Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company’s public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.
The response of the mental health network of the Salamanca area to the COVID-19 pandemic: The role of the telemedicine.

Carlos Ronceroa,b,c,⁎, Llanyra García-Ullána,b,c, Javier I. de la Iglesia-Larradaa,b, Carmen Martín a,b, Pilar Andresa,b, Ana Ojeda a, David González-Parrea,b, Javier Pérez a,b, Clara Fombellida a, Ana Álvarez-Navaresea, José Antonio Benito a,b,c, Virginia Dutilla, Carolina Lorenzoa,b,c, Ángel Luis Montejoa,b,d

a Psychiatry Service, University of Salamanca Healthcare Complex (USHC), Salamanca, Spain
b Institute of Biomedicine of Salamanca (IBSAL), University of Salamanca, Salamanca, Spain
c School of Medicine, University of Salamanca, Salamanca, Spain
d School of Nursing and Physiotherapy, University of Salamanca, Salamanca, Spain

ABSTRACT

The COVID-19 pandemic reached worldwide causing a great impact on healthcare services. The aim of this work is to describe the response of the Mental Health Network of the Salamanca Area (Spain) to this crisis and the reorganization of its resources within the first 8 weeks after the state of alarm was declared. The Psychiatry Service applied a contingency plan which included the reorganization of the human resources, the closure of some of the units and the implementation of telemedicine programs along with two specific programs, namely a mental health assistance program in the context of the infection by coronavirus, and another program for homeless people. 9,038 phone interviews were carried out in the outpatients and community mental health programs. The activity in subacute and acute wards, as well as that of the day hospital programs was decreased to 50%.

Based on that this real-world response provided we concluded that the usage of telemedicine is promising in patients with any kind of disorder. Its implementation in daily practice will be considered in the future. Research must continue on COVID-19’s impact on patients with mental disorders and Psychiatry’s necessary adaptations and new approaches to them.

1. Introduction

Since December 2019, instances of acute respiratory illnesses were reported in Wuhan (China). They were found related a new coronavirus previously unknown in humans, which produces the easily transmittable, so-called Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-Cov-2) (European Centre for Disease Prevention and Control, 2020). Apart from affecting the respiratory system, it can also alter the central nervous system (Asadi-Pooya et al., 2020). It has spread very quickly from China to other countries in Asia, Europe, Australia, Africa, and the Americas. As this article is being written, the illness has been declared in more than 224,390 people in Spain, of which 26,621 have died (Ministry of Health, 2020).

The pandemic in Spain has forced the country to a reorganization of its healthcare services, including its mental health network (MHN), as it was suggested in China (Xiang et al., 2020; Li et al., 2020), demanding a coordinated response with the sociosanitary system (Mediavilla et al., 2020). The Salamanca Psychiatry Department (PS), belongs to the University of Salamanca Healthcare Complex (USHC), which includes 45 medical departments and more than 900 beds. The PC contains two reference units for the whole Castilla y Leon region and assists 330,000 inhabitants. In addition to this population, there are roughly 30,000 university students coming from other Spanish provinces or from other countries (Martin et al., 2019) living in the city without being censed, and who present a higher risk of mental illness, drug abuse and first psychotic episodes, given the possibility that, due to the state of alarm,
they weren’t able to return to their homes.

The PS includes most of the resources from the MHN, including a portion of the drug dependence care network divided in outpatient services, hospitals, and community flats (see Table 1). It also counts on a psychiatric emergency service allocated in the University Hospital (UH) and located on-call doctors for the Los Montalvos Hospital (LMH). Additionally, transversal programs for suicide prevention and attention to resistant mental disorders exist. Community outpatient programs are located within primary care buildings (15), in the former provincial hospital (3), and in both general hospitals (University Hospital and Virgen de la Vega Hospital) (2) and within the third hospital in the area (LMH) 10 km away from the city. There are 165 professionals linked to the SUHC, working either full or part-time (Table 1). The aim of this work describes the response of the PS and the reorganization of the MHN in Salamanca within the first 8 weeks after the declaration of the state of alarm on 14 May 20201 because of the COVID 19 pandemic.

2. Material and method

We developed an observational study, comparing the organization and medical activities with the same period (the same 8 week period from March to April) of the 2019 year. All the interviews in the medical wards, emergency rooms, and inpatient units that remained opened of the Salamanca Mental Health Network were recorded. All the outpatient units staff reported their activities (phone call, face to face interview, interventions, pharmacological administration, etc.).

3. Results

The SP adapted quickly to the declaration of the state of alarm by applying a contingency plan on the week of March the 16th. A reorganization of the professionals was necessary due to the incorporation of 46 professionals of the PS to the COVID teams, doctors, nurses and auxiliary nurses coordinated by specialists in Internal Medicine. Social workers and occupational therapists worked as case managers. Up to 36 professionals were off-work during this period -because of

| Professional category | Total | Sick leaves COVID* | Total leaves** | Integration in COVID teams |
|-----------------------|-------|-------------------|---------------|---------------------------|
| Doctors***            | 38    | 9                 | 11            | 9                         |
| Psychologists***      | 23    | 1                 | 2             | 0                         |
| Nursery               | 37    | 2                 | 7             | 13                        |
| Auxiliary Nurse       | 39    | 12                | 14            | 14                        |
| Social Workers        | 8     | 0                 | 1             | 3                         |
| Occupational therapist| 3     | 1                 | 1             | 2                         |
| Social Educators      | 2     | 0                 | 0             | 0                         |
| Administrative staff  | 7     | 0                 | 0             | 0                         |
| Sports Monitor        | 1     | 0                 | 0             | 0                         |
| Wardens               | 5     | 0                 | 0             | 5                         |
| Total                 | 163   | 25                | 36            | 46                        |

* Sick leaves due to COVID, either confirmed or suspected because of compatible clinical symptoms. After sick leave the professionals rejoined the activities of the psychiatry service or entered the COVID teams.

