voluntary in all other cases. In N = 48 cases (33.10%) patients had a current comorbid substance abuse (cannabis in N = 39; poly-abuse in N = 9 patients) and in N = 36 cases (24.83%) a current comorbid alcohol abuse. Patients' mean period of hospitalization was 10.39 days (range: 0-40 days, standard deviation = 7.76). The main diagnosis at discharge, according to ICD9 criteria, are presented in Table I.

Regarding psychopharmacological treatment at discharge, antidepressants were prescribed to N = 42 patients (28.96%), mood stabilizers to N = 21 (14.48%), first-generation and second-generation antipsychotics to N = 54 (37.24%) and N = 34 (23.44%) patients, respectively. N = 45 patients (31.03%) were discharged after receiving a first generation (N = 33; 22.76%) or a second generation (12; 8.27%) long-acting injectable (LAI). Last, N = 7 patients (4.82%) were discharged without any prescription of psychopharmacological treatment.

Table I. Diagnosis at discharge according to ICD9 criteria.

Diagnosis (ICD9)	N (%)
• Schizophrenia, schizotypal and delusional disorders	48 (33.10%)
• Disorders of adult personality and behaviour	27 (18.62%)
• Neurotic, stress-related and somatoform disorders	25 (17.24%)
• Mental and behavioural disorders due to psychoactive substance use	20 (13.79%)
• Mood (affective) disorders	17 (11.72%)
• No diagnosis of psychiatric disorder	3 (2.07%)
• Mental retardation	2 (1.38%)
• Organic, including symptomatic, mental disorders	2 (1.38%)
• Behavioural syndromes associated with physiological disturbances and physical factors	1 (0.69%)

Data related to migrant status

Reasons for migration to the host country included job search (N = 75; 51.72%), family reunification (N = 45; 31.03%), adoption (N = 12; 8.27%) or other/unknown reasons (N = 13; 8.96%). At the moment of hospital admission, the average length of stay in Italy was 12.49 years (range 1 to 38 years, standard deviation = 8.23). In most cases, patients had a residence permit (N = 129; 88.96%), while 16 (11.03%) were undocumented migrants; N = 4 (2.76%) were in Italy as asylum seekers; N = 3 (2.07%) had a temporary residence permit. Regarding migrants' LP, its mean value was 6.95 at admission to the Psychiatry Ward. The intervention of an interpreter/cultural mediator during hospital stay was required in N = 12 cases (8.28%).

Outcome scales

Main results of the HoNOS are presented in Table II. Medium CGI scores were 4.09 and 8.4 at admission and discharge, respectively (severity = 2.5; overall improvement = 1.9; efficacy index = 3.9). Mean values of HoNOS scores were 15.96 and 9.78 at admission (T0) and discharge (T1), respectively, with a significant decrease from T0 to T1 ($p < 0.0001$).

Comparison of the two subgroups of patients subdivided according to LP

As described in the methods, the total sample (N = 145) was subdivided into two subgroups according to the LP median value (= 7): N = 68 (46.89%) patients were rated as HLP, while N = 77 (53.10%) as LLP. The two subgroups were then compared on all the variables assessed for this study (personal and anamnestic data, information about hospitalization and migrant status-related information); statistically significant results are shown in Table II.

The comparison of the two subgroups yielded statistically significant differences in the HoNOS scale scores, as presented in Table III, while for the CGI a statistically significant difference emerged only for global improvement: mean LLP = 1.76 (IC: 1.59; 1.94), mean HHP = 2.06 (IC: 1.85; 2.26) ($p = 0.034$).

Table II. Comparison between HLP and LLP migrants.

		LLP (N = 77)	HLP (N = 68)	P value
Diagnosis (ICD9) % (N)	Mental and behavioural disorders due to psychoactive substance use	18.18% (14)	8.82% (6)	**0.0019**
	Schizophrenia, schizotypal and delusional disorders	**37.66% (29)**	27.94% (19)	
	Mood (affective) disorders	15.58% (12)	7.35% (5)	
	Neurotic, stress-related and somatoform disorders	12.98% (10)	22.05% (15)	
	Disorders of adult personality and behaviour	7.79% (6)	30.88% (21)	
	Other (non-psychiatric problems, organic mental disorders, behavioural syndrome, mental retardation)	7.79% (6)	2.94% (2)	
First-generation LAI % (N)	Yes	31.16% (24)	13.23% (9)	**0.0164**
	No	68.83% (53)	**86.76% (59)**	
Educational level % (N)	Unknown	18.18% (14)	2.94% (2)	**0.0234**
	Primary school	48.05% (37)	**50% (34)**	
	High school	27.27% (21)	35.29% (24)	
	Degree	6.49% (5)	11.76% (8)	
Employment status in country of origin % (N)	Unknown	19.48% (15)	13.23% (9)	**0.0006**
	Employed	**58.44% (45)**	41.17% (28)	
	Unemployed	15.58% (12)	11.76% (8)	
	Students	6.49% (5)	33.82% (23)	
Reasons for migration % (N)	Unknown	6.49% (5)	5.88% (4)	**0.0012**
	Work	**63.63% (49)**	38.23% (26)	
	Family	27.27% (21)	35.29% (24)	
	Other	2.59% (2)	20.58% (14)	
Necessity for cultural mediator % (N)	Yes (or family members)	19.48% (15)	0% (0)	**< 0.0001**
	No	80.51% (62)	100% (68)	
Mean numbers of years in Italy (mean, IC)	7.97 (6.63; 9.31)	17.60 (15.79; 19.42)	**< 0.0001**	

Table III. Comparison Between HLP and LLP migrants (HoNOS scale).

