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Use of psychiatric inpatient services by heavy users: Findings from a national survey in Italy

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ABSTRACT

Purpose: To analyze factors associated with a patient's probability of being a Heavy User (HU) of inpatient psychiatric services and to compare the HU inpatient population with Non-Heavy Users (NHUs).
Patients and methods: The survey was conducted among inpatients enrolled in the PROGRES-Acute-project, an Italian nationwide survey of public and private inpatient facilities. Patients with three or more admissions over the last 12 months were considered HUs, and patients who had undergone one or two admissions during the same period made up the NHU group.
Results: Four hundred and thirty-five (40.5%) were HUs, and 640 (59.5%) NHUs. HUs were younger, more frequently unmarried, unemployed, receiving a disability-pension, and either homeless or living in a residential facility. HUs were more likely to have experienced conflicts with their partners or family members during the week prior to admission. A logistic regression analysis revealed that age, age at first admission, number of life-time admissions, and having been the victim of violence were the most important predictive factors for the HU phenomenon.
Conclusion: Our study suggests that specific attention should be given to patients' family context, due to its crucial role in daily informal care and in the triggering of events leading to rehospitalization.

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1. Introduction

In Italy, Law no. 180, enacted in 1978, led to the gradual closure of all mental hospitals and to the development of a network of community-based mental services. These services are currently organized into 211 Departments of Mental Health (DMHs) and are entirely funded by the National Health Service (NHS). Each DMH is responsible for a geographically defined area and provides various community-oriented services, including day hospitals, day-centres, and community mental health centres (CMHCs) that deliver the bulk of outpatient and non-residential care, mainly through a network of outpatient clinics. Although most CMHCs operate 12 hours a day, a few operate 24 hours a day and provide inpatients beds. Other facilities targeted to patients needing long-term support or acute care are residential facilities (RFs) and acute in-patient facilities. RFs are intended for long-stay patients who require intensive rehabilitation or merely long-term support. Acute in-patient care is provided by a network of public and private facilities, including 262 General Hospital Psychiatric Units (GHPUs), 23 University Psychiatric Clinics (UPCs), 16 CMHCs operating 24 hours a day, and 54 private inpatient facilities. Patient stays, in the latter type of facilities, are also covered by the NHS [4].

In 2001, the Italian National Institute of Health launched a project aimed at a close evaluation of the characteristics and functioning of acute inpatient, public and private facilities. The project – "PROGRES-acute" (PROGetto RESidenze, i.e.: Residential Care Project for Acute Patients) – was the first nationwide survey of acute inpatient facilities ever conducted in Italy [3]. It was inspired

by the previous, Italian-NIH-promoted "PROGRES" project, which had provided detailed information on the country's long-term residential facilities and patients living there [6,7,34].

PROGRES-acute assessed many different aspects of acute inpatient facilities: phase 1 focused on the physical characteristics, staff arrangements, activity data, and process of care of surveyed facilities; a national census-day was also conducted. Phase 2 examined the sociodemographic, clinical, and treatment-related characteristics of a representative sample of patients admitted to or discharged from acute, public and private inpatient facilities in Italy during an index period in the year 2004.

The present study is based on Phase 2 data and investigates a specific problem concerning psychiatric inpatient facility utilization – i.e., the "Heavy User" (HU) patient population. The phenomenon of frequent psychiatric patient rehospitalization (frequently referred to as the "revolving door phenomenon") has become the focus of increasing interest over the last decades, for both clinical and financial reasons. From a clinical perspective, repeated hospitalizations are often considered a sign of "therapeutic failure". Thus, several studies have attempted to clarify the causes leading to this failure (e.g., poor treatment effectiveness, poor relapse prevention, treatment-resistance, non-compliance) [1,2,13,14,18].

Another important aspect of this phenomenon is the financial burden that is inevitably associated with recurrent rehospitalization episodes, which overtax (what are frequently already inadequate) mental health care resources [1,12,19,32].