** Total sick leaves, including all causes.

*** Includes senior professionals and residents, doesn’t include those linked to the SP, but assigned to a different service.

The total number of professionals assigned to each resource is indicated, in brackets the number who works part-time, often incorporated into various resources; The community psychiatry program is supervised by the psychology and the psychiatry of the RU and with nursing support from the CMHT. **: Includes the Head of Nursing Area without affiliation to any unit, and a Head of Nursing Unit attached to the Rehabilitation Unit ***: Includes the Head of Service, without affiliation to any Unit.

The total number of professionals assigned to each resource is indicated, in brackets the number who works part-time, often incorporated into various resources; The community psychiatry program is supervised by the psychology and the psychiatry of the RU and with nursing support from the CMHT. **: Includes the Head of Nursing Area without affiliation to any unit, and a Head of Nursing Unit attached to the Rehabilitation Unit and the RMH. ***: Includes the Head of Service, without affiliation to any Unit.

Table 2 Human resources and COVID.

| Professional category | Total | Sick leaves COVID* | Total leaves** | Integration in COVID teams |
|-----------------------|-------|-------------------|---------------|---------------------------|
| Doctors***            | 38    | 9                 | 11            | 9                         |
| Psychologists***      | 23    | 1                 | 2             | 0                         |
| Nursery               | 37    | 2                 | 7             | 13                        |
| Auxiliary Nurse       | 39    | 12                | 14            | 14                        |
| Social Workers        | 8     | 0                 | 1             | 3                         |
| Occupational therapist| 3     | 1                 | 1             | 2                         |
| Social Educators      | 2     | 0                 | 0             | 0                         |
| Administrative staff  | 7     | 0                 | 0             | 0                         |
| Sports Monitor        | 1     | 0                 | 0             | 0                         |
| Wardens               | 5     | 0                 | 0             | 5                         |
| Total                 | 163   | 25                | 36            | 46                        |

Spain. Real Decreto 463/2020, de 14 de marzo, por el que se declara el estado de alarma para la gestión de la situación de crisis sanitaria ocasionada por el COVID-19. [Royal Decree 463/2020, of 14 March 2020, which declares the state of alarm for the management of the health crisis caused by COVID-19]. BOE A-2020-3692, nr. 67, 14 March 2020. Available in: https://www.boe.es/buscar/pdf/2020/BOE-A-2020-3692-consolidado.pdf
COVID 19 infections mainly. (Table 2). The professionals previously attached to the now closed in- and outpatient units who did not join the COVID teams gave support to the resources which remained active. Tele-medicine (consultation by telephone) intensified notably within daily health-care while presential activity decreased (Table 3) and new security measures were implemented (Table 5). A system of regular communication with all the specialists in the PS was established in all resources and units.

Beside the reorganization of human resources, other intense re-adaptations occurred, such as the transfer (short-term hospitalization unit) or shutdown (addiction and dual diagnosis unit) of different in-patient units, as well as some of the outpatient ones, and the implementation of tele-medicine programs in the units which remained operative. Simultaneously, two new healthcare programs were initiated: one aimed at mental health care for professionals and patients and new security measures were implemented (Table 5). A system of regular communication with all the specialists in the PS was established in all resources and units.

Regarding the inpatient units, all patients with sufficient clinical stability were discharged. The short-term hospitalization unit (STHU) was closed and reconverted into a COVID ward for Internal Medicine. Prior to its shutdown, three patients were transferred from the STHU to the LMH (outside the capital), enabling a new thirteen-bed ward and new security measures were implemented (Table 5). A system of regular communication with all the specialists in the PS was established in all resources and units.

The patients received a telematic follow-up by the team. Until this date 9th and other 2 patients, were transferred to the Convalescence Unit. The patients remained stable and locked down, with no cases of infection. The_convalescence unit, located in the LHM, has a semi-open, half-stay hospitalization scheme for subacute phases (Green et al., 2019). Eight patients were discharged to their homes and 2 remained hospitalized because of their clinical situation. After the state of alarm was declared, 11 admissions were accepted from the STHU, with which a close coordination was maintained to keep it from overburden. A team of 4 psychiatrists and 3 psychologists from different resources in the network was generated, who worked in this unit on a rotating basis. The aim of this schedule was to avoid contagion, due to the patients presenting a greater risk of infection related to their decreased capability of realizing their likelihood of getting infected and the consequences linked to it, among others. In the rehabilitation unit, also placed in the LMH, with an open care plan, was shut down on March the 16th. Previously 14 patients were discharged by March the 9th and other 2 patients, were transferred to the Convalescence Unit. The patients received a telematic follow-up by the team. Until this date the patients remained stable and locked down, with no cases of infection. Only one patient needed hospital admission for a lithium intoxication and a psychopathological decompensation after it. Super-vision of the flats, which are managed by the rehabilitation unit, has been maintained via tele-medicine and in person. The resistant mental disorder program assisted 66 patients with 465 telephone calls, requiring only 3 patients to be hospitalized.

In the University Hospital liaison psychiatry’s five specific programs were closed. The team was reorganized increasing its numbers by 6 doctors from other resources, all of them appropriately trained in the usage of IPE (Individual Protection Equipment), to attend the referrals of COVID inpatients. Rotational teams of at least two people were
created to minimize infection risks and making a rational use of the IPEs. Before the initial assessment of a possibly infected patient, a reunion was made with the medical team at the ward emitting the consultation referral, defining the case for referral and its objective. The initial assessment with the patient was done by one only professional, assisted by a colleague in the placement and removal of the IPE and to accessing and leaving the room. When this was not possible (due to the organic or mental state of the patient), the follow-up was done in person. During the 8 first weeks 30 COVID and 24 non-COVID patients were assessed.

