# Management of psychiatric patients before deinstitutionalization: an inquiry into the years 1907-1913 in Pisa

## *Gestione dei pazienti psichiatrici prima della deistituzionalizzazione: un'indagine della Clinica di Pisa fra 1907 e 1913*

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**SUMMARY. Aim.** Asylums comprises the main focus of historical research on early 20th century psychiatry. To assess the characteristic of asylum transfers in a clinical population, we analyzed newly found clinical records from University of Pisa Clinic for Mental and Nervous Illness. We focused on the early years of this structure's activities considering all admissions from 24th April 1907 to 31st January 1913. **Method.** We collected demographic and clinical data from 1,068 patients performing Chi-Square Tests to study correlation between asylum transfer and diagnosis and gender difference; independent sample Student's t-tests were also performed to compare mean Age, mean number of Days of Hospitalization and mean number of Subsequent Admissions to the Clinic observed in patients transferred to an asylum versus those who had been discharged. Multiple logistic regression model was employed to identify the best predictors of asylum transfers. **Results.** Most patient were discharged, and only a third of the hospitalization led to asylum confinement. Our data outlines a peculiar discharge rationale, suggesting that the Clinic acted like a "sieve-institution" to prevent asylum overcrowding from treatable, non-chronic conditions. **Discussions.** These data suggest that our historical view of psychiatric care is probably not complete, and that a different approach to source materials could provide new research paradigms.

**KEY WORDS:** history of medicine, health system, psychiatric care.

**RIASSUNTO. Scopo.** La maggior parte della ricerca storiografica sulla psichiatria agli inizi del ventesimo secolo prende principalmente in considerazione l'istituzione manicomiale. Per indagare le caratteristiche di internamento in una popolazione clinica, abbiamo analizzato i registri clinici, recentemente resi disponibili, della Clinica di Malattie Nervose e Mentali dell'Università di Pisa, prendendo in considerazione tutte le ammissioni dal 24 aprile 1907 al 31 gennaio 1913. **Metodo.** Sono stati raccolti dati demografici e clinici di 1068 pazienti, effettuando test del Chi Quadrato per elicitare la correlazione fra trasferimento manicomiale e differenza di genere; inoltre sono stati effettuati T-Test per confrontare la media di età, la media di giorni di ospedalizzazione e la media di ricoveri successivi nei pazienti trasferiti in manicomio e in quelli licenziati. È stata quindi impiegata una regressione logistica multipla per identificare i predittori del trasferimento manicomiale. **Risultati.** La maggior parte dei pazienti veniva licenziata, e solo un terzo delle ospedalizzazioni esitava in un trasferimento verso strutture manicomiali. I dati raccolti suggeriscono un modello di razionale clinico, per il quale la Clinica avrebbe funzionato come un filtro che regolava le ammissioni presso i frenicomi del territorio, per evitare il sovraffollamento di questi ultimi. **Discussioni.** I dati qui presentati suggeriscono che l'attuale ricostruzione storica sull'assistenza psichiatrica del primo Novecento probabilmente non è completa, e che un approccio metodologicamente differente alle fonti può fornire nuovi paradigmi di ricerca.

**PAROLE CHIAVE:** storia della medicina, sistema sanitario, cura psichiatrica.

### INTRODUCTION

More than other medical branches, psychiatry has been closely related to the concomitant social and cultural context. As a result, historical writing in psychiatry has been defined by Shorter «as broad as the discipline itself»[1].