		LLP (mean level; IC)	HLP (mean level; IC)	p
T0	Problems in everyday life activities	1.649 (IC: 1.367; 1.932)	1.235 (IC: 0.954; 1.516)	**0.04**
	Problems in the living conditions	1.662 (IC: 1.355; 1.97)	1.132 (IC: 0.82; 1.448)	**0.0136**
	Problems in the availability of resources for work and recreational activities	1.688 (IC: 1.395; 1.98)	1.162 (IC: 0.882; 1.44)	**0.0129**
	Total score	17.12 (IC: 15.72; 18.52)	14.65 (IC: 13.31; 15.98)	**0.0085**
T1	Somatic disease or physical disability problems	0.5195 (IC: 0.288; 0.751)	0.1765 (IC: 0.045; 0.308)	**0.0275**
	Problems in everyday life activities	1.558 (IC: 1.239; 1.878)	1.088 (IC: 0.818; 1.358)	**0.013**
	Problems in the living conditions	6.065 (IC: 5.138; 6.992)	4.676 (IC: 3.79; 5.56)	**0.0358**

Discussion

In this study, we focused on a real-world sample of migrant inpatients, a group which is widely acknowledged to be at risk for mental disorders but still understudied. During the four years of the study, 145 migrants were hospitalized in the Psychiatry Ward of the Maggiore della Carità Hospital in Novara; the number of foreign patients did not change significantly from year to year. This is in line with the "2019 Immigration Statistical Report" that described a substantial stability and no significant expansion of the foreign population residing in Italy in the last years [22].

Personal data

In line with Italian data, in our sample, the gender ratio was balanced and migrants admitted to the Psychiatry Ward were younger compared to the global Italian native population; actually, migrant patients' mean age in our sample was 38 years, while that of the foreign population in Italy was = 35 years and that of the Italian population = 46 in the same period. Migrants admitted to our Psychiatry Ward in most cases came from European (European Union or not) and North African Countries, in agreement with data from the National Institute of Statistics about the provenance of migrant populations in Italy [22].

Concerning employment status, while most migrant patients were employed or students in their own country, about half of them were unemployed at the time of their admission to the Psychiatry Ward. Regrettably, it seems that many migrants lose their socioeconomic status when arriving in the host country, as a consequence of the difficulties they may face in working conditions and career opportunities. Data from the National Institute of Statistics confirm that a great proportion of migrants do low-skilled jobs [22].

The main religion practised by the migrant patients admitted to our Psychiatry Ward was Catholic Christian (42.76%) in line with the data of the foreign population in Italy where the main religion is Catholicism (52.2%).

Anamnestic data

As regards medical and psychiatric history, it is interesting to note that a fair number of patients had a previous history of drug or alcohol abuse; literature data on this topic show that migrants may be at risk for alcohol and substance use for reasons including coping with traumatic experiences, co-morbid mental health disorders, acculturation challenges and social and economic inequality [23,24].

Most of the patients did not report a psychiatric history in their home country, but about half of them were treated by psychiatric services or had been previously admitted to a Psychiatry Ward in Italy. This gap between the psychiatric history in the home and in the host country could be explained, as already pointed out, by the fact that migrants seem to be more prone to certain psychiatric disorders, also because of their migration-related history and difficulties settling down in the new countries [25].

Comparison of the two subgroups of patients subdivided according to LP

Interestingly, after dividing the migrants' sample into two subgroups based on the level of LP, we found a higher rate of patients diagnosed with psychosis in the LLP group. It is well known that migrants have a strongly increased risk for schizophrenia, which is associated with psychosocial stress factors such as social isolation and exclusion [25], but our data seem to suggest that this greater proportion may be especially higher in the LLP group of patients. Some hypotheses can be suggested for this phenomenon; on the one hand, language and communication skills are critical in the acculturation process and during the resettlement phase in the host country: poorer abilities could be related to greater difficulties, possibly leading to social isolation and supporting the social defeat model of schizophrenia [26,27]. On the other hand, meeting with LLP patients may face psychiatrists with specific critical issues, as psychiatry relies more than other medical

disciplines on speech and verbal communication. The classic literature [28] about migrant patients suggests that sometimes a clinical presentation characterised by bouffées with persecutory delusions could correspond to a depressive equivalent, as described by Collomb [29]. While cultural issues in the presentation of psychiatric disorders cannot be overlooked, limited language fluency, understanding and knowledge, could make it challenging to discriminate between clinical pictures, possibly leading to an overdiagnosis of psychotic disorders [12,30].

It is also worth mentioning that only in a small proportion of cases there has been the intervention of cultural mediators. This could be explained by the current difficulties in our healthcare system in finding such resources in a short time and even more in emergency conditions. A close collaboration involving clinicians, cultural mediators and interpreters is warranted to overcome both language and cultural barriers that can hinder a thorough and reliable assessment of patients and, as a consequence, the implementation of an adequate treatment plan [31-33].

The two subgroups of patients showed also further differences as far as pharmacological treatment is concerned: if we consider atypical LAIs, there is a general tendency not to receive these drugs by migrants, particularly those with HLP. We can assume that this can be due to the lower rate of psychosis diagnoses in this group, or to the fact that speaking fluently the language may help to understand the advantages of psychopharmacological treatment and, therefore, may lead to better compliance to oral therapies.

Regarding reasons for migration, we found out that work was the main issue for both groups but especially for LLP: this could be explained taking into account that LLP were already workers in their origin country, but it remains an open clue. These data were partially confirmed by the previous migration policies debate formulated by the International Organisation for Economic Co-operation and Development (OECD). This debate reported that low-educated migrants and their native peers had comparable employment rates, differently from highly educated migrants who showed lower employment rates than those of their native counterparts, and, when employed, in almost 50% of cases they were likely to be overqualified for their job.

Noteworthy, analysing the HoNOS scores, our data showed that LLP patients had higher scores and therefore greater severity at admission, in all social and living conditions but also as far as clinical conditions are concerned. Differences between the two subgroups were still evident at discharge: poorer improvements were those concerning social conditions, which may be difficult to address during the period of hospitalization and also not likely to change in a short time.

Another key finding of this investigation was about the CGI global score at discharge: in the LLP subgroup, the global improvement was considerably lower compared to the HLP one. Considering that psychiatric treatment involves medication but mainly relational issues, the language barrier may represent a significant challenge for the possibility to adequately intervene in this subgroup, that represents a vulnerable group of patients.

Some limitations of the present study should be underscored. The sample size and the monocentric design limit the possibility to generalize results. No comparison has been proposed here between the migrant and native population admitted to the Psychiatry Ward during the study period. Some information and data were missing because sometimes patients unwilling to provide information, while other times because of lack of documentation. Nonetheless, real-world data are proposed here, with a specific focus on LP, which seems to emerge as a possible target of interventions delivered for this vulnerable population. In conclusion, the present findings, despite the limitations described above, support the importance of LP for migrant psychiatric inpatients [11,15,16].