The addictions and dual disorders unit (ADDU) includes one outpatient unit for the treatment of alcohol- and cocaine-related disorders -alcohol treatment unit (ATU)-, an outpatient dual disorders program (ODDP) and a hospitalization resource fulfilling the roles of a hospital detoxication unit and an inpatient dual disorder unit (HDU/IDDU). The latter is a reference unit for Castilla y Leon (Castilla y Leon regional council, 2016). Castilla y Leon regional council, 2017), located in the LHM. It was closed on march the 16th, after referring the patients to either the Outpatient Drug Clinics (ODC), their Community Mental Health Teams (CMHT) or a Therapeutic Community in one case. The HDU/IDDU was repurposed as the new STHU. In the outpatient units, a mixed telemedicine program has been adopted, with occasional instances of presential assessments for patients at higher risk of relapse and for the administration of long-acting intramuscular treatments under supervision. All the group therapies were canceled, and urinalyses were not carried out. 8 cases of relapse were detected at the ATU, with one patient having to be urgently admitted in the STHU and 2 patients referred for admission in medical wards, due to acute organic pathologies. 2 relapse instances have been identified by the ODDP during the lockdown time, during the second and fifth week.

Related to the outpatient units the Psychosocial Rehabilitation Center (PSRC), located in the LMH, the frequency of telephone contacts with the long-lasting and severe mental disorder patients and their families was once/twice per week, depending on their mental health state and social support. In this moment most of them (33/35) remain stable. One patient died of physical illness (unrelated to COVID) and a present visit was carried out before he died, giving support to his relatives by phone. One patient was admitted in the STHU for 2 weeks and 2 patients presented low mood state for 4 days, requiring more frequent follow-up calls leading to their amelioration. Follow-up via telephone was successful, 90% of the patients remaining stable. The Day Hospital is a multidisciplinary resource located in the old provincial hospital beside the University Healthcare Complex (Regional Health Management of Castilla y Leon, 2002). During the pandemic, a mixed working model was created, presential for some hours per day, and by phone. Three patients stopped attending it to avoid transmitting the infection to their elder parents. Other 4 patients remained in the initial phase of treatment, keeping them from a possible decompensation. Individual and group therapy was maintained, keeping the initial objectives, analyzing the consequences of the lockdown regarding the duel for deceased close relatives and the impact of the economic crisis. Daily phone calls became weekly progressively. The patients’ physical and mental states were evaluated, as was adhherence to treatment, level of activity and feelings produced by the pandemic.

The Unit for Eating Disorders is a multidisciplinary resource and a regional reference unit including a Day Hospital and an outpatient consultation unit, place within the Virgen de la Vega hospital attaches to the University Hospital. Since the declaration of the state of alarm the activities of this Day Hospital were shut down and outpatient consultations were carried out prioritizing urgent cases (weekly, daily calls), with preferent referrals followed up every 15 days and ordinary

| Measure                                                                 | Inpatient SHTU | CU | DH | Outpatient PSRC | CMHT | CAMHT | ADU/ODDU | Community flats | SMIP |
|------------------------------------------------------------------------|----------------|----|----|-----------------|------|-------|----------|----------------|------|
| Handwashing (Ma et al., 2020)                                          | yes            | yes| yes| no              | yes  | yes   | yes      | yes            | no   |
| Use of the mask (Ma et al., 2020)                                      | yes            | yes| yes| no              | yes  | yes   | yes      | yes            | no   |
| Distance (Ma et al., 2020)                                             | yes            | yes| yes| no              | yes  | yes   | yes      | yes            | no   |
| Safety gloves (Ma et al., 2020)                                       | yes            | yes| yes| no              | yes  | yes   | yes      | yes            | no   |
| Family calls instead of walks (Xiang et al., 2020)                     | yes            | yes| no | –               | yes  | yes   | yes      | yes            | no   |
| Restrict family visits (Tor et al., 2020)                              | yes            | yes| –  | –               | yes  | yes   | yes      | yes            | no   |
| Audiovisual materials and books instead of a walk (Xiang et al., 2020) | no             | yes| –  | –               | yes  | yes   | yes      | yes            | no   |
| Stop motor group activities (Adhikari et al., 2020)                    | yes            | yes| no | –               | yes  | yes   | yes      | yes            | no   |
| Carrying out graphomotor activities and personal experiences (dance, music) | no             | yes| –  | –               | yes  | yes   | yes      | yes            | no   |
| Nursing-administered prevention guidelines (Shi et al., 2020; Tor et al., 2020) | no             | yes| yes| yes             | yes  | no    | yes      | yes            | no   |
| Temperature taking once per shift. (Zhu et al., 2020)                   | yes            | yes| yes| yes             | yes  | yes   | yes      | yes            | no   |
| Only clothes and food provided by the institution are used (Zhu et al., 2020) | yes            | yes| no | –               | yes  | yes   | yes      | yes            | no   |
| Preparation of isolation room (Percudani et al., 2020)                 | yes            | yes| –  | –               | yes  | yes   | yes      | yes            | no   |
| Preventive action such as stocking up on personal protective equipment. (Houghton et al., C. 2020; Tor et al., 2020) | yes            | yes| no | yes             | yes  | yes   | yes      | yes            | no   |
| Covid education for healthcare personnel (Saitoh et al., 2020; Tor et al., 2020) | yes            | yes| yes| yes             | yes  | yes   | yes      | yes            | no   |
| Psychiatrist turn over from time to time (Tor et al., 2020)            | yes            | yes| no | yes             | yes  | no    | yes      | no             | yes  |
| Telemedicine from home with remote access (Corrubel, 2020)             | no             | no | no | no              | yes  | no    | yes      | no             | yes  |
| Face-to-face visit for LAI administration (nursery)                     | yes            | yes| no | no              | yes  | no    | yes      | no             | yes  |
| Turn-over of presential assistance to decrease exposure and ensure physical presence (Tor et al., 2020) | yes            | yes| no | yes             | yes  | no    | yes      | no             | yes  |
| Prioritized assistance to suicide risk and décompensation of SMI       | –              | –  | yes| yes             | yes  | yes   | yes      | yes            | yes  |
| Urgent telephone attention (Corrubel, 2020)                            | yes*           | yes*| yes*| yes             | yes  | yes   | yes      | yes            | yes  |
| Telephone follow-up from office (Tele-Psychiatry) (Corrubel, 2020)     | no             | yes| yes| yes             | yes  | yes   | yes      | yes            | yes  |
| Remote internet Access (Corrubel, 2020)                                | no             | no | no | yes             | yes  | yes   | yes      | yes            | yes  |
| Face-to-face medical attention with security measures                   | yes            | yes| No | yes             | yes  | yes   | yes      | no             | no   |