Hence, health care systems should place high priority on pinpointing the characteristics of patients at high multiple admission risk: if these patients can be properly identified, targeted intervention strategies can be developed and implemented for them, reducing the probability of recurrent hospitalization thereby [9,24]. Most studies conducted in this area to date have used a retrospective design, with the exception of two prospective studies [31,33], which were limited, however, to the evaluation of patients with a diagnosis of schizophrenia. Moreover, in Italy (as in other western countries), no other study prior to the PROGRES-acute project [9,10,12,26] had previously investigated the problem by using a large-scale, nationwide sample.

The objective of this study was to analyze the factors associated with the probability of being a HU by comparing this inpatient population with Non-Heavy Users (NHUs), among all inpatients enrolled in the PROGRES-acute project.

2. Patients and methods

2.1. Data collection

All 20 Italian regions were asked to participate in the study and all agreed to do so, with the exception of Sicily. Each region appointed a coordinator, who organized and supervised data collection. The project began in 2001 and was completed in 2005. Our sample was collected in the second phase of the PROGRES-acute study, which was conducted on a random, regionally stratified sample of 130 public and 36 private acute inpatient facilities. During a 12-day index period in each participating public facility, all patients scheduled for discharge within a week were enrolled and assessed by research assistants, before leaving the facility. A shorter index period of 3 days was used for private facilities, because the National Association of Private Hospitals consented to patient recruitment and evaluation for only a limited number of days.

Information on treatment, sociodemographic, and clinical characteristics were obtained either from patient records or from treating clinicians by asking them to fill out a "Patient Schedule"

specifically designed for the PROGRES-acute study. A section on the issue of admission appropriateness was added to the schedule, given that admission is frequently requested in Italy by clinicians other than psychiatrists working on admission wards. All regional coordinators were centrally trained to administer and rate the study instruments; the coordinators then trained research assistants to administer the instruments in their own regions.

Assessments included the administration of two standardized instruments: the 24-item Brief Psychiatric Rating Scale (BPRS), a commonly used measure used to evaluate severity of psychopathology [5] and the Personal and Social Performance Scale (PSP). This latter interview-based scale is designed to evaluate a patient's psychosocial functioning during the previous week on a 0- to 100-point scale. Ratings are based on the assessment of the patient's functioning in four main areas:

- socially useful activities;
- personal and social relationships;
- self-care;
- disturbing and aggressive behavior.

Operational criteria for rating level of disability are defined for the above-mentioned areas, with detailed scoring instructions. The PSP has been shown to have high reliability [27].

Data quality control was first conducted locally and then centrally. Admissions included episodes of care for which patients had been directly admitted to a psychiatric facility and those for which patients had initially been admitted to another specialty ward and then transferred (i.e., from a medical ward after a self-harm episode). Primary diagnosis was assigned by the treating physician, according to ICD-10 criteria.

This observational study was approved and entirely funded by the Italian Ministry of Health; therefore, according to the Italian legislation, it was not necessary any local Ethics Board permission.

2.2. Sample selection

All patients, for whom complete information on psychiatric admissions occurring in the previous 12 months was available, were included in this study. Patients with three or more admissions, including the index admission, over the previous 12 months were rated as Heavy Users (Hus), in line with the prevailing operational definitions of HUs found in the literature [1,8,12,23,33], whereas patients with one or two admissions in the same time span made up the Non-Heavy Users (NHU) group.

2.3. Statistical analysis

Categorical data were analyzed and compared between the two populations using the Chi^2 test, significant at $P < 0.05$. Adjusted standardized residuals were calculated in contingency tables with "nx2" cells to identify cells in which observed – versus expected frequency discrepancies exceeded 1.96 and were, therefore, significant at $P < 0.05$.

An independent sample *t*-test was conducted to identify participant differences in "mean age" versus "mean age at first admission". The same test was also carried out to identify mean BPRS and PSP scale score differences. In both cases, the homogeneity of variance assumption was examined using Levene's test.