Nevertheless, the history of psychiatry has been long identified with the history of asylums. Many classical studies, such as those of Foucault[2], Rothman[3] and Scull[4] have identified psychiatry with the practice of patient isolation from society. If asylum confinement of mental patients was a distinctive characteristic of the 19th and early 20th centuries, it probably does not by itself account for the complexity of this medical discipline as a whole[5,6]. Regardless of disorder's core structure, experiences of these patients could vary greatly on the premise of their social class, sex, diagnosis and – lastly – the place they were treated in. This was particularly true in the late 19th-early 20th century Italian psychiatry, given the heterogeneous landscape of the national medical, bureaucratic

and social system[7,8]. Despite the prominent role of the asylum structures in mental care of that age, Italian psychiatrists often deemed that the use of asylum as a repository for the chronically ill was not the best solution for health care needs[9]. Eugenio Tanzi (1856-1934), a late-19th-century Italian psychiatrist[10], contended that «the madhouse, while a new and inspired institution, is no more than a glorified waste. Society […] abandoned there all the poor souls that with their oddities could interfere with public safety»[11]. Tanzi's view reflected a broader paradigm shift on asylum, as it was perceived in various Western contexts[12]. At the time, in Italy, asylums were scant and scattered over the nation; in various cases other kind of structures, such as psychiatric wards and university clinics, became the deputed place of psychiatric assistance[13,14].

The 1904 "Dispositions on the mental hospitals and the mentally disturbed", also known as "Giolitti's law 36", replaced and unified the previous legislation on this subject[15]. The law provided the means to discharge from asylums all patients not belonging to dangerous categories, so as to solve the problem of overcrowding and avoid prolonged stays: a condition that often worsened the clinical case[16]. Also, this law seems to have been interpreted in a sense which envisioned the establishing of new structures intended only to treat recent, acute, curable cases and the creation in pre-existing ones of separate wards for these kinds of patients, supplying them with all necessary resources. As a result of this effort, in the late 19th century, several Italian Universities created Chairs of Psychiatry with annexed Clinics (Turin, Pavia), that were generally detached from asylums[17]. Slightly later the Clinic for Nervous and Mental Illnesses was founded in Pisa (hereafter referred to as Clinic), a medical clinic located in Royal Santa Chiara Hospital and co-managed by the Pisa University.

However, it should be mentioned that academic study and practice of psychiatry in Pisa University began in 1886. The relevant structure was named "Forensic medicine and psychiatric study" (*Gabinetto di medicina legale e psichiatria*), and it was under the responsibility of Professor Beniamino Sadun[18]. At the time, psychiatric practices were still integrated into the nineteenth century framework of forensic science. Rooms for patients suffering from mental diseases were set up in the Royal Santa Chiara Hospitals (*Regi Spedali Riuniti di Santa Chiara*), and their management was ordered by regulations that involved the Hospitals, Pisa University and the provincial administration body. These structures, however, were little more than consulting rooms. While probably inadequate for a large number of patients, they were still sufficient from a bureaucratic point of view due to the absence of unified legal guidelines for psychiatric activities in Italy before 1904. In this historical context, admission to mental hospitals had been mainly regulated by traditional rules, which varied from region to region. Thus, in some areas commitment had to be prescribed by the court, whereas in others police authorization, or even a mere medical certificate, were sufficient. The University of Pisa could not, in 1904, satisfy the new guidelines for psychiatric treatment provided by this law, as space and personnel available were not adequate. Sadun debated this issue during the Faculty council on various occasions. In order to meet the new legal guidelines for mental treatment – and to provide proper psychiatric teaching at the University – on the 29th of March 1906 a recently appointed extraordinary professor of Psychiatry, Dr. Giovanni Battista Pellizzi, requested 10,000 lire for the constitution of a Clinic for Nervous and Mental Illnesses (*Clinica di Malattie Nervose e Mentali*). The sum was granted by the faculty Dean and the University Rector on April 5th of the same year. A new Psychiatric Study (*Gabinetto di Psichiatria*) found accommodation in a section of the Medical Clinic, while the work for the new structure began. In 1907, when Sadun retired, two free courses of psychiatry were already active, taught by Dr. Alessi and Dr. Pieri. After Sadun, the direction of the Psychiatric Study passed to Pellizzi in 1907, who also became that year Full Professor. Pellizzi's research interests were all oriented towards neurology[19-21], a common feature of Italian psychiatrists of that time: a "cerebral mythology" which, despite Enrico Morselli's claim for a reintegration of psychology in 1904, became in Italy the main psychiatric paradigm of early 20th century[22]. In 1909 the Psychiatric Study was moved and aptly renamed Clinic for Nervous and Mental Diseases (*Clinica di Malattie Nervose e Mentali*), following the examples of the universities of Turin and Pavia.