SHTU: Short Term Hospitalization Unit CU: Convalescence Unit DH: Day Hospital.
PSRC: Psico-Social Rehabilitation Center CMHTs: Community Mental Health Teams CA-MHT: Child and Adolescence Mental Health Team ADU/ODDU: Addicteve/Outpatient Dual Disorder Unit SMIP:Severe Mental Illness Program.

*Carried out by localized and presental on-call professionals.
follow-ups every 2–3 months (“Niño Jesús” University Children’s Hospital, 2020). A presential consultation was needed for three patients, one of them resulting in a referral for hospital admission.

The assistance of adult patients in the CMHTs has been an unprecedented challenge. A new joint model was implemented mixing presential assistance, and consultations by phone with the aim of avoiding the infection. Presential assistance was kept only for patients requiring depot medication provided by a nurse and follow-ups were done by phone, with attention to the severity of the cases and the need for special attention according to the previous experience of other European mental health care networks (Percudani et al., 2020; Chevance et al., 2020). An individual periodicity was established, increasing the frequency of contacts when needed to ensure security and to evaluate the necessity of urgent or preemptive attention with special care put to suicidal risk and possible decompensations of severe mental disorders. A recommendation has been made to follow mental health reinforcement strategies to deal with confinement such as physical exercise, occupational activity and increasing communication with loved ones. Contact with primary care services has been strengthened via telephone or the internet sending comments about the patients and treatment prescriptions for them to be included in the electronic prescription records. Contact with different community mental health resources, protection flats and programmed and urgent attention at the hospital were intensified. The patients’ reaction has been in general very favorable, being quite thankful for the assistance offered and the follow-up made by the whole team.

The child and adolescence mental health team, located in the University Hospital, canceled all the outpatient consultations programmed, organizing a mixed model, both presential and telephonic with a rotational team consisting on 1 psychiatrist and 1 psychologist physically present at the hospital, following the scheduled patients up via telephone calls, paying special attention to possible incidences and emergencies in the pediatric population and wards. The rest of the team worked from home. The main objective was to ensure care continuity, avoiding possible relapses. Communication with Primary Care was kept, contacting by phone with preemptive referrals evaluating the necessity of presential assistance. Only twelve patients with suicidal risk or acute symptoms were assessed in person, who could not be managed by phone. A patient admitted to hospitalization under the responsibility of the PS at the pediatric ward had to be visited in person, given that the child and adolescence psychiatry ward located in Valladolid (the unit of regional reference) has remained closed.

After the declaration of the state of alarm, two new programs were created. The first one, named PASMICOR (intends to give a quick response to mental health problems arising from the COVID 19 pandemic), being given direct access to via one e-mail and without risk of contagion, making the assessment easier. 128 people were assessed: health care professionals, patients, and relatives to people admitted to the hospital due to the infection by COVID. The program was initiated on March the 23rd, and on April the 7th the offer was opened to primary care professionals, patients isolated at home, relatives and third age residential centers (DOC-PSQ-GE-20–01–02, 2020). Sixteen clinical psychologists, members of the PS, and an additional psychologist specially hired for the program, made 455 interventions by phone. The second program was organized two weeks after the beginning of the state of alarm, to assist homeless people (HP) who could not continue living on the streets. The city hall of Salamanca, cooperating with local entities, enabled one local shelter for their lodging and maintenance. The aim of the program was to detect mental illness and respond to them if necessary. Four psychiatrists in teams of two people have been attending the center weekly. Give the high risks found in this population, the interviews have been performed with the use of complete IPEs. In addition, 7 phone calls have been made to the Center managers. During the first visit, a 27% of the 22 locked down people, fulfilled DSM-5 criteria for at least one diagnostic label of mental disorder, and 24% presented symptoms requiring sleep hygiene and healthy lifestyle measures. Finally, 27 people were assessed with some form of mental disorder being detected in 62,9% of them, 33,3% of them consisting in substance use disorders. Only one of them used required attention at the emergency service, before the program was initiated.

4. Discussion

As a consequence of the pandemic a radical re-adaptation of the Psychiatry service was carried out in three main aspects: generalized implementation of telemedicine, physical shutdown of the resources, and reorganization of human resources with those professionals who were not off work due to COVID nor were included in the COVID teams. Additionally, two programs were initiated, namely one program to assist health care professionals, patients and relatives affected by the COVID infection (PASMICOR program) and another program for homeless people. The reorganization and the creation of new teams resulting from it has already been described in Spain (Arango et al., 2020) and Europe (Percudani et al., 2020; Chevance et al., 2020), following some of the suggestions made in China. Patients have remained stable and their subjective perception of the support given was hardly lesser than with conventional hospitalization.

The usage of tele-medicine in an extensive way, with around 9000  calls in 8 weeks, was successful in all the resources, in consonance with previous works (Corrubel et al., 2020; Castro et al., 2012) including the new implemented health care resources and establishing that the use of tele-medicine in mental health is feasible.