Conclusions

In conclusion, the present preliminary findings support the expected importance of LP among immigrant psychiatric inpatients. Further investigations are needed to deepen knowledge on this topic, encouraging additional studies and consideration of language assessment and training as part of the comprehensive support of psychiatric patients. Overcoming language barriers fin mental care setting is therefore essential to the quality of care provided.

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Lesson from COVID-19: the opportunity of telepsychiatry

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Summary

The need for remote mental health care services has increased in various countries with the evolving of the COVID-19 crisis. The suspension of the previous routine and of the non-urgent healthcare activities certainly contributed to the containment of the infection on one hand, while on the other hand it exposed the need for alternative methods to monitor patients, who were called to adapt to the rules of distancing and of staying at their home.

During the pandemic the difficulties of the mental health system, and in particular of the mental health care community, in meeting the multiple needs of individuals , while awaiting to get access to an adequate supply of personal protective equipment, allowed for the provision of some benefits via telephone communications with patients. While initially not explicitly requested, some clinicians started to virtually "see" patients from the comfort of their home using live videoconferencing. This eliminated the need to reach outpatient units and allowed them to operate regardless of their geographic location.

As the public health crisis unfolded, many applications of telepsychiatry developed in other areas of the Departments of Mental Health (DMHs) such as: psychological counseling and support services, rehabilitation individual and/or group sessions, consultation liaison services in COVID and non-Covid hospital areas, communications with family members and/or other stakeholders, clinical briefings and staff training.

As the reopening of healthcare activities progresses, many clinicians have come to appreciate the opportunity and the convenience of the telemedicine experience. So mental health care organizations have to implement video-conferencing technology, alongside the mental health standard of care. However, it's necessary to consider the main critical issues relating to remote services, which are the implication for security and the mainstreaming of the use of technology in psychiatric patients, who may have very little, if any, experience with telemedicine.

Key words: telepsychiatry, mental health-care delivery, COVID-19 pandemic

Background

In every historical period, a crisis is seen as an opportunity to look over old models and to advance new strategies. Some authors [1] define crisis as "an upset in equilibrium at the failure of one's traditional problem solving approach" in which usual patterns of behavior are no longer adequate to cope with the present situation [2]. In this perspective, a crisis is considered as an evolutionary stage in the process of growth and constant change [3].

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The coronavirus pandemic has demonstrated the limits of the health system in Italy and in the world, unveiling a deep crisis that has long-standing origins.

The latest report of the Ministry of Health dated 2018 [4] indicated that in the face of a 1.6% reduction in the number of patients in the public psychiatric operating units when compared to 2017, the staff units decreased by almost 2000.

And while in 2018 the number of hospitalizations decreases (107,662 against 109,622 the previous year) proportionally to the reduction in the number of beds in ordinary hospital stay (9.7 per 100,000 adult inhabitants in 2018 against 10.1 in 2017), conversely access to emergency rooms increases, indicating an increase of mental health needs among the population.

Italy was the first Western country to be severely affected by the COVID-19 pandemic. The epidemic has undoubtedly placed a huge strain on the National Health System, giving rise to grave concerns as to the ability of the system to effectively respond to the needs of the population and its patients.

To strengthen health surveillance measures and limit the spread of COVID-19 diffusive infectious disease, most health activities were also suspended, with the exception of those that could not be postponed. In some cases, patients and health care providers were infected in emergency rooms or other areas of the hospitals and of the outpatient units [5].

For those reasons in April 2020, the Institute of Health published a report with specific recommendations on the implementation of telemedicine services defining areas of intervention during the COVID-19 outbreak [6]. Those included , inter alia, patients with chronic diseases, rare diseases and people in fragile conditions, or that require long treatment periods such as patients with mental illness, otherwise managed in part or entirely by territorial services or by residential structures. This first report was followed by others, regarding the reorganization of the Departments of Mental Health (DMHs) for the management of the impact of the pandemic, and the use of telephone intervention, together with telemedicine, to offer health services and psychological support to people at home (see Tab. I).

In the reorganization of the DMHs, routine activities were suspended. Some Community Mental Health Centres (CMCHs) were closed or had limited hours of access.

The number of admissions to General Hospital Psychiatric Wards (GHPWs) significantly reduced, and was often limited to mandatory mental health treatments (Trattamento Sanitario Obbligatorio, or TSO).

At the same time, the psychiatric health system had to stop relying on the rehabilitative health services and its activities, which had to adapt to the rules of social distancing and of staying at home as necessary measures to curb the infection. The difficulty of the psychiatric health system, in particular of home and territorial assistance, to meet the multiple needs of the territory during the pandemic, have determined a rapid expansion of telepsychiatry. The popularization of internet services and smartphones, and the emergence of fifth generation (5G) mobile networks, have encouraged this step. Together, these factors have encouraged psychiatrists to sanction the tools of technology, or better of videoconferencing, as a possible therapeutic tool.

The report “Recommendations for Mental Health Departments regarding activities and measures of contrast and containment of the SARs-COV-19 virus”, published by the Italian Society of Psychiatry [7], states: “The capacity of these services as well as of CHMCs to maintain regular telephone/ video call contacts with clients should be granted, in particular as regards the accessibility of phone lines and the availability of apps for video-call”. To this ens, while many Organizations as well as Departments have used commonly used platforms,

Table I. Reports about COVID-19 from Italian ISS (Istituto Superiore Sanità), 2020.

Report	Title	Date	Authors
Rapporto ISS COVID-19 n. 12/2020	Indicazioni ad interim per servizi assistenziali di telemedicina durante l’emergenza sanitaria COVID-19	Versione 13 aprile 2020	Gabbrielli F, Bertinato L, De Filippis G, Bonomini M, Cipolla M
Rapporto ISS COVID-19 n. 23/2020	Indicazioni di un programma di intervento dei Dipartimenti di Salute Mentale per la gestione dell’impatto da epidemia COVID-19 sulla salute mentale	Versione 6 maggio 2020	Veltro F, Calamandrei G, Picardi A, Di Giannantonio M, Gigantesco A
Rapporto ISS COVID-19 n. 30/2020	Indicazioni sull’intervento telefonico di primo livello per l’informazione personalizzata e l’attivazione dell’empowerment della popolazione nell’emergenza COVID-19 - Gruppo di lavoro ISS Salute mentale ed emergenza COVID-19	Versione 24 maggio 2020	Cirulli F, De Mei B, Luzi AM
Rapporto ISS COVID-19 n. 31/2020	Indicazioni ad interim per il supporto psicologico telefonico di secondo livello in ambito sanitario nello scenario emergenziale COVID-19 - Gruppo di lavoro ISS Salute mentale ed emergenza COVID-19	Versione 26 maggio 2020	Rebecchi D, Lazzari D, Calamandrei G