The aim of the present study was thus to investigate diagnoses and individual sociodemographic characteristics of a population treated outside the asylum – namely in a university hospital ward setting – in the decade at the beginning of the last century in Italy. In particular, we examined subjects hospitalized from 1907 to 1914, long before the era of deinstitutionalization. Secondary aim of the present study was to try to outline the medical rationale underlining the practice of classifying, managing and discharging mental disorders during that period in Italy.

A note to explain the procedures detailed in 1904 Giolitti's law 36 (and in its 1905 and 1909 addendums) is perhaps necessary. Psychiatric treatments could end with a "trial discharge" (*licenziamento in prova*), a formula meaning that the illness was not in complete remission but symptoms were much less severe so the patient was expected to not cause concerns in matters of public safety; or they could end with a "final discharge" (*licenziamento definitivo*), implying complete remission of mental symptoms. Moreover the Clinic of Pisa, as a University Clinic, had the possibility to transfer a patient to a nearby asylum. In accordance with the Article 1 of Giolitti's Law 36, all structures admitting mental patients were considered "asylums"[13]. This characteristic of Italian university clinics, namely, that of being a structure for mental health while not actually constituting an asylum in the most usual sense of the word, is pivotal for the understanding of the statistical analysis below.

## MATERIALS AND METHODS

Two groups of archive sources were used to describe clinical practice from 1907 to 1914 in the University of Pisa's Clinic. The first one is conserved in the Pisa University Archive (Ospedaletto, Pisa, Italy), comprising bureaucratic, administrative and academic material regarding the Clinic[23]. As discussed below, we mainly used in this paper the academic files of both Beniamino Sadun and Giovanni Battista Pellizzi, and the records of Medicine Faculty Councils. The other group of sources includes clinical records, recently discovered, that report data for every admission

to the Clinic from late 1907 to 1966. These clinical records are managed by the Department of Clinical and Experimental Medicine (University of Pisa, Pisa, Italy). This latter set of sources is contained in 16 volumes, divided by ward type (male and female wards respectively) and each volume covers several years[24]. Clinical records include the following data: name and surname, age, place of birth, place of residence, marital status, admission observations, discharge type, diagnosis and clinical observations.

All data from clinical records have been entered in an electronic database and a consecutive number given to patients for privacy policy concerns. We recorded 1,317 entries, regarding 1,068 patients: some of the patients, in fact, reported more than one hospitalization. Complete data were available for 821 patients including: diagnosis, admission date, discharge date, discharge type, civil status and place of birth. For each patient, we recorded the presence or absence of asylum transfer and the number of subsequent admissions.

Female ward clinical activity began on the 24$^{th}$ of April 1907, while the male ward opened only on 19$^{th}$ of April 1908. Also, it should be noted that patients admitted in the last days of 1913 were discharged in 1914. We recorded over 80 unique diagnostic labels while investigating 1,317 entries.

We used diagnostic categories for our analyses, grouping different diagnoses referring to disorders of similar nature. Insertion of all the diagnoses from clinical records into diagnostic categories was performed by staff psychiatrists who only considered historical literature[11,25-28], and were blind to the results given by other researchers. This procedure led to the identification of 8 diagnostic categories: Epilepsy, Age Related Cognitive Impairments, Mood Disorders, Cognitive Impairments (grouping congenital conditions or neurodevelopment disorders), Hysteria or Neurasthenia, Dementia Praecox and Psychosis, Alcohol Abuse Related Disorders, plus an "Other" category that groups under-represented diagnosis. These diagnostic categories loosely follow Tanzi's 1905 nosographical proposal[11]. Insertion of diagnostic labels into diagnostic categories is shown in Table 1.