Lastly, a logistic regression analysis (backward stepwise model) was performed to select variables that were more significantly associated with the HU/NHU conditions; all the variables shown to be significant at the univariate analysis were entered.

All analyses were conducted using SPSS 13.0.

3. Results

Of all patients composing the admitted patient cohort (n = 1577), 1075 met the inclusion criteria described in the Methods section. Among them, 435 (40.5%) were considered Heavy Users (Hus) and 640 (59.5%) Non-Heavy Users (NHUs). Patients' ages ranged from 16 to 90 years, with a mean age of 45.1 ± 13.9 years; 545 patients were men (50.7%), and 530 were women (49.3%).

In terms of sample distribution by facility type, 765 patients (71.2%) were admitted to General Hospital Psychiatric Units (GHPUs), 189 (17.6%) to Private Inpatients Facilities (PIFs), 77 (7.2%) to University Psychiatric Clinics (UPCs), and 44 (4.1%) to Community Mental Health Centres (CMHCs).

3.1. Sociodemographic characteristics

A strong association ($\chi^2[3]$ = 26.948, $P < 0.001$) was observed between age and utilization pattern; in particular, HUs were more likely to belong to the 16 to 30 or 31 to 45 age groups, whereas NHUs were more likely to be "older than 60" (Table 1). The result was confirmed by the above-described independent-sample t-test: HUs (mean age 42.5, SD 12.8) were significantly younger than NHUs (mean 46.8, SD 14.3) ($t[1073]$ = 4.941, $P < 0.001$).

There was a significant association between HU status and being unmarried, unemployed, receiving a disability-pension, and being homeless or living in a residential facility. NHUs, conversely, were more likely to be married or cohabiting; housewives;

Table 1
Sociodemographic characteristics of "Heavy" and "Non Heavy Users" of inpatient facilities.

	Heavy Users (3 or more admissions in 12 months)		Non-Heavy Users (1 or 2 admissions in 12 months)		Chi^2 [df], P
	n	(%)	n	(%)	
Sex					3.232 [1], 0.072
Men	235	54.0	310	48.4	
Women	200	46.0	330	51.6	
Age (in years)					26.948 [3], <0.001
16 to 30 (HU)	76	17.5	83	13.0	
31 to 45 (HU)	199	45.7	242	37.8	
46 to 60	123	28.3	194	30.3	
>60 (NHU)	37	8.5	121	18.9	
Nationality					0.306 [2], 0.858
Italian	422	97.0	616	96.4	
European Union	3	0.7	5	0.8	
Non-EU	10	2.3	18	2.8	
Unknown	–	–	1		
Marital status					16.428 [4], 0.002
Never married (HU)	257	59.9	310	48.7	
Married or cohabiting (NHU)	92	21.4	199	31.3	
Separated	40	9.3	57	9.0	
Divorced	22	5.1	33	5.2	
Widowed	18	4.2	37	5.8	
Unknown	6	–	4		
Occupational status					28.538 [7], <0.001
Student or grant/training	15	3.6	21	3.4	
In search of first occupation/unemployed (HU)	140	33.7	148	23.7	
Part-time job	31	7.5	52	8.3	
Full-time job (NHU)	46	11.1	107	17.1	
Housewife (NHU)	36	8.7	81	13.0	
Disability pension (HU)	107	25.8	125	20.0	
Retired or other pension (NHU)	40	9.6	90	14.4	
Unknown	20	–	16	–	
Educational status					16.542 [4], 0.002
Illiterate	21	5.1	22	3.8	
Primary school (5 years)	82	20.0	137	23.5	
Secondary school (8 years) (HU)	208	50.9	234	40.1	
Technical/High school (NHU)	86	21.0	156	26.7	
Bachelor or University degree (NHU)	12	2.9	35	6.0	
Unknown	26	–	56	–	
Living situation					40.302 [9], <0.001
Alone	66	16.2	109	17.8	
With parents or siblings	153	37.5	217	35.4	
With a partner without children (NHU)	46	11.3	96	15.7	
With a partner and with children (NHU)	51	12.5	121	19.7	
With family partially original/partially acquired	12	2.9	16	2.6	
With other relatives/friends	9	2.2	10	1.6	
Institution (for elderly)	6	1.5	9	1.5	
Nursing House	9	2.2	8	1.3	
Residential Facility (HU)	43	10.5	23	3.8	
Homeless (HU)	13	3.2	4	0.7	
Unknown	27		27		