others have employed dedicated platforms, safer than the traditionally used ones, to prevent the risk of violation of privacy and data security breach.
To keep contact even with non-urgent or indifferent patients, most of the services have converted into online therapies (psychiatric visits, individual psychotherapies, individual and group rehabilitation therapies).
In a second phase, teleconsulting stations were also activated in GHPWs, to allow communication between hospitalized patients and family members, between doctors and family members of the patient, between doctors and the territorial psychiatric network for the management of the post-acute phase; in residential psychiatric structures, to allow periodic re-evaluations of the Personalized Therapeutic - Rehabilitation Project between the community team and the sending team of the territory, and to maintain contact with family members in Departmental services dedicated to child and adolescent psychiatrist.

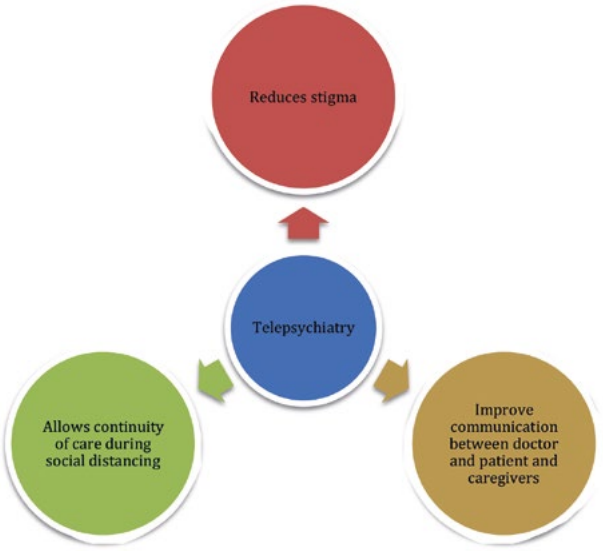

Figure 1.
Key points of e-Psychiatry.

e-Health and Telemedicine

In general the term of e-Health, for which the evolution of technological tools continually redefines the application fields, indicates the practice of personal care through the support of Information Technology (IT) tools, specialized personnel and innovative medical-patient and medical-medical communication techniques [8]. Telemedicine, a term which means "healing at a distance", represents an opportunity to overcome geographical barriers, and increase access to health care services [9].
The peculiar aspects of interventions in this area are (essentially characterized by):

- accessibility;
- ease of use;
- utility;
- high level of appeal;
- the ability to reach a large number of users.

The ability inherent in current tools to allow an adequate degree of anonymity in the face of a high level of interactivity and therefore personalization of care can represent a real turning point in the psychiatric field precisely for overcoming the barriers that have always conditioned the related interventions such as stigma.
Some authors define telemedicine the only way of assistance to people experiencing mental health crises in widespread catastrophes or natural disasters [10]. During lockdown and in general in the conditions in which social distancing is necessary, telemedicine is the only option capable of ensuring the safety of patients and operators (Fig. 1).
In different countries telemedicine is defined by the laws and regulatory provisions that describe the fields of application. In Italy for example the use of Information and Communication Technologies (ICTs) for the treatment of health information or the online sharing of data and/or health information (e-health) do not constitute a telemedicine service. Telemedicine does not include health information portals, social networks, forums, newsgroups, e-mail or other [11].
In the area of Telemedicine it is possible to distinguish specific areas:

- *Specialized telemedicine*. It includes the various ways in which specialist-provided remote medical services are provided within a specific medical discipline. It can occur between doctor and patient, or between doctors and other healthcare professionals;
- *Telehealth*. It mainly concerns the domain of primary care. Systems and services connect patients, especially the chronic ones, with doctors assisting in the diagnosis, monitoring, management, empowerment. It allows a doctor to remotely interpret the data necessary for telemonitoring and for taking care of the patient;
- *Teleservice*. Social assistance system for taking care of the elderly or frail persons at home, through the management of alarms, activation of emergency services, "support" calls from a service center.

These differences are useful to specify some aspects in the doctor-patient relationship. In telehealth, as well as in specialist telemedicine, the role of the doctor is active (taking charge of the patient) as well as the role of the patient (self-care). It differs from telemonitoring, which is exclusively intended as an exchange of health informations. Telehealth includes telemonitoring: the exchange of data (vital parameters) between the patient and a monitoring station takes place not only for analytical purposes, but also to provide and support therapy management programs and to improve information and patient training.
One central point is the management of health information between the provider, the structure of the NHS or NHS

operator (Clinical Center), and the user. This can happen directly or through a Service Center. The Service Center does not intervene at the level of clinical responsibility, as the latter responds to the Clinical Center on the effective performance of all its tasks, in particular on the integrity and security aspects of the health information transmitted during telemedicine activities.
Any system that processes sensitive data must comply with the regulatory provisions regarding the processing of personal data (Fig. 2).

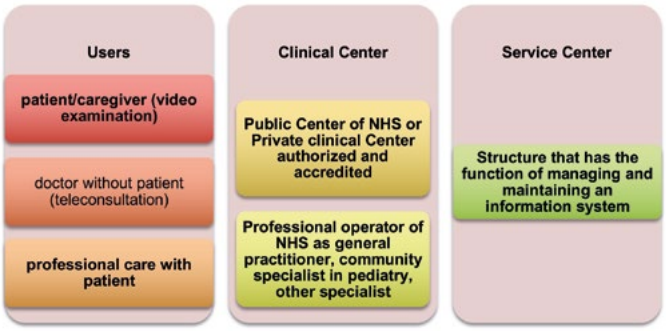

Figure 2
Users/clinical center/service center.

Telepsychiatry

Based on the ICTs tools used in the context of information/communication/management services regarding the promotion and protection of mental health, it is possible to distinguish different types of intervention:

- video-mode;
- telesupport;
- websites;
- mail;
- instant messaging and chat rooms;
- mobile-health-app.

As defined for telemedicine, the video and chat rooms, given their interactivity component in live mode, are generally considered a real treatment (e-Therapy), as they are able to provide online mental health services [12].
As for websites, emails or apps, which in general have a lower level of interactivity, they can fall within the scope of eTherapy only when the exchanged information concerns aspects of the private or intimate life of the users (Fig. 3).