## Statistical analyses

Chi-Square Tests ($\chi^2$) were utilized to study asylum transfers in each diagnostic category (Epilepsy, Age Related Cognitive Impairments, Mood Disorders, Cognitive Impairments, Hysteria or Neurasthenia, Dementia Praecox and psychosis, Alcohol Abuse Related Disorders, Other) and upon demographic variables (gender, marital status, place of residence, rural versus urban, etc).

$\chi^2$ were also used to study gender differences in the occurrence of each diagnostic category mentioned above.

Independent sample Student's t-tests were utilized to compare the mean Age, the mean number of Days of Hospitalization and the mean number of Subsequent Admissions to the Clinic observed in patients transferred to an asylum versus those who had been discharged.

A multiple logistic regression, using the above-mentioned diagnostic categories, gender, civil status, place of residence, number of subsequent returns, days of hospitalization and age as independent variables, was employed to identify the best predictors of asylum transfers. To compare the risk of asylum transfer for each diagnostic, we set to use the diagnostic group less correlated with asylum transfers.

All statistical analyses were carried out using Statistical Package for Social Sciences (SPSS) version 22.0.

Table 1. Diagnostic categories coded upon the diagnostic labels of Clinical Records (1907-1913).

| Diagnostic categories | Diagnostic labels |
|---|---|
| Epilepsy | Epilepsy, senile epilepsy. |
| Age related cognitive impairments | Dementia, senile dementia, post apopleptic dementia, presbiophreny, Alzheimer disease, atherosclerotic dementia. |
| Mood disorders | Maniacal depressive phrenosis, melancholy, depression, mental exaltation, mania, maniacal phrenosis, suicidal tendencies, post partum depression, transitory mania, hypomania. |
| Cognitive impairments | Idiocy, mental deficiency, phrenasthenia. |
| Hysteria or neurasthenia | Hysteria, hysterical phrenosis, neurasthenia, psychological asthenia, hysterical dumbness, hysterical pseudoparesis, nervous breakdown, hysteroneuroasthenia. |
| Dementia praecox or psychosis | Dementia praecox, psychosis, erotic psychosis, delirious ideation, paranoid dementia praecox, paranoid psychosis, delirium of jealousy, persecutory delirium, dementia praecox with ebephrenia, hallucinatory delirium, confused delirium, |
| Alcohol abuse related disorders | Alcoholic phrenosis, alcoholism. |
| Other | Toxic amentia, meningitis, confusion, constitutional psychopathy, complex phrenosis, tuberculosis, moral insanity, self-induced intoxication, progressive paralysis, syphilis, cerebral tumor, pathology not recognized, microcephaly, deafness and dumbness, simulation of mental illness, gastroenteric complication, acute fever. |

Note: this table does not report labels obtained by adjectivation or specification of pre-existing labels (i.e. "mild maniacal phrenosis", "intense delirium of jealousy", "depression and suicidal tendencies: dangerous case", "chronic alcoholism").

## RESULTS

We analyzed the records of 1,068 patients who were admitted to the Clinic from 24th April 1907 to 31st December 1913. Among these, male patients were 575 (53.9%) and female were 493 (46.1%). Most patients, 723 (1063; 68%), lived in rural areas, while 340 (32%) came from urban areas. Most subjects lived within the Pisa district, 919 (86.5%); 99 patients (9.3%) came from other areas of Tuscany, 30 (2.8%) from other regions of Italy and 14 (1.3%) came from other countries. Data on civil status are reported for 836 (79%) patients, in particular: 386 were married (192, 22.9% males and 194, 23.2% females), and 325 were not married (204, 24.4% males; 121, 14.4% females). A minor share of 125 were registered as widows/widowers (51, 6.2% males and 74, 8.8% females) (Table 2).