HU: adjusted standardized residual significant at $P < 0.05$, showing an association with HU; NHU: adjusted standardized residual significant at $P < 0.05$, showing an association with "Non Heavy Users".

Table 2
Clinical characteristics of "Heavy" and "Non-Heavy Users" of inpatient facilities.

	Heavy Users (3 or more admissions in 12 months)		Non Heavy Users (1 or 2 admissions in 12 months)		Chi^2 [df], P
	n	(%)	n	(%)	
Diagnostic groups					31.966 [8], <0.001
Schizophrenia and related disorders	186	42.8	252	39.4	
Organic mental disorders (HU)	11	2.5	6	0.9	
Substance abuse	36	8.3	41	6.4	
Bipolar disorders (NHU)	84	19.3	170	26.6	
Unipolar depression (NHU)	34	7.8	82	12.8	
Anxiety and stress-related disorders	13	3.0	15	2.3	
Personality disorders (HU)	61	14.0	50	7.8	
Mental retardation	8	1.8	12	1.9	
Other (NHU)	2	0.5	12	2.9	
Number of life-time admissions					135.074 [2], <0.001
3 to 6 (NHU)	112	27.0	325	60.2	
7 to 11	96	23.1	121	22.4	
>11 (HU)	207	49.9	94	17.4	
1 or 2	20		66		
Unknown			34		
Age at first-ever admission					31.495 [4], <0.001
0 to 15 (HU)	19	4.7	14	2.4	
16 to 30 (HU)	264	65.8	303	50.9	
31 to 45 (NHU)	80	20.0	188	31.6	
46 to 60 (NHU)	30	7.5	71	11.9	
>60	8	2.0	19	3.2	
Unknown	34		45		
Any compulsory admission					2.479 [1], 0.115
Not	314	75.1	417	79.4	
Yes	104	24.9	108	20.6	
Unknown	17		115		
Previous admission to a Mental Hospital (before 1978)					0.056 [1], 0.814
Not	405	95.5	596	95.8	
Yes	19	4.5	26	4.2	
Unknown	11		18		
Previous admission to a Forensic Mental Hospital					8.698 [1], 0.003
Not (NHU)	415	96.7	619	99.2	
Yes (HU)	14	3.3	5	0.8	
Unknown	6		16		

	Mean value	SD	Mean value	SD	T [df], P
BPRS score	55.3	16.8	53.9	16.9	1.321 [949], 0.187
PSP score	41.7	17.2	45.3	18.0	3.124 [977], 0.002

HU: adjusted standardized residual significant at $P < 0.05$, showing an association with HU; NHU: adjusted standardized residual significant at $P < 0.05$, showing an association with "Non Heavy Users".

employed full-time or retired; and living with a partner, with or without children. In particular, the results concerning living situation were consistent with other findings – i.e., that admitted NHUs were more frequently accompanied to the hospital by family members (χ^2[1] = 6.490, P = 0.01), and that admission was made more frequently upon request by a family member (χ^2[1] = 20.059, P < 0.001). HUs, however, were more likely to have experienced conflicts with their partners and/or family members during the week prior to admission (χ^2[1] = 3.931, P = 0.05).

Lastly, NHUs were more likely to have a higher educational status (high school, technical school, and university-graduates) than HUs, who had more frequently attained a middle school degree only.