Figure 3
Telepsychiatry.

Video mode

The speed of current internet connection systems, through the use of webcams, allow the therapist and the patient to communicate in real time with video, audio / text. Recently the Health Commission of National Health System of Italy has developed a document with the homogeneous rules for the delivery of remote outpatient services [13]. Video mode (Television) is available for outpatient services that either do not require the patient's physical examination (traditionally consisting of inspection, palpation, percussion and auscultation) or present the following conditions:

- the patient is included in a follow up path from a known pathology;
- the patient is placed in a diagnostic therapeutic care path (in Italian, Percorso Diagnostico - Terapeutico Assistenziale or PDTA), formalized in the health organization, or at a regional level;
- the patient needs monitoring, confirmation, adjustment, or change of the therapy in progress (e.g. renewal of the therapeutic plan or modification of the same);
- the patient needs anamnestic evaluation to get a prescription of diagnostic tests, or staging of known or suspected pathology;
- the patient requires an explanation by the doctor of the results of diagnostic or staging tests carried out, which can be followed by the prescription of any further information, or treatment;
- any other scenario where the doctor assesses the possibility of delivering the visit in "television" mode.

The activation of telemedicine service requires the patient's or tutor's prior adhesion, in order to confirm, inter alia, the availability of a telematic contact for documentary/information interaction with the specialist and access to a remote communication system according to the technical specifications and the current legislation on privacy and security (Fig. 4).
The provision of remote outpatient services shares the following system of rules:

- services: tariff system, classification, detection, reporting;
- informed patient adhesion;
- health responsibility during television activities;
- communication of the outcome of the outpatient service provided in television mode.

The minimum and sufficient elements to create a service equipped with the features allowing clinicians to deliver a TV service are as follows:

- basic features;
- connection network always available between doctors

Figure 4.
Mental Health and Technologies.

and patients;
- web portals, to which doctors access with their account to manage assigned patients;
- access to the web page from notebooks or tablets or smartphones for healthcare professionals;
- simple patient login, who must be able to access the service with their own account, with identity verification;
- compatibility with the General Data Protection Regulation (GDPR) for the processing of personal data.

The person connects to the internet with the available digital tools (computer, tablet, smartphone).
There are two ways of providing treatment [12]:
1. augmenting: further treatment compared to an already ongoing (psycho)therapeutic path;
2. stand alone: single treatment method.

Special consideration for psychiatry

If, on one hand, psychotherapeutic interventions or framing/treatment of mental disorders carried out by tele/videoconference, compared to the other systems, offer the possibility of creating a setting comparable to a traditional one (face to face) as much as possible, on the other hand some authors point out to limits inherent to the virtuality of the therapeutic relationship and the incomplete management of the setting in terms of communication times; those could also be affected by the user's removal or sudden disconnection [12].

Tele support

Given the extent of the COVID-19 epidemiological emergency, healthcare personnel working in a hospital environment or in the area may experience stress, anxiety, and manifest safety and health concerns during this period.

In almost all international and national scenarios, sadly affected by the epidemic, psychological interventions for the health emergency have been developed with telephone support from operators working in the health field. In a newly published study on mental health consequences among Chinese operators who dealt with the emergency, the results suggested that some categories, such as women, nurses, health workers operating in critical areas and those exposed on the front lines, are at high risk of developing unfavorable mental health outcomes and therefore needing support or psychological intervention [14].
Looking at the experience of those operators, there are many experiences, expressed or unexpressed, such as the fear of contagion, the concern for one's health or that of loved ones, the fear for those who share the workplace or for patients, the uncertainty about the outcome of the treatments, which can cause psychological discomfort and negatively affect mental health, causing emotional falls, feelings of anger and helplessness, tension. Even in the general population, restrictions on movement, the exposure at frighteningly critical news through the media and social media, loneliness and reduced social contact triggered or amplified phobias, a sense of bewilderment, confusion.
The experience of China taught us the usefulness of online mental health services have as interventions for psychological crises during the epidemic [15].
The obsession with contagion, the fright of physical contact, casual or necessary, the transmission of the virus in not very-known ways, the great mystery of asymptomatic, paucisymptomatic, symptomatic for others causes, have greatly amplified the sense of fear, which in some cases, has crossed the banks of reason: this is the case of the student from Messina who killed his partner for fear of having contracted the infection. Of note is the fact that the COVID-19 outbreak has particularly affected the most fragile and most at risk people; a study by a group of Italian researchers [16] has shown that those who suffer from a psychiatric disorder, even of minor severity, have a higher level of stress related to COVID infection, and a higher probability of developing symptoms anxious and depressive of a certain severity. In the midst of the COVID-19 exceptional emergency, there were some professional categories subjected to particularly stressful work rates (such as police operators, personnel operating in basic services), or who had to quickly deploy new resources for the requests of the context (for example teachers, struggling with the need to ensure continuity of training in different ways; agents who engage in smart working; interventions and social agencies); or again, like freelancers, who had to deal with the "vacuum" at work and economic concerns. Without forgetting the needs of the family, the first connector of social ties and community memberships, which found itself responding to insurance claims from children and adolescents, dealing with an exceptional event, but also to address questions for working future.

In the early phase of the lockdown, almost all the Italian Mental Health Departments and the health and university companies activated a free psychological/psychiatric support service, dedicated to health workers and general population, to break down the barrier of fear in the request for help and offer guidance and information on the possible need for specialized help.
The consultation was offered 24 hours a day or in specific time slots, usually through dedicated telephone lines answered by a qualified operator, who guaranteed one or more telephone interviews with the aim of promoting individual resilience and optimal use of personal resources, implementing stress management measures with the aim to maintain the mental well-being of the community. If necessary, the operator or the applicant requested on-site consultation. Some health agencies also offered support to family members of COVID-19 victims. As the weeks went by, the psychological and psychiatric phone counseling has been shifted in many organizations to a video platform.