As far as discharge type is concerned, 48.4% of all patients received a "trial discharge"; males (N=260, 25%) were released on trial slightly more frequently than females (N=243, 23.4%). A final discharge was reported for 79 (7.6%) patients. Only 333 (32%) of all the admissions ended with the patients being transferred to an asylum. Most cases (98.1% of all patients) were sent to *Frenicomio San Girolamo*, an asylum located in the village of Volterra, about 70 km far from Pisa. 108 patients (10.4%), mainly males (66, 6.4% vs 42, 4.0%), died during hospitalization. The remaining patients were either sent back to their countries (in the case of foreign patients), not recognized as suffering from mental illness or (in 2 cases) ran away from the clinic (Table 3). The mean duration of hospitalization was 49.16±51.52 (mean±SD) days for females and 55.88±47.52 (mean±SD) days for males. For what concerns subsequent admissions: 142 (17%) of all patients were registered more than once between 1907 and 1913, up to a maximum of 5 times; 13 (1.2%) patients were sent to the asylum twice.

Given the nature of the clinical records as working tools, not all patients received a diagnosis. Mood Disorders was the most frequent diagnostic category [278 (33.9%)], followed by Age Related Cognitive Impairments [174 (21.2%)] and disorders related to Alcohol abuse [93 (11.3%)]. Epilepsy and Dementia Praecox or Psychosis were other common clinical cases (Table 4).

Contingency tables showing the percentage of asylum transfers by diagnosis reveal that the presence of Age Related Cognitive Impairments and Cognitive Impairments correlate significantly with presence of asylum transfers [87 (50.0%) vs 261 (40.3), $\chi^2$=4.85 p=.028; 39 (60.9%) vs 309 (40.8%), $\chi^2$=8.97 p=.003 respectively]; while the presence of Alcohol Abuse Related Disorders and of Hysteria or Neurasthenia correlate significantly with absence of asylum transfers [20 (21.5%) vs 328 (45.1%), $\chi^2$=6.35, p<.001; 16 (26.2%) vs 332 (43.7%), $\chi^2$=17.78, p=.012 respectively]. Alcohol Abuse Related Disorders represents the diagnostic group that correlates the least with asylum transfers (21.5%) (Table 5).

No significant differences in the percentage of asylum transfers were observed comparing males and females [224 (38.6%) vs 215 (49.0%), p=.129] or rural and urban place of residence [297 (41.4%) vs 132 (38.6%), p=.391]. Conversely,

Table 2. Socio-demographic characteristic of the whole sample and by gender.

| | Males (N, %) | Females (N, %) | Total (N, %) |
|---|---|---|---|
| Social Context (N=1063) | | | |
| Rural | 381 (35.8) | 342 (32.2) | 723 (68.0) |
| Urban | 191 (18.0) | 149 (14.0) | 340 (32.0) |
| Place of residence (N=1062) | | | |
| Pisa | 490 (46.1) | 429 (40.4) | 919 (86.5) |
| Tuscany | 57 (5.4) | 42 (4.0) | 99 (9.4) |
| Italy | 16 (1.5) | 14 (1.3) | 30 (2.8) |
| Abroad | 8 (0.8) | 6 (0.5) | 14 (1.3) |
| Civil status (N=836) | | | |
| Unmarried | 204 (24.4) | 121 (14.4) | 325 (38.8) |
| Married | 192 (22.9) | 194 (23.3) | 386 (46.2) |
| Widow/er | 51 (6.2) | 74 (8.8) | 125 (15.0) |

Table 3. Type of discharge in the whole sample and by gender.

| Discharge type | Males (N,%) | Females (N,%) | Total (N,%) |
|---|---|---|---|
| Trial discharge | 260 (25.0) | 243 (23.4) | 503 (48.4) |
| Asylum transfer | 165 (15.9) | 168 (16.2) | 333 (32.1) |
| Death | 66 (6.4) | 42 (4.0) | 108 (10.4) |
| Final discharge | 55 (5.3) | 24 (2.3) | 79 (7.6) |
| Other | 11 (1.1) | 5 (0.4) | 16 (1.5) |
| Discharge recorded | 557 (53.7) | 482 (46.3) | 1039 (100) |

Table 4. Diagnostic categories: gender comparison.