The number of hospitalization beds was 69% lower, with an adequate containment of the patients with severe mental disorders. Changes made in the STHU are coherent with the proposals made by other hospitals: short stays under more strict criteria, encouraging outpatient assistance, implementing isolation, and avoiding presential visits (Liu et al., 2020). There was no specific zone defined only for likely COVID patients, separated from the rest of the unit with protective measures, nor has a separate unit been generated, although it has been considered. In previous experiences, the creation of units for infectious cases in psychiatric hospitals was suggested and transferring the STHU to general hospitals (Xiang et al., 2020). That is related to the fact that in China, most of the acute wards are in psychiatric hospitals (Xiang et al., 2020). In Singapore, acute psychiatric wards are kept in psychiatric and general hospitals with the necessary measures of protection, training and isolation and the turnover of psychiatrists is organized after set time intervals (Tor et al., 2020), as we did in our team. They propose keeping electroconvulsive therapy, with fitting preventive measures (Tor et al., 2020), although it has not been done so in our case. There is no literature on the adaptation of half-term units to the COVID-19 pandemic. Most of the changes generated are replicated in other studies made in STHUs, even if some measures like patient discharge after two weeks of stay is not appliable to this resource (Ji et al., 2020; Zhu et al., 2020). There is no experience either about the closure of rehabilitation units due to the pandemic, but the assertion can be made that close, multidisciplinary support via telephone, although provisional as management strategy, seems to be effective to minimize relapses, with the patients experiencing a similar subjective perception of support. Furthermore, home treatment stands as a way of avoiding hospitalization and infection (Yao et al., 2020). For patients who are not candidates for tele-medicine or who need closer support,
this would be the ideal option, combined with granting the administration of depots and the lab analyses needed in patients under treatment with clozapine, and blood levels of lithium.

Reorganization of the Liaison Psychiatry unit is in consonance with other Spanish hospitals (Arango et al., 2020). Previous training in the usage and removal of IPEs has permitted to avoid contagion and the frequent meetings with the teams of internal medicine have allowed to limit direct contact with the infected patients. The application of telemedicine in Liaison psychiatry has turned out being useful for the moment, optimizing the average protection resources, material, and time available and lowering the risk of infection.

The readjustment of resources in the ADDU, reducing presential and hospital-based activity (Xiang et al., 2020) via telephone and on-line support, has obtained good results in consonance with previous works about the pandemic in China, (Liu et al., 2020). There is some experience, especially in the EEUU, about the use of telemedicine in addicted patients (Tofighi, 2018; Ondersma, 2019), but there aren't enough descriptions of units similar to the IADDU. Already described consequences of COVID-19 such as development of anxiety, depression, insomnia, suicidal risk, lack of adherence to treatment, relapses, problems while accessing the emergency care system and COVID-19 infection (Liu et al., 2020; Volkow, 2020) have hardly been detected. However, these findings correspond only to the first 8 weeks and must be revised in the long-term or after the situation goes back to normal. In contrast with the usual rate of relapse presented by these patients (Grau-Lopez, 2012), decompensations for the moment seem minimal, although substances keep being consumed; consumption of alcohol and anxiolytics is probably increasing, since they are easier to acquire in these circumstances.

Concerning outpatient units PSRCs work intensively with groups, hence some of the objectives of the rehabilitation like daily basic self-care, social relationships and activities cannot be checked since they need presential supervision. However, PSRC has been effective keeping patients stable and maintaining social contact among them by phone. This suggests that, by means of telemedicine, some of the objectives can be pursued and it can be used in the future (Castro et al., 2012; Góngora-Alonso et al., 2020), even with patients with schizophrenia. Psychiatry Day Hospital remained open with a mixed health care system (presential and by phone), permitting to manage the difficulties associated with stress due to the anomalous and dangerous situation, as well as continuing with its previous work. Even though most day hospitals have closed, we kept ours open given its location outside the Universities Hospitals and pondering the potential risks and benefits for the patients. Up to this date it has fulfilled its aim to avoid decompensations and the need to use the emergency services, lowering the number of admitted patients following the existent recommendation (Management Office, 2020; IASC, 2020). In the Eating Disorder Unit, the risks were unaffordable, because of the medical frailty of the patients, because of which the day hospital was closed following the recommendations in this area (Asociación Española de Trastornos de la Alimentación, 2020).

Regarding adult outpatients attention no great difficulties have been detected. Patients have reacted very positively, showing gratitude for the call and the follow-up made by the team. This suggests that telemedicine can be a very relevant resource in the attention to geographically distant patients, urgent and preemptive, which is similar to the previously described experience (Percudani et al., 2020), and that it will undoubtedly stay after the pandemic is over, at least partially. The system helps screening referrals from primary care via first contact with the patients by which their real needs and the necessity for referral to an adequate resource is assessed. The child and adolescence team has assessed 12 children, although more are likely to appear in the following weeks, given that confinement has been linked to new symptoms after 33.7 days on average (Xie et al., 2020), and to an impoverishment at baseline status (Zhang et al., 2020). In Spain, children with Autism Spectrum Disorders have been allowed to go out since the first days of the pandemic, as have children under 14 on week 6, with some restrictions. Based on clinical records, after follow-up by phone it seems that previously existing problems, like behavioral alterations in children with ADHD, have worsened as the tie of lockdown got extended, with the apparition of other kinds of symptoms, such as sleep distortion and anxiety. These symptoms have been managed via contact by telephone, and thus could be considered for other settings.

The assistance given by the PASMICOR program during these weeks is quite relevant, given that encouraging mental health in healthcare providers and survivors would be impervious in order to reduce suffering and demoralization after the pandemic (Kangas, 2013; Levin, 2013). The application of special psychological and emotional support programs has been adequate in order to reduce the frequency and intensity of post-traumatic stress disorder and anxiety and depressive symptoms and has helped preventing the appearance of chronic pathologies although interventions shouldn’t be offered without a careful assessment, which would hinder the use of natural coping mechanisms (CTRWG, 2020). That is why the attention must be provided by qualified professionals, since emotional, cognitive, and behavioral responses in resilient people are often difficult to differentiate from stress or post-traumatic stress disorder (Drury et al., 2013). Direct access to individual psychological and psychopharmacological help has been provided (Huremovič et al., 2019), allowing for early and confidential access by healthcare professionals to support resources (Richins et al., 2019). Providing mental health care for HPs is a challenge given that the prevalence of mental disorders among them, higher than 60%, is within the expectable range, since it was estimated that 50% suffered from some kind of mental disorder (Scott et al., 1993; Muñoz et al., 2005) and up to 60% suffer from an alcohol use disorder (Panadero et al., 2016). Preventive evaluations, like the one carried out in our case, could avoid the access to the emergency care units in the situation of a pandemic, supposing a reduction in risks for the patients themselves and health care professionals.