3.2. Clinical characteristics

The distribution by diagnostic group (ICD-10) differed significantly for HUs and NHUs (Table 2). Specifically, whereas HUs more frequently received a diagnosis of organic mental disorders or personality disorders, NHUs were more likely to be diagnosed with

affective disorder (manic/bipolar and depressive disorder). The latter finding was consistent with the data showing that NHUs were more likely to experience symptoms of depression and inhibition during the week prior to admission (χ^2[1] = 7.287, P = 0.007). A significant association was also observed between HU status and episodes of alcohol-abuse during the week prior to admission (χ^2[1] = 3.934, P = 0.05) (Table 3).

HUs were more likely to be diagnosed with "borderline/instable personality disorder" than NUs were (χ^2[1] = 4.137, P = 0.04).

While HUs had significantly lower PSP (Personal and Social Performance Scale) scores at admission than NHUs, there was no significant difference in BPRS (Brief Psychiatric Rating Scale) mean scores (Table 2).

HU/NHU status showed a strong association with the number of lifetime psychiatric admissions: HUs were more likely to have undergone more than 11 admissions in their lifetime, whereas NHUs were more likely to have had less than six admissions. Younger age at first admission was also a characteristic of HUs, who showed a higher probability of being ≤30 at their first-ever admission, whereas NHUs were more likely to be older (mean

Table 3
Pattern of care: symptom pattern and contributing reasons for admission.

	Heavy Users (3 or more admissions in 12 months)		Non Heavy Users (1 or 2 admissions in 12 months)		Chi^2 [df], P
	n	%	n	%	
Treated in month prior to admission	395	92.1	540	86.1	8.889 [1], 0.003
Among those in treatment (**), treated by					
Community Mental Health Centre	280	73.3	352	67.7	35.252 [6], <0.001
University Psychiatric Clinic	11	2.9	18	3.5	
Private Inpatient Facilities (HU)	31	8.1	13	2.5	
Drug addiction service	7	1.8	19	3.7	
General practitioner (NHU)	2	0.5	16	3.1	
Private mental health specialist (psychiatrist, psychologist, neurologist) (NHU)	34	8.9	85	16.3	
Other	17	4.5	17	3.3	
Unknown	13		20		
Symptom pattern during week prior to admission					
Hallucinations/Delusions	176	41.5	288	45.6	1.758 [1], 0.185
Severe anxiety	299	69.9	430	67.8	0.492 [1], 0.483
Agitation	218	50.5	288	45.1	2.927 [1], 0.087
Confusion	152	35.2	222	35.0	0.006 [1], 0.940
Depression/Apathetic symptoms (NHU)	186	44.0	333	52.4	7.287 [1], 0.007
Alcohol abuse (HU)	82	19.6	93	14.9	3.934 [1], 0.047
Substance abuse	35	8.4	44	7.0	0.636 [1], 0.425
Disordered eating behavior	44	10.2	59	9.2	0.273 [1], 0.601
Reasons contributing to admissions (present during the week leading to admission)					
Work/social functioning problems	269	62.6	424	66.8	2.003 [1], 0.157
Social withdrawal	231	54.0	343	54.6	0.043 [1], 0.836
Lack of self-care (HU)	188	44.2	238	38.0	4.058 [1], 0.044
Conflicts with family members (HU)	209	49.2	269	43.0	3.931 [1], 0.047
Conflicts with others	141	33.0	182	29.2	1.725 [1], 0.189
Victim of violence (mostly verbal threat) (HU)	28	6.6	19	3.0	7.739 [1], 0.005
Violent behavior toward people	70	16.4	93	14.8	0.466 [1], 0.495
Violent behavior toward things	40	9.4	46	7.4	1.416 [1], 0.234
Traumatic events	28	6.6	54	8.7	1.517 [1], 0.218
Suicide attempt	48	11.3	76	12.0	0.128 [1], 0.721
Crime committed	7	1.7	8	1.3	0.272 [1], 0.602
Drug (psychopharmacology) side-effects	25	5.8	25	4.0	1.921 [1], 0.166
Other characteristics of last admission					
Pt accompanied by relatives to the hosp. (NHU)	206	49.5	358	57.6	6.490 [1], 0.011
Admission requested by patients' relatives (NHU)	190	45.0	366	59.1	20.059 [1], <0.001
ED involvement in the admission (HU)	182	42.1	219	34.7	6.110 [1], 0.013