| Diagnostic category | Total N | Valid (%) | Gender | | $\chi^2$ | p |
|---|---|---|---|---|---|---|
| | | | N (%) | N% | | |
| | | | Males (482) | Females (339) | | |
| Epilepsy | 70 | 8.5 | 40 (8.3) | 30 (8.9) | 0.02 | .880 |
| Age Related Cognitive Impairments | 174 | 21.2 | 110 (22.8) | 64 (18.9) | 1.62 | .203 |
| Mood disorders | 278 | 33.9 | 123 (25.5) | 155 (45.7) | 35.38 | p<.001 |
| Cognitive impairments | 64 | 7.8 | 39 (8.1) | 25 (7.3) | 0.06 | .807 |
| Hysteria or neurasthenia | 61 | 7.4 | 28 (5.8) | 33 (9.7) | 3.91 | .048 |
| Dementia praecox or psychosis | 67 | 8.2 | 43 (8.9) | 24 (7.1) | 0.67 | .413 |
| Alcohol abuse related disorders | 93 | 11.3 | 89 (18.5) | 4 (1.2) | 57.49 | p< .001 |
| Other | 14 | 1.7 | 10 (2.1) | 4 (1.2) | 0.95 | .330 |

Table 5. Diagnostic categories: presence vs absence of asylum transfers.

| Diagnostic categories | Presence of asylum transfers n (row %) | $\chi^2$ | p |
|---|---|---|---|
| Epilepsy<br>Abs. (Total 751)<br>Pres. (Total 70) | <br>315 (41.9)<br>33 (47.1) | <br>0.512 | <br>.474 |
| Age related cognitive impairments<br>Abs. (647)<br>Prs. (174) | <br>261 (40.3)<br>87 (50.0) | <br>4.85 | <br>.028 |
| Mood disorders<br>Abs. (543)<br>Prs. (278) | <br>233 (42.9)<br>115 (41.4) | <br>0.122<br>.727 | |
| Cognitive impairments<br>Abs. (757)<br>Prs. (64) | <br>309 (40.8)<br>39 (60.9) | <br>8.974 | <br>.003 |
| Hysteria or neurasthenia<br>Abs. (760)<br>Prs. (61) | <br>332 (43.7)<br>16 (26.2) | <br>6.348<br>.012 | |
| Dementia praecox or psychosis<br>Abs. (754)<br>Prs. (67) | <br>314 (41.6)<br>34 (50.7) | <br>1.731 | <br>.188 |
| Alcohol<br>Abs.(728)<br>Prs. (93) | <br>328 (45.1)<br>20 (21.5) | <br>17.776 | <br>p<.001 |
| Other<br>Abs. (807)<br>Prs. (14) | <br>344 (42.6)<br>4 (28.6) | <br>0.612 | <br>.434 |

Abs. = Absence of diagnosis
Pres. = Presence of diagnosis

presence of asylum transfers resulted significantly associated with unmarried or widow civil status: unmarried or widowed patients were more often sent to the asylum than married patients [144 (44.9%) vs 138 (35.7%), $\chi^2$=5.82, p=.016].

Considering gender distribution by diagnosis we observe that the presence of Mood Disorders and of Hysteria or Neurasthenia correlate significantly with female patients [155 (45.7%) vs 123 (25.5%), $\chi^2$=35.38, p<.001 and 33 (9.7%) vs 28 (5.8%), $\chi^2$=3.906, p=.048 respectively], while the presence of disorders related to Alcohol Abuse Related Disorders correlates significantly with males [89 (18.5%) males vs 4 (1.2%) females, $\chi^2$=57.49, p<.001] (Table 5).

The patients transferred to asylums do not show a mean age significantly different from those who were not transferred (44.85 ± 19.83 vs 44.23 ± 18.99, p=.115).

The mean numbers of Subsequent Admissions to the Clinic and of the Days of Hospitalization are significantly higher in the group with presence of asylum transfers compared to those of the discharged ones (0.39 ± 0.74 vs 0.11 ± 0.40, p<.001 and 64.88 ± 48.04 vs 43.07 ± 47.51, p=.013 respectively) (Table 6).