The re-organization of human resources was crucial. In this regard, it is relevant to consider the high rates of infection among professionals from the PS, even though it is a second line department in the COVID setting, even if it is in consonance with previous reports which claim that mental health professionals are a risk population (Xiang et al., 2020; Li et al., 2020), possibly because of the kind of relationship, contact and dynamics established with the patients and because of the delayed access to IPEs to mental health resources.

The response to the pandemic has been articulated in a noticeably short time, and we consider that its execution has been successful taking the few instances or relapse among the patients. The permanent contact and interaction between teams has without a doubt contributed to the fight against mental burnout and additional stress. It is vital to maintain professionals mentally healthy when coping with the pandemic (Walton et al., 2020), being a priority in the response given by public health care systems. Opportune, adequate information to the professionals in crucial to avoid the apparition of group anxiety.

We can conclude that the usage of support via telephone and telemedical applications in this situation looks promising for patients with...
mental disorders, and its implementation should be encouraged beyond the current crisis (Bilal et al., 2020). It is necessary to continue researching on the impact of COVID on the course of illness and treatment of patients with mental disorders. The response should be articulated with the other levels of the health care system, including primary care and other resource in the drug-dependence assistance network. The response described here is only initial and short-term and will surely change, and thus will need to be reevaluated. As a final lesson, it seems relevant to plan medium- and long-term care by adding realistic possibilities for the health care system, the professionals’ needs and demands from patients and their relatives.

CRediT authorship contribution statement

Carlos Roncero: Conceptualization, Formal analysis, Data curation, Writing - original draft, Writing - review & editing. Llyana García-Ullán: Conceptualization, Formal analysis, Data curation, Writing - original draft, Writing - review & editing. Carmen Martín: Investigation, Resources, Writing - original draft, Writing - review & editing. Pilar Andrés: Investigation, Resources, Writing - review & editing. Ana Ojeda: Investigation, Resources, Writing - review & editing. Clara Fombellida: Investigation, Resources, Writing - review & editing. Ana Álvarez-Navares: Investigation, Resources, Writing - review & editing. José Antonio Benito: Investigation, Resources, Writing - review & editing. Angel Luis Montejo: Conceptualization, Investigation, Resources, Writing - review & editing.

Declaration of Competing Interest

None

Acknowledgements

We, the authors, want to thank all the professionals who were on sick leave due to exposure to or infection with COVID 19 and helped to write this article nonetheless. Their effort has been essential.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.psychres.2020.113252.

References

Adhikari, SP, Meng, S, Wu, YJ, Mao, YP, Ye, RX, Wang, QZ, Sun, C, Sylvia, S, Rozelle, S, Raat, H, Zhou, H. 2020. Epidemiology, clinical manifestations, diagnosis, prevention and control of coronavirus disease (COVID-19) during the early outbreak period: a scoping review. Infect Dis Poverty 9 (1), 29. https://doi.org/10.1186/s40678-020-00646-x. Mar 17 Review. PubMed PMID: 32189301; PubMed Central PMCID: PMC709521.

Arango, C. 2020. Lessons learned from the coronavirus health crisis in Madrid, Spain: how COVID-19 has changed our lives in the last two weeks. Biol Psychiatry. Epub Apr 8 2020. https://doi.org/10.1016/j.biopsych.2020.04.003.

Asadi-Pooya, AA, Simani, IL, 2020. Central nervous system manifestations of COVID-19: a systematic review. J. Neurol. Sci. 413, 116832 Advance online publication. https://doi.org/10.1016/j.jns.2020.116832.

Asociación Española de Trastornos de la Alimentación. [Spanish Association of Eating Disorders] [webpage] Last visited on the 5th of May 2020.Available in: www.aetaec.com.

Bialal, Latif F, Bashir, MF, Komal, B, Tan, D. 2020. Role of electronic media in mitigating the psychological impacts of novel coronavirus (COVID-19) [published online ahead of print, 2020 Apr 29. Psychiatry Res 289, 113041. https://doi.org/10.1016/j. psychres.2020.113041.

Castilla y Leon regional council. 2017. VII Plan regional sobre drogas (2017-2021). [VII Regional plan on drugs (2017-2021)] Gerencia de Servicios Sociales. Comisionado Regional para la Droga Available in. http://familia.jcyl.es/web/es/drogas/plan-regional-sobre-drogas.html.

Castilla y Leon regional council, 2016. IV Plan de Salud de Castilla y Leon. [IV Castilla y Leon Healthcare plan] Directorate General of Research, Innovation and Infrastructures. Directorate General of Healthcare Available in. https://www.saludcastillaleon.es/institucion/es/planes-estrategicas/iv-plan-salud-castilla-leon.

Castro, A, Larrain, A, Fristch, R, Roja, G. 2012. Feasibility of implementing tele-psychiatry in Chile. Rev. Med. Chile. Sociedad Médica de Santiago. 15 (6), 789-796. Jun.

Chevance, A, Gourion, D, Hoertel, N, Llorca, PM, Thomas, P, Bocher, R, et al., 2020. [Ensuring mental health care during the SARS-CoV-2 epidemic in France: a narrative review]. Encephale. https://doi.org/10.1016/j.encep.2020.03.001. Epub Apr 2 2020. pii: S0013-7006(20)30064-6.