Mail

In general, communication via email is considered one of the easiest communication tools in the doctor-patient relationship (smartphone) as it allows a valid and accurate exchange of information even in the absence of simultaneous availability of the clinician and patient. Initially designed as a tool for registration, confirmation, change of appointment, reminder system, request for information or change regarding a medical prescription, general information relating to the service to which you want to access (e.g. timetables, contacts), this tool is part of Telemedicine and therefore included in e-Therapy when the content of the communication concerns personal information [12].
Often this communication system integrates more complex systems, such as specialist websites on specific ailments, by individual professionals or by scientific societies. The possibility of attaching electronic documents, both in the form of texts and images, allows this tool to create a real archiving system that can be used in the creation of a clinical diary, with the possibility of bi-directional information exchange (clinician-patient).
These characteristics, based on the type of information exchanged, can at the same time create specific profiles of responsibility for the clinician, in particular when the contained data concerns aspects that can compromise/discriminate the patient, such as sensitive clinical data, including on HIV positivity, use of substances, information regarding third parties (identity, personal information), judicial documents or legal issues, required to start a treatment. About this, it is extremely important in the use of this communication tool to provide clear, exhaustive and adequate information to the patient, regarding the use and the related limits, disable automatic response and download functions, avoid archiving on cloud systems (for risks connected to data security). It could be useful the periodic control of the communications exchanged (number, content) as they could indicate an improper use by the patient linked to his own disorder. With regard to professional liability related to communications for which the content reflects urgent/emergency conditions including suicide, some authors recommend specifying their terms and conditions of use with the final user from the onset. This approach aims to manage critical issues, so that the procedures that the user should put in place in critical conditions, such as direct contacts with emergency/emergency services, are clearly established well in advance.

Websites

Websites are an easy tool for a clinician who can provide information on his activity especially for new – onset patients [12]. In general, they can be categorized in two groups, based on the level of interactivity:
- basic (static) websites, that describe the activity of the services;
- interactive websites that allow a two-way exchange of information.

In general, current websites contain both of the characteristics listed, creating real services with a high level of interactivity.
The main specific critical issues connected to this communication tool essentially concern security relating to the risk of access by third parties and in the storage of data. In this regard, the application of a series of measures is recommended to reduce the risks associated with these critical issues including the use of passwords to be renewed periodically or protection systems constantly updated.

Instant messaging and chat rooms

The use of instant messages can be considered like emails, with similar advantages and limitations.
Chat rooms can allow, in case of live connections, forms of group therapy which, through the use of webcams, can be equated to telepsychiatric interventions by video mode [12].

Mobile-health

Data from market analysis shows that an extremely high percentage of young adult subjects, about 90% in industrialized countries, owns a smartphone. These data have led to increasingly implement applications (apps) for these devices in recent years also in the context of health promotion and protection. In the document drawn up by the National Bioethics Committee of the Presidency of the Council of Ministers [17], "mobile-health" is defined as the set of mobile or wireless communication technologies (mobile phones and smartphones, tablets, digital devices, with or without wearable sensors), applied in specific areas to health [12]. In general apps can be considered a

Table II. Issues of telemedicine.

	Indication	Critical issue
Video mode	• Patient with known pathology • Alone in stable phase • In presence of caregiver during relapse	• Risk of virtuality of the relationship • Incomplete management of the setting
Telesupport	• General population • Colleagues	• Anonymous
Mail	• Communication in the absence of simultaneous availability • Integrate visit (face to face or video mode) • Monitoring the course of illness	• Comunication of sensitive clinical data, risk of security • Comunication of emergency conditions including suicide
Websites	• Provide information of service activities • Exchange information doctor-patient bidirectional	• Risk of access by third parties • Storage data
Chat rooms	• Similar to mail but in case of live connection and in presence of webcams it is like to video mode	• Similar to mail or video mode
Apps	• Telemonitoring	• Useless if not integrated

valid tool for telemonitoring (Tab. II).

Specific populations: child, adolescent, geriatric

With some populations (i.e., children and adolescents, older people), telepsychiatry may be better than inperson services, for different reasons.

For children, it is a convenient, accessible model of care, because they are more willing to open up when they are in a familiar environment, surrounded by their toys or in reach of pets who may offer comfort. With remote connection, clinicians also get clues and information from a home environment they will never see in an office setting. It may be preferable to in-person care in some specific populations (e.g., autism spectrum).

For adolescent and younger adults, the easier scheduling of the remote interaction can help to overcome one of the greatest barriers in engaging younger populations in mental health treatment, which is stigma. Adolescent and young people who come to the CMCHs often have problems of engagement and adherence to treatment. They therefore require a therapeutic course "built", tailored to the individual's attention, needs skills and competencies, as well as challenges and level of attention, in a non-stereotypical way [18]. A pleasant context is preferable, possibly not physically connected to other care facilities, and neither characterized nor stigmatizing, supported by a team with a style of work that is as informal as possible, friendly and sensitive to youth interests and language. Information technology holds great potential to address gaps in care, also because this is a mode of communication familiar for the youth. Telehealth and digital services should be useful for patients with physical limitations, or comorbid conditions, and those with significant geographical obstacles. It is advised to improve access to culturally appropriate care providers for asylum seekers, refugees and migrants. They could prefer telepsychiatry in their mother tongue, rather than interpreter-assisted care [19].

However, there may be logistical problems and drawbacks associated with the use of remote therapies, especially in people who might be in greater need. A technical support provided by nurses or rehabilitation technicians (care personnel) should be available during the early stages of switching to video-conferencing, particularly for older people or people with low technological literacy.

In addition to technological proficiency, therapists and others offering support need to develop a way of supporting and maintaining the important therapeutic partnership that enables recovery. People who find remote communication more challenging than face-to-face interactions might disengage from treatment, and their loneliness could increase without in-person contact. It is necessary to carry out an analysis of the satisfaction level and perceived advantages reported by users and family members, trying to appreciate if they were able to achieve their goal and express everything they wanted through the ICTs. Telehealth and digital services should not replace face-to-face treatment for patients in need particularly those requiring intensive mental health treatment and support, when in-person contact is evaluated by clinicians as safer. There are serious limits in the application of this tool in patients suffering from serious psychotic disorders in which, during the phases of decompensation, the examination can result strongly compromised. At the same time, this modality could be particularly effective in disorders with serious forms of social anxiety that often limit patients starting from their access to the care phase. Therefore an adequate assessment is recommended before undertaking this form of treatment by envisaging the possibility to switch to a traditional form of intervention [12] already in the formulation phase of the therapeutic contract.