Multiple logistic regression showed an increased likelihood of asylum transfer to be associated with Epilepsy (OR=3.38, CI 95%: 1.40-8.30), Age Related Cognitive Impairment (OR=4.24, CI 95%: 1.75-10.31), Mood Disorders (OR=2.44, CI 95%: 1.14-5.21), Cognitive Impairment (OR=8.15, CI 95%: 3.16-21.01), Dementia Praecox or Psychosis (OR=4.06, CI 95%: 1.62-10.14). Also, numbers of Subsequent Admission to the Clinic and Days of Hospitalization act as significant risk factors (OR=3.06, CI 95%: 2.07-4.52 and OR=1.008, CI 95%: 1.004-1.01 respectively). It should be noted how the odds ratio of 1.008 for Days of Hospitalization corresponds to a 24% increase of risk of asylum transfer for a difference of 30 days. Lastly, being married represented a protective factor (OR=0.48, CI 95%: 0.31-0.75) (Table 7).

Table 6. Age, number of hospitalizations and of subsequent admissions: presence vs absence of asylum transfers.

| Variable | Presence of asylum transfers (n; mean ±SD) | Absence of asylum transfers (n; mean ±SD) | t | p |
|---|---|---|---|---|
| Age (per year) | 423; 44.85±19.83 | 614; 44.23±18.99 | -0.51 | .115 |
| N. of subsequent admissions | 432; 0.39±0.74 | 633; 0.11±0.40 | -7.19 | p<.001 |
| Days of hospitalization | 423; 64.88±48.04 | 605; 43.07±47.51 | -7.19 | .013 |

Table 7. Multiple logistic regression model of variables affecting asylum transfers.

| Variable | B (SE) | OR | CI 95% | p |
|---|---|---|---|---|
| Epilepsy | 1.22 (0.46) | 3.38 | 1.40-8.30 | .008 |
| Age related cognitive impairment | 1.45 (0.45) | 4.24 | 1.75-10.31 | .001 |
| Mood disorders | 0.892 (0.39) | 2.44 | 1.14-5.21 | .021 |
| Cognitive impairment | 2.10 (0.48) | 8.15 | 3.16-21.01 | <.001 |
| Hysteria, neurasthenia | 0.09 (0.50) | 1.10 | 0.41-2.93 | .853 |
| Dementia praecox or psychosis | 1.40 (0.47) | 4.06 | 1.62-10.14 | .003 |
| Other | 0.89 (0.87) | 2.45 | 0.44-10-57 | .306 |
| Male/female | 0.38 (0.20) | 1.46 | 0.98-2.18 | .67 |
| Unmarried or widow/er vs married | -0.73 (0.23) | 0.48 | 0.31-0.75 | .001 |
| Rural vs urban | -0.10 (0.21) | 0.90 | 0.60-1.35 | .620 |
| Age (per year) | 0.01 (0.08) | 1.01 | 1.00-1.03 | 0.088 |
| N. of subsequent admissions | 1.12 (0.20) | 3.06 | 2.07-4.52 | <.001 |
| Days of hospitalization | 0.008 (0.002) | 1.008 | 1.004-1.01 | <.001 |
| K | -2.58 (0.06) | - | - | - |

Fox &Snell $R^2$ =.169; Nagelkerke $R^2$ =.228.
Multiple logistic regression correctly predicts 68.3% of subjects.

## DISCUSSION

The results of the present study provides evidence, for the years 1907-1913, to a little studied type of discharge rationale and a rather undescribed kind clinical practice, with particular attention to the low rates of asylum transfers. Only a third of patients were actually confined, while almost half of them received a trial discharge, and 7% of the sample was wholly discharged.

It should be noted how findings are limited to the regional context of Pisa; however, it is probably not exact to assume that the asylum has been everywhere the only and primary structure for psychiatric care[6]. While these structures were probably rather relevant, there are evidences of psychiatric care outside what could be considered a "typical" asylum long before deinstitutionalization. This particular population had both the possibility to be completely treated outside containment structures, regardless of social status. It is perhaps possible to detail the Clinic specific management.