Corbule, E.A., 2020. Viewpoint From Paris on the COVID-19 Pandemic: a Necessary Turn to Telepsychiatry. J Clin Psychiatry 81 (3), 20. https://doi.org/10.4088/JCP.19m1361. Mar 31.

CTRWG, 2020. Website guidance of University College London and the Traumatic Stress Clinic at Camden and Islington. NHS Trust Available from. https://www.taruegroup.org/.

DOC-GE-GR-20-01-02, 2020. Programa de atención a la salud mental ante la infección por Coronavirus 2019 [PASMCORO. (Program for assistance to mental health care related to the COVID19 infection)]. Salamanca Healthcare Complex.

Drury, J, Novelli, D, Stott, C, 2013. Representing crowd behaviour in emergency planning: ‘mass panic’ or collective resilience. Resilience 1 (1), 18-37. https://doi.org/10.1214/12-rlc112.

European Centre for Disease Prevention and Control, 2020. Coronavirus Disease 2019 (COVID-19) in the EU/EEA and the UK – ninth update, 23 April. ECDC, Stockholm Available in. https://www.ecdc.europa.eu/en/publications-data/covid-19-europe-week-2020-04-23-fifth-update.

Grau-López, I, Roncero, C, Daigre, C, Gonzalvo, B, Bachiller, D, Rodríguez-Cintas, L., 2012. Risk factors for relapse in drug-dependent patients after hospital detoxification. Addiciones 24 (2), 115. https://doi.org/10.20862/addiciones.103.

Green, R, Mitchell, P.F., Lee, K., et al., 2019. Key features of an innovative sub-acute residential service for young people experiencing mental ill health. BMC Psychiatry (1), 311. https://doi.org/10.1186/s12888-019-2303-4.

Góngora Alonso, S, Fumero Vargas, G, Morón Nozaleda, L, Sainz de Abajo, B, de la Torre Piz, J, Alonso, M. 2020. Usability Analysis of a System for Cognitive Rehabilitation. Gradior. a Spanish Region. Teledem J Health 26 (5), 671-682. https://doi.org/10.1089/tmj.2019.0084.

Houghton, C, Meskell, P, Delaney, H, Smallle, M, Glenton, C, Booth, A, Chan, X.H.S., Devane, D, Bisyet, LM. 2020 Apr 21. Barriers and facilitators to healthcare workers’ adherence with infection prevention and control (IPC) guidelines for respiratory infectious diseases: a rapid qualitative evidence synthesis. Cochrane Database Syst Rev 3 Epub ahead of print. https://doi.org/10.1002/14651858.CD007858.

Huremović, D, 2019. Psychiatry of Pandemics A Mental Health Response to Infection Outbreak. (North Shore University Hospital Manhasset. Springer Nature, NYSwitzerland. https://doi.org/10.1007/978-3-030-15346-0.

IASO-PIPSI MIAPS Reference Group. Briefing note on addressing mental health and psychosocial aspects of COVID-19 OutbreakVersion 1.0 Last updated Feb. 21, 2020. https://doi.org/10.1089/tmj.2020.0055.

Kangas, M, Milross, C, Taylor, A, Bryant, R.A., 2013. A pilot randomized controlled trial of a brief early intervention for reducing posttraumatic stress disorder, anxiety and depressive symptoms in newly diagnosed head and neck cancer patients. Psychooncology 22 (7), 1665–1673. https://doi.org/10.1002/pon.3208.

Lima, NNR, de Souza, RI, Feitosa, PWG, Moreira, JLS, da Silva, CGL, Neto, MLR, 2020. People experiencing homelessness: their potential exposure to COVID-19. Psychiatry Res 288, 112945. https://doi.org/10.1016/j.psychres.2020.112945. Apr 11Epub ahead of print. pii: S0920-3988(20)30067-8.

Liu, S, Yang, L, Zhang, C, Xiang, Y, Liu, Z, Hu, S. 2020. Online mental health services in China during the COVID-19 outbreak. The Lancet Psychiatry 7 (4), e17-e18. https://doi.org/10.1016/S2215-0366(20)30071-4.

Marín, C., Gamonal, S., Lozano, MT., Matías, J., Lorenzo, C., Roncero, C., 2019. Management Office, 2020. Medical Chief Office, Corporate Nursing Committee of the Salamanca University Hospital. 15 Mar.

Martín, C., Gamonal, S., Lozano, MT., Matías, J, Lorenzo, C., Roncero, C., 2019. Incidence of First Episodes of Psychosis and their relation to substance use, in the Brief HospitalizationUnit of the University Assistance Complex of Salamanca. In: 3rd WADD World Congress of the 6th edition of SEPD International Congress. Madrid, . http://dx.doi.org/10.17579/AbstractBookICDD2019.01).

Mediavilla, R, Fernández-Jiménez, E, Rodríguez-Vega, B, Gotor-Martínez, I, Rivellés-Segovia, R, Rojano-Capilla, P, Bravo-Ortiz, MF. 2020. Adapting mental health care after the COVID-19 outbreak: preliminary findings from a public general hospital in Psychiatry Research 291 (2020) 113252
Madrid (Spain). Psychiatry Res 289, 113077. https://doi.org/10.1016/j.psychres.2020.113077. May 12.

Ma, QX, Shan, H, Zhang, HL, Li, GM, Yang, RM, Chen, JM. 2020. Potential utilities of mask-wearing and instant hand hygiene for fighting SARS-CoV-2. J Med Virol. https://doi.org/10.1002/jmv.25805. Mar 31 [Epub ahead of print] PubMed PMID: 32232986.

Ministry of Health, 2020. Consumer Affairs and Social Welfare. Situación del COVID 19 en España COVID 19 Situation in Spain [Internet] Last updated 9 May Available in. https://cneccovid.isciii.es/COVID19/.

