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## Impact of a day hospital facility on type and length of hospital stay: a cost-effectiveness analysis

In their recent paper, Ielmini *et al.* pointed out that the most frequent diagnoses among patients compulsorily admitted to psychiatric wards are psychotic disorders (namely, Schizophrenia, Schizotypal Personality and Delusional Disorder) and severe personality disorders (55% vs. 35%, respectively,  $P < 0.01$ ). Differently, Mood Disorders are more frequent among voluntarily rather than compulsorily admitted patients (32% vs. 15%, respectively,  $P < 0.01$ ). With respect to the length of hospital stay, the authors found that it is significantly longer among compulsorily rather than voluntarily admitted patients ( $26 \pm 24$  vs.  $13 \pm 8$  days,  $P < 0.01$ ).<sup>1</sup>

Recovery-oriented rehabilitation interventions are recommended in the treatment of severe psychiatric disorders such as psychotic disorders, major depression and severe personality disorders.<sup>2</sup> Their use in community mental health care can contribute improving the outcome of these conditions. Also, such interventions may help reduce the number of voluntary and compulsory admissions, as well as length of hospital stay.<sup>3,4</sup>

In the light of the above, we evaluated whether participation in rehabilitation activities carried out at the Community Mental Health Center (CMHC) of Castelfranco Emilia (Modena, Italy) is associated with an improvement in relevant clinical outcomes measures. Also, we performed a cost-effectiveness analysis to estimate any reduction in admission costs related to the intervention.<sup>5</sup>

The day hospital facility of the CMHC placed in Castelfranco Emilia is active since 1995. Its main goal is to promote rehabilitation of patients attending. The team include one part-time psychiatrist, one part-time psychologist, and two nurses.

We retrospectively investigated a cohort of male and female patients, aged  $\geq 18$ , from the caseload of the CMHC of Castelfranco Emilia. The study was approved by the Local Ethical Committee of the Province of Modena and by the Local Health Agency of Modena. The sample was divided into two groups. The first group was made up of patients attending the day hospital facility between January 1, 2008 and December 31, 2017. This group was compared with a non-experimental control group, made up of patients that did not attend the day hospital facility in the same period. Statistical analysis was performed by means of linear and logistic regressions, both univariate and multivariate. Also, Student's *t*-test and Wilcoxon-Mann-Whitney's Test were used, when appropriate.

The sample was made up of 126 users (women: 57%), 61 attending and 65 not attending the day hospital facility. Mean age was  $49 \pm 14$  years. The most common diagnoses were schizophrenic spectrum disorders (57%) and mood disorders (20%). The statistical analysis showed a reduction in the number of admissions in patients who attended the day hospital facility ( $z=2.79$ ,  $P<0.01$ ). By comparing attending and not attending patients, increased odds of voluntary admissions were noticeable among the former at the 10% significance level ( $OR=2.49$ ,  $P=0.07$ ). Compulsory admissions were more common in the control group rather than among patients attending the day hospital facility (38% vs. 19%,  $P=0.05$ ).

Also, though not confirmed at the multiple regression analysis, a trend towards an increase of the use of non-scheduled interventions and a reduction in the number of days as inpatients were noticeable among patients attending the day hospital facility.

As far as the cost-effectiveness analysis is concerned, the estimated reduction in hospitalization costs was € 56.135 over 10 years.

Our study indicates that the rehabilitative interventions delivered at the day hospital facility of Castelfranco Emilia are associated with a reduction of admissions to hospital, namely to the inpatients psychiatric unit of patients who attend. Also, the latter are more frequently voluntarily admitted than those who do not participate in rehabilitation programs.

A noticeable limitation of our study is that it was not possible to calculate the overall cost for the implementation of rehabilitation interventions.

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