HU: adjusted standardized residual significant at $P < 0.05$, showing an association with HU; NHU: adjusted standardized residual significant at $P < 0.05$, showing an association with NH.

age 28.1, SD 12.0 for HUs as compared to 32.8, SD 12.5 for NHUs) (t[994] = 5.913; $P < 0.001$).

Inpatient service user status, conversely, was not associated with having ever had a compulsory admission or having been previously admitted to an old mental hospital (before 1978, when the Italian reform law began phasing out mental hospitals); however, HUs were more likely to have been previously admitted to a forensic mental hospital.

3.3. Service utilization patterns and determinants of admission

HUs had been more frequently in treatment for psychiatric problems in the month prior to admission (χ^2[1] = 8.889, $P = 0.003$), and emergency services were more frequently involved in HU admissions (χ^2[1] = 6.110, $P = 0.01$).

With regard to the symptoms and functioning during the week prior to admission, significant associations were found only for HU status and lack of self-care (χ^2[1] = 4.058, $P = 0.04$), and for HU status and having been the victim of violence (mostly of verbal threats) (χ^2[1] = 7.739, $P = 0.005$). No associations were observed, however, for other variables (Table 3), with the exception of depressive/apathetic symptoms and alcohol-abuse, as previously described.

Furthermore, staff psychiatrists judged GHPU admission "totally inappropriate", "inappropriate" or "of uncertain appropriateness" for 111 out of the 765 patients admitted to GHPUs; this observation was made only for 15 out of the 310 patients admitted to other facilities (e.g., CMHCs, UPC, PIF) (χ^2[1] = 16.38, $P < 0.001$).

3.4. Heavy Users and stay in residential facilities

Considering the sub-group of patients staying in RFs, more HUs than NHUs (χ^2[1] = 14.15, $P < 0.001$) with schizophrenia had been placed in these facilities. Overall, 36 out of the 66 (54.5%) patients in our sample living in RFs were suffering from schizophrenia. Although no association emerged between the entire HU sub-sample and schizophrenia, the association became statistically significant when we considered the subgroup of patients living in RFs: indeed, a comparison of the "HUs in RFs" subgroup versus the "HUs not in RFs" subgroup revealed that patients in the first group presented a higher number (≥ 11) of lifetime admissions and that the latter had a lower number (three to six) of lifetime admissions (χ^2[2] = 10.524, $P = 0.005$; adjusted standardized residuals >1.96 for the indicated associations). Moreover "HUs in RFs" had higher BPRS-scores (mean BPRS-score for "HU in RFs" = 63.5, SD 19.8 vs "HU not in RFs" = 54.4, SD

15.9; $t[371] = 3.43$, $P = 0.001$) and lower PSP-scores (mean PSP-score for "HU in RFs" = 33.9, SD 13.4 vs "HU not in RFs" = 42.8, SD 17.3; $t[376] = 3.25$, $P = 0.001$).

3.5. Multivariate analysis

The Binary Logistic Regression analysis revealed that age (Wald = 21.185; $P < 0.001$), age at first admission (W = 5.466; $P = 0.019$), number of life-time admissions (W = 89.358; $P < 0.001$), and having been victim of violence (mostly verbal threats) (W = 8.813; $P = 0.003$), remained significant in the last step of the model, and were therefore, the most important predictors linked to the HU phenomenon.