Conclusions

After the acceleration impressed by the epidemiological emergency from SARS-CoV-2, psychiatry is the branch

that is most suitable for entering telemedicine, since no special equipment is needed to perform psychiatric and psychological services, nor it requires the detection of the patient's physical parameters in most cases. Under social distancing, many mental health care organizations have been unable to offer in-person care for anything but the most urgent or serious conditions, while patients can be reluctant to risk visiting a facility even if available. The initial difficulty was for some organizations to equip a platform and make it operational in few days, allowing for several operating units to work simultaneously, also through training webinars (the teleconsultation had a strong implementation, in healthcare companies, for other services, from pre-birth courses to the cancer network, phoniatric rehabilitation). In many operating units, it was necessary to update obsolete operating systems, which quickly had to adapt to the new provisions, also taking into account the problems in obtaining electronic media supplies during the pandemic. Currently the advantage of telepsychiatry certainly bypasses the problem of geographical distances (with limitations on movement, access to health facilities if physical health problems coexist) and phone contact to check psychic conditions, which is often limited in duration.

After the first wave of the pandemic, the current opinion is that telepsychiatry is here to stay. On-line sessions, even in the re-opening phase of healthcare activities, appear to be more appreciated than on-site ones, both by patients and operators, because they allow to carry out the interview without masks, without physical distancing in medical and psychological rooms, without the necessary triage before accessing inpatients and outpatients units.

In an atmosphere in which users and health professionals certainly feel more relaxed and calm, it is still possible to grasp the facial expressions and guarantee empathic contact; if necessary, a face to face interview can be scheduled. In Italy some psychiatric services have equipped themselves with a room in which the patient, if he does not have a personal connection, can access a video consult with an operator who is set in another room (to avoid personal protective equipment, allow physical distancing etc.) The use of a corporate platform, which also allows video recording (of the consent given by the patient, or if necessary of the whole session), avoids the operators' personal connections.

Connection difficulties persist for patients, for economic and cultural reasons. We believe that even in the future, the implementation of telematic services should be strongly encouraged and supported, and differentiated in their offer, alongside the traditional method.

To this end the following is highly recommended :

1. telepsychiatry shall be regulated by specific guidelines, allowing the safe and regulatory delivery of the use of online platforms providing assistance, with regard to legal, clinical, cultural and practical aspects in use of technology. This could also apply to telemedicine;
2. remedy the poor digitization of the patient population (minors, adults), supplying smartphones, tablets (as it already happens for schools);
3. raise awareness on the subject, also through a regional project with the support of Scientific Societies (of the sector, or general), with telephone companies providing free or unlimited connections to patients to promote e-health;
4. implement health training to guarantee online evidence-based services, including rehabilitation, in different settings (inpatient and outpatients services, prisons, residential and semi-residential structures, or in emergency in support of non-medical teams, such as law enforcement agencies).

Telepsychiatry has emerged as a solution for the lack of access to mental health care because it enables patients to see providers remotely over secure videoconferencing technology. Many health care organizations could offer this service to supply to the shortages of psychologists and psychiatrists, which risk to leave our most vulnerable population without care. Such solution will address the issue of the growth of the average age of healthcare workers while reducing the risk for people with preexisting mental health disorders, who might have a higher risk of SARS-CoV-2 infection than those without mental health disorders [20].

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COVID-19 pandemic and young people mental health: a survey on an early intervention service

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Summary

The study deals with the impact of the COVID-19 emergency on psychophysical wellbeing of mental health patients, particularly young patients, joining an Early Intervention Program. We reorganized our Project in remote form, according to the social distance required by the emergency and subsequently drew up a survey to evaluate the response of patients to reorganization. We investigate also the changes in patients' feelings during the emergency and their satisfaction about the service provided in the period.

Key words: Covid-19, early intervention, young people, mental health

Introduction and aim

The Covid-19 pandemic determined many consequences on different aspects of our lives [1], and its effects are evident not only for physical but also for mental health [2,3]. In Italy, since the lockdown started in March 2020, we had to reorganize our lives, and our national health service, according to the emergency and to the infection containment measures [4].

Our study aimed to evaluate the Covid-19 consequences on mental health, in particular on the Prevention and Early Intervention Mental Health Program of our Mental Health and Addiction Department (EI Program).

During the Italian lockdown period, we provided an alternative service for the EI Program from March 16th, according to government's provisions and patient needs. The service was offered remotely and was composed by therapeutic and rehabilitative interventions, in particular: telephonic support, individual psychological support and psychotherapy on video conference, using different digital platforms (such as Zoom, Discord or Skype); therapeutic and rehabilitative group activities and individual psychoeducational interventions were scheduled four times a week as follows:

1. a discussion group on the main topics of Covid-19 in a "TV news" format;
2. a physical activity group, with yoga and relaxation exercises;
3. a socialization group, sharing leisure virtual activities, such as museum virtual tour or "happy hour";
4. an expressive group using artistic activities.

Finally we also provided individual behavioral suggestions, that patients could use on their own at home.

The first aim of this preliminary study was to understand the effect of this pandemic, and of the quarantine related to it, on feelings and experiences of young mental health services users [5]. The second aim was to identify new strategies to ensure the

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The Authors declare no conflict of interest.

continuity of care for this vulnerable group (especially for high risk mental health disease young population) and trying to address and reorganize our Project in remote form, according to the requests of the social distance [6]. Finally, we wanted to evaluate changes in patient's feelings during the different phases of the emergency and measure their satisfaction for the remote service we offered.

Project and sample

According to literature suggestion [7], we drew up an online survey to explore patients' feelings and needs of care, during the Covid-19 lockdown, and to identify new strategies for psychological, psychosocial and rehabilitative support in a distant way, using web and online resources.

Assessment and method

We developed a specific questionnaire for the Covid-19 emergency, anonymously sent to 56 young patients (18-28 years old) attending our EI Program. The questionnaire was a three-stroke survey, the same form for T0 and T1, and a customer satisfaction form for T2. T0 form has been sent between the 25th and 31st of March 2020, shortly after the beginning of the lockdown; T1 has been sent between 15th and 21st of April 2020, in the middle of the lockdown; at T2 the patients satisfaction survey has been sent between 4th and 8th May 2020, at the beginning of "Phase 2" of the national emergency. The first two surveys contained the same 11 closed questions, 7 on five points Likert scale (from 1 "not at all", to 5 "a lot") and 4 multiple choice; the questions investigated the Covid-19 emergency impact on psycho-physical wellbeing and needs about health care service during the period, and 2 questions on age and gender. The last survey contained 2 questions on age and gender and 13 closed questions, 3 on a 4-points Likert scale (from 1 "not at all", to 4 "a lot"), 7 with multiple choice and 3 closed "yes/no"; the questions investigated feelings in the "Phase 2" of the emergency and users' satisfaction for the provided service.