Muñoz, M, Panadero, S, Santos, EP, Quiroga, MA. 2005. Role of stressful life events in homelessness: an intragroup analysis. Am J Community Psychol 35 (1–2), 35–47. “Niño Jesús” University Children’s Hospital, 2020. Eating Disorder Unit. Community of Madrid. Recommendations for parents of children and adolescents with eating disorders during the period of lockdown due to COVID 19 Available in. https://www.asecca.com/index.php/6-noticias/noticias/77-recomendaciones-para-padres-de-ninos-y-adolescentes-con-trastornos-del-comportamiento-alimentario-tca-durante-el-periodo-deaislamiento-por-covid-19.

Onderma, SJ, Ellis, JD, Resko, SM, Grekin, E. 2019. Technology-Delivered Interventions for Substance Use Among Adolescents. Pediatr. Clin. North Am. 66 (6), 1203–1215. https://doi.org/10.1016/j.pcl.2019.08.009.

Panadero, S, Vázquez, JJ, Martín, RM. 2016. Alcohol, poverty and social exclusion: alcohol consumption among the homeless and those at risk of social exclusion in Madrid. Adicciones 29 (1), 33–36. https://doi.org/10.20882/adicciones.830. 14.

Percudani, M, Corradin, M, Moreno, M, Indelicato, A, Vita, A. 2020. Mental Health Services in Lombardy during COVID-19 outbreak. Psychiatry Res 288, 112980. https://doi.org/10.1016/j.psychres.2020.112980.

Regional Health Management of Castilla y Leon, 2002. Hospital de Día Psiquiátrico, guía básica de funcionamiento. [Psychiatry Day Hospital, basic functioning guideline] internet Available in. https://www.saludcastillayleon.es/institucion/es/publicaciones-consejeria/buscador/hospital-dia-psiquiatrico-guia-basica-funcionamiento.ficheros/328061-gui3.pdf.

Richins, MT, Gauntlett, L, Tehrani, N, Hesketh, I, Weston, D, Carter, H, et al., 2019. Scoping Review: early Post-trauma Intervention in Organizations. Independent research undertaken by Public Health England's Behavioural Science Research Team. Emergency Response Department, Public Health England Retrieved from. https://www.bps.org.uk/sites/www.bps.org.uk/files/MemberNetworks/Sections/Crisis/CDTScopingReviewEarlyPostTraumaInterventionsinOrganisationsReport_09052019FINAL.pdf.

Saitoh, A., Sato, K., Magara, Y., Osaki, K., Narita, K., Shioiri, K., Fowler, K.E., Ratz, D., Saint, S., 2020 May. Improving Hand Hygiene Adherence in Healthcare Workers Before Patient Contact: a Multimodal Intervention in Four Tertiary Care Hospitals in Japan. J Hosp Med 15 (5), 262–267. https://doi.org/10.12788/jhm.3446.

Scott, J., 1993. Homelessness and mental illness. Br J Psychiatry 162, 314–324.

Shi, Y, Wang, J, Yang, Y, Wang, Z, Wang, G, Hashimoto, K, et al., 2020. Knowledge and attitudes of medical staff in Chinese psychiatric hospitals regarding COVID-19. Brain, behavior, & immunity health 4, 100064. https://doi.org/10.1016/j.bbih.2020.100064.

Tofiqi, B, Abrantes, A, Stein, MD, 2018. The Role of Technology-Based Interventions for Substance Use Disorders in Primary Care: a Review of the Literature. The Medical clinics of North America. 2018 102 (4), 715–731. https://doi.org/10.1016/j.mcna.2018.02.011.

Tor, PC, Phu, AHH, Koh, D, Mok, YM. 2020. ECT in a time of Covid-19. Department of Mood and Anxiety, West Zone Institute of Mental Health, Singapore. Department of Nursing Administration, Institute of Mental Health, Singapore. Journal of ECT DOI:10.1097/YCT.0000000000000690.

Volkow, ND, 2020. Collision of the COVID-19 and Addiction Epidemics. Ann. Intern. Med. https://doi.org/10.7326/M20-1212.

Walton, M, Murray, E, Christian, MD, 2020. Mental health care for medical staff and affiliated healthcare workers during the COVID-19 pandemic. Eur Heart J Acute Cardiovasc Care 28, 2048872620922795. https://doi.org/10.1177/2048872620922795. Apr.

Xiang, YT, Zhao, YJ, Liu, ZL, Li, XH, Zhao, N, Cheung, T, et al., 2020. The COVID-19 outbreak and psychiatric hospitals in China: managing challenges through mental health. Int. J. Biol. Sci. 16 (10), 1741–1744. https://doi.org/10.7150/ijbs.45072.

Xie, X, Xue, Q, Zhou, Y, et al., 2020. Mental Health Status Among Children in Home Confinement During the Coronavirus Disease 2019 Outbreak in Hubei Province. China. JAMA Pediatr 24https://doi.org/10.1001/jamapediatrics.2020.1618. Apr.

Yahya, AS, Khawaja, S, Chukwuma, J, 2020 May. Improving Hand Hygiene Adherence in Healthcare Workers Before Patient Contact: a Multimodal Intervention in Four Tertiary Care Hospitals in Japan. J Hosp Med 15 (5), 262–267. https://doi.org/10.12788/jhm.3446.

Yao, H, Chen, JH, Xu, YF, Apr 2020. Patients with mental health disorders in the COVID-19 epidemic. Lancet Psychiatry 7 (4), e21. https://doi.org/10.1016/S2215-0366(20)30090-0.

Zhu, Y., Chen, L., Ji, H., Xi, M., Fang, Y., Li, Y., 2020. The risk and prevention of novel coronavirus pneumonia infections among inpatients in psychiatric hospitals. Neurosci Bull 36 (3), 299–302. https://doi.org/10.1007/s12264-020-00476-9.

Zhang, J., et al., 2020. Acute stress, behavioural symptoms and mood states among school-age children with attention-deficit/hyperactive disorder during the COVID-19 outbreak. Asian J Psychiatr 51. https://doi.org/10.1016/j.ajp.2020.102077.