4. Discussion

4.1. HU as an early-onset, stable status

Our survey provides interesting clues for differentiating Heavy Users (HUs) from Non-Heavy Users (NHUs) variables. Younger participants are at higher risk of being HUs, and the latter tend to be concentrated in the age range of 16 to 45 years (63.2%HU vs 50.8%NHU) [1,8,11,12,14,20,33,40].

One half of our HU patients had undergone ≥11 lifetime psychiatric admissions, and this finding suggests that the "heavy utilization" of mental health services, and of hospital services in particular, might be stable over time. Moreover, previous studies [35] and our findings indicate that one of the most important variables associated with HU status is the younger age (<30 years) at first psychiatric admission (70.6% of HUs have <30 years vs 53.3% of NHUs); it is, therefore, possible to define HUs as a clinical population showing an early and extensive utilization of hospital services, that is stable over time.

4.2. Heavy Users state and social disadvantage

In terms of socioeconomic variables, our sample included, as expected, a higher number of patients with a technical/high school or university degree among NHUs [11,20,30,37], and a higher percentage of HU patients with a "middle school degree". This last finding may pertain to a critical period during personal development – i.e., late adolescence – which also represents the age of onset for many disorders [22].

Our study also confirms some significant associations between the HU phenomenon and poor socioeconomical condition [12,15,21,29,30,33,36,39,40].

Overall, HUs represent a socially disadvantaged population: unemployed or in search of first occupation, together with those receiving a disability pension, made up more than one half (59.5%) of the HU group, vs 44% in the NHU group. From this perspective, mental health services may end up replacing or backing up the inadequacy of specific social support systems.

With regard to living situation, as expected, a higher proportion of NHUs were living with their own families or with a partner. Conversely, homeless patients were over-represented in our HU sample: hospital admission can presumably serve as a stopgap for inadequacies in these patients' social support system, also by providing the means to meet their basic daily needs.

Moreover, admission for NHUs was more frequently requested by family members, who also more frequently accompanied patients in this group to admission sites, conversely HUs showed more episodes of "conflict" with family members and were more frequently victims of violence (mostly verbal threat) during the week prior to admission. These data, therefore, point to what might represent a "critical HU area" – i.e., that of

family and social relationships, although the direction of causality is difficult to understand, due to other potentially intervening factors, such as varying prevalence of diagnosis (e.g. personality disorders). Ostman et al. [28] have underscored how the informal care "burden" is heavier for the family members of patients with more admissions than for those of patients at their first admission.

4.3. Heavy Users and diagnostic status

The research findings concerning the association between HUs and diagnostic status have been quite inconsistent [1,11–14,17,18,20,32,36,38], and the most frequently reported association of an association between HU status and a diagnosis of schizophrenia [1,11,13,14,18,20,32,36,38] has not been confirmed in our sample – at least not until we controlled for age. Even then, it held true only for patients aged 31–45 years, and younger patients (aged 16–30 years) with schizophrenia were over-represented among NHUs. A possible explanation for this discrepancy is that patients suffering from schizophrenia in their middle years have an established disorder, with a degree of disability easily leading to the need for hospitalization.

Consistently with the results of previous studies, we found an association between HUs and personality disorders, in particular, with the borderline/instable personality disorder subtype. Concerning the association with alcohol abuse found in other studies [12,18,20,36,38], in our survey episodes of alcohol abuse were associated with the HU status only during the week prior to admission (with no other symptom pattern association observed during the same period), suggesting that alcohol abuse does not directly lead to higher admission rates, but may rather cause a "fracture" in a patients' environment, resulting in hospital admission thereby.

In terms of illness severity, the observed lower Personal and Social Performance Scale (PSP) scores at admission for HUs matched the poor psychosocial functioning also assessed in this same group, although HUs and NHUs showed no significant Brief Psychiatric Rating Scale (BPRS) mean score differences. A closer examination of BPRS items shows that HUs were mostly characterized by symptoms pertaining to behavior and psychosocial functioning, consistently with the finding of HUs' lower PSP scores.