Data analysis and results

56 subjects (53,6% male and 46,4% female, average age 21,01 years) completed T0 survey; 47 young patients (46,8% male and 53,2% female, average age 23,23 years) completed T1 survey; 50 young patients (52 % male and 48 % female, average age 21 years) completed T2 survey. Results are summarized in two distinct blocks, T0 *vs* T1, and T2.

About the concern for the virus, the higher proportion of answers was in the middle ("neither too little, nor too much"), in both T0 (35,7%) and T1 (29,8%), data showing a decrease of the concern over time; the second higher frequency of answer at T1 is "a little" (27,7%), where at T0 the higher frequency was "a little" and "enough" (both 17,9%) indicating a slight trend toward normalization.

Asked about changes in their everyday life, due both to the health emergency, and to the lockdown, patients reported a high frequency of habits changes, both in T0 and T1, even if with a slight increase over time: asked about "How much the spread of the virus has changed your everyday life?", at T0 37,5% answered "enough" and 32,1% "a lot"; at T1, the same answers received a percentage of 34% each. Asked about "How much the quarantine has changed your everyday life?", at T0 30,4% answered "enough" and 28,6% "a lot"; at T1, the same answers received respectively a percentage of 31,9% and 34%, showing a slight increase over time.

Almost all of the respondents were respecting the infection containment measures, respectively a 75% at T0 and a 70,2% at T1, even if they described a substantial effort.

Investigating the subjective reactions and feelings to quarantine and lockdown, the higher percentage of answer was in the middle ("neither little, nor much"), at T0 33,9% and at T1 31,89%, showing however an increase of the subjective suffering over time ("enough" 14.3% and a lot" 25% at T0 and, respectively, 21.3% and 21.3% at T1).

A detailed description of subjective sufferings is summarized in Table I.

In Table II we summarized the main aspects of life that patients lack the most (more possible answers, total higher than 100%). The data show a slight increase of socializing activities as the most lacking.

Finally, we wanted to know which therapeutic remote

Table I. Summary of subjective suffering due to lock-down (multiple choice question).

Prevailing feelings	T0	T1
Boredom	42,8%	42,5%
Sadness	25%	29,8%
Depression - mood changes	3,6%	2,1%
Anxiety and panic disorders	1,8%	4,2%
Fear	7%	2,1%
Anger	1,8%	6,7%
Sense of lack	3,6%	4,2%
Physical pain	3,6%	2,1%
Self harm		2,1%
A mix of all the previous	1,8%	4,2%
Concern for the future	1,8%	
Insomnia	1,8%	
Loneliness	1,8%	
Nothing	3,6%	

Table II. Main lacking life aspects due to lockdown.

Aspects of life lacked the most	T0	T1
Socialization	60,7%	63,8%
School/ work	37,5%	46,8%
Sports	26,8%	34%
Usual Mental health care	25%	21,3%
Leisure activities	23,2%	21,3%
None of these	12,5%	2,1%

supports the patients would find most useful to deal with the emergency and the isolation (more answers possible, total higher than 100%); Table III summarizes results.
The last survey, the T2 one, was submitted in order to investigate both the prevailing feelings at the beginning of the "step 2" of the emergency (partial opening of lockdown), and the users' satisfaction about support received.
A 44% of patients still felt "enough" worried about the spread of the virus, but they felt largely optimist about the future, as their expectation was to get back soon to normality (48%), reporting "a little" of difficulties (52%), being "confident that the difficulties that have been experienced with the health emergency would lead to positive changes in the lives of all of us" (26%). They were eager to take back especially the sociability (44%), but the 76% of the respondents also thought that the emergency had brought with it secondary benefits, especially an increased awareness of the value of everyday life prior to social distance (44%), and increased time for family relationships (36%).
As for our remote service, 80% answered they benefited from it, and the expressed level of global satisfaction was "enough" for a 48% and "a lot" for a 30%.
Table IV summarizes the preferred interventions (more answers possible, total higher than 100%).
Finally, patients were asked if they would like some of the services offered remotely to be kept even at the end of the emergency, 72% of the respondents answering "yes", especially for those already cited as the most welcome, but also increasing resocialization and leisure group activities on video call (12,2%), expressive artistic activities on video call (12,2%) and group sports activities on video call again (9,8%).

Conclusions

This preliminary study, which was developed in accordance to emerging needs in psychiatric care in Covid-19 era[8], shows that young patients were more concerned about the spread of the virus at the beginning of phase two than during the lockdown and they were suffering from the quarantine and the isolation, more and more as time went on. According to other surveys, they felt especially bored and sad, but they developed other subjective sufferings, in addition to those already present in their psychopathological status[7]. Changes in patients' everyday life are significant, especially when referring to social isolation[5]. The sense of lack of their usual activities, especially socialization and school or work, increased over time, unlike the one for the usual care system, that decreased, since the introduction of the remote program. They felt supported by the remote psychological and rehabilitative EI Program, especially by individual interventions in video call and remote group activities. The vast majority of the respondents appreciated the remote service and they would have liked to keep some activities even when emergency was over. These data suggest that mental health services, especially for young people attending to our services need to develop and implement a more "modern" way to manage needs in different areas of mental health.

Table III. Which remote supports are most preferred.

Therapeutic supports remotely, found most useful	T0	T1
Individual psychological/rehabilitative video call	44,96%	48,9%
Psychological/rehabilitation phone call	42,9%	53,2%
Suggestion for individual use, on their own	35,7%	23,4%
Resocialization on video call	16,1%	17%
Leisures group activities on video call	10,7%	19,1%
Group sports activities on video call	7,1%	6,4%

Table IV. Most used therapeutic support provided by remote devices.

Individual psychological/ rehabilitative video call	63,6%
Psychological/ rehabilitation phone call	50%
Suggestion for individual use, on their own	20,5%
Resocialization on video call	15,9%
Leisures group activities on video call	11,4%
Group sports activities on video call	6,8%

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