Lastly, the higher number of HUs showing lack of self-care, alcohol-abuse, and depression/apathy episodes during the week prior to admission highlights how these patients are generally more impaired in self-care, rather than being socially "dangerous" (no differences, there were for episodes of aggressiveness, violence, or attempted suicide between the two groups). On the other hand, having been a victim of violence during the week prior to admission was a predictive factor for the HU condition (binary logistic regression). We note that, as "violence" was mostly specified as being "verbal aggression or threats", the latter finding is most probably due to a predictably high degree of conflict in the patient's familial-social context leading to admission.

4.4. Heavy Users and stay in residential facilities

One of the most interesting and novel findings of our study was the markedly higher rate of HUs living in Residential facilities (RFs). Overall, our results (see section 3.4) show that the "HU in RF" sub-group of patients had more severe symptoms and a higher lifetime utilization of hospital admissions. Our data, therefore, point to a subgroup of patients with schizophrenia requiring long-term care (and therefore placed in RFs) who are still highly symptomatic, and therefore, can require

hospital admission. Residential settings may frequently be ill-equipped to manage acute psychotic crises or situations of severely disturbed behavior, leading to a high rate of hospital admissions thereby.

4.5. Appropriateness of hospital stay for Heavy Users

Interestingly, General Hospital Psychiatric Unit (GHPU) psychiatrists more frequently considered GHPU admission "inappropriate" for HU patients and, in most instances, indicated RF admission as representing the most appropriate choice for these patients labelled as chronically ill. It is questionable, however, whether this is the most appropriate response, or whether other types of community-based care programs, such as "Intensive Community Services" [19] or "Assertive Community Treatment" [25], might better meet the special needs of this highly disabled population.

If we consider this finding together with that of the high percentage of patients with schizophrenia living in RFs and admitted to GHPUs, we can conclude that many clinicians view placement in a long-term care facility as the most appropriate solution for many psychotic patients showing poor outcomes. Indeed, RF placement was indicated as the most appropriate care setting for 21.2% of HUs vs 6.1% of NHUs ($\chi^2[1] = 13.12$, $P < 0.001$). Yet, these long-term facilities are not always able to handle the various clinical situations which can arise in the management of psychotic patients, and therefore, they may sometimes be obliged to refer patients to a hospital acute unit.

4.6. Limitations

Some limitations must be considered when drawing inferences from the present data. These diagnoses were based on treating clinicians' judgments and not on structured clinical interviews (although the risk of drawing inferences on misdiagnosed participants can be considered minimal, given the broad diagnostic categories used). Moreover, the study has a cross-sectional design, and therefore, it is not possible to draw inferences concerning the longitudinal course of disorders. Lastly, it must be acknowledged that the sample size for some diagnoses was too small to allow for meaningful comparison.

5. Conclusion

In conclusion, as compared to NHUs, HUs are more likely to be younger, unmarried, and unemployed; to have lower educational levels; and to have a personality disorder diagnosis. They also frequently experience conflict with their family members, who bear a heavier burden than the family members of NHUs do. Overall, HUs show "heavy utilization patterns" for all mental health services (e.g., early first admission, high number of life-time admissions, and more frequent contact with services during the period leading up to admission). Moreover, HUs living in RFs represent a subgroup of patients for whom hospitalization remains a necessary treatment option, regardless of the intensity of care received at any time. Findings from several studies examining the HU phenomenon have underscored the implications of placing priority on critical, but modifiable rehospitalization risk aspects of these patients' situations [16]. Findings from the present study suggest that, among all the clinical and psychosocial features characterizing HUs, the patients' family and social context should receive special focus, due to its key role in triggering events leading to hospitalization. Family psychoeducation could, therefore, represent a crucial form of intervention, although its use is still quite limited throughout the country [24].

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