Most of Clinic's patients were from Pisa, in particular, from the rural areas around the city. A rural place of residence leads to hypothesize that, from a demographic point of view, most patients must have been from the working class. It should be noted that psychiatric treatments in the Clinic were free of charge for those who proved to have little or no wealth. Also, the range of spatial proximity to the Clinic itself is significant. People of both sexes sought care in roughtly equal numbers.

Our data clearly shows how a large majority of patients was not sent to an asylum after the treatment, and that a considerable number (17%) of them sought care on subsequent occasions over the course of the years that we have analyzed here. It also should be noted that the asylum itself appeared in our data not as a structure of endless confinement: 1.2% of all patients, after a first period of treatment in Pisa, were transferred to the asylum of Volterra and then, after being released from there, were hospitalized again in Pisa. Such data suggests a very specific kind of asylum management which is also elsewhere described[6,29], and outlines a complex set of dynamics between public mental health institutions, whose analysis by various authors is currently ongoing[30], but a coherent synthesis – while desirable – is yet to come.

Being an academic structure, Pisa's Clinic did not operate according to reclusive criteria. More likely, it performed a "sieve" function, monitoring the patient population and selecting candidates for the asylum of Volterra, in order to prevent overcrowding of this facility. Only a relative minority of patients (32.1% of the total) was sent to the asylum in the observed period. The spatial proximity of the Clinic to the patient's place of residence allowed to discharge all other cases that could be managed, with little risk, using brief hospitalizations.

Since Pisa's Clinic could define those who could be discharged and those who were in need of an asylum transfer, it is perhaps possible to outline the rationale of this decision.

The main factors seem to involve any kind of cognitive impairment, the number of resources needed by the patient and the eventual availability of a caregiver. The more impaired the patient was (from a cognitive point of view), the more likely asylum transfer became. Age Related Cognitive Impairment and Cognitive Impairment significance as risk factor ($p<.001$) are in this framework rather interesting. In fact, in Chi-Square tests presence of Age Related Cognitive Impairment and of Cognitive Impairments correlated significantly with presence of asylum transfers, probably outlining how the management of cognitively impaired individuals had proved difficult in the first years of the 20th century. Different considerations arise for Mood Disorders. While these patients risk for asylum transfer obtained by multiple logistic regression was significantly higher than those affected by disorders related to Alcohol Abuse Related Disorders ($p=.021$), still the majority of these patients (163 discharge vs 115 transfers) were not sent to the asylum. Moreover, Chi-Square test between presence of Mood Disorders and presence of asylum transfer did not outline a significant relationship between presence of Mood Disorder and presence of asylum transfer. A similar consideration could be made with patients affected by Epilepsy. It should be noted that presence of Hysteria or Neurasthenia and Alcohol Abuse Related Disorders are significantly correlated in Chi-Square tests with absence of asylum transfer, thus outlining a population of patients (154) who were significantly (and thus, probably, preferably) treated outside the asylum. Even for patients affected by very impairing illnesses, from the group of Dementia Praecox or Psychosis, asylum transfer was not much higher than other kinds of discharge, and Chi-Square test failed to outline a significant relationship between the presence of this kind of diagnosis and the presence of asylum transfer.

From this point of view, the clinical rationale appears to not rely wholly on diagnostic criteria, but also on social and demographic ones. As results from both Chi square tests and logistic regression suggest, being married is an effective protective factor, since it probably involves the presence of an available caregiver. On the other hand, Subsequent Admissions and Days of Hospitalization behave as risk factors.

Early 20th century Italian nosography is hardly commensurable with that which has been described in DSM since 1980, and the historical reasons for survival or change of a diagnosis are elsewhere reported[31]. In our data it is common to observe how different entries of the same patient provide different diagnoses, from the different nosographic systems of that age. Thus, while the diagnostic definitions in these clinical records are coherent with the available literature about late 19th and early 20th century Italian nosography[32], yet they proved to be problematic from a statistical point of view[33]. The absence of a standard led to the huge differentiation of diagnoses we have witnessed in the source materials. This is the main reason behind our use of diagnostic categories. The results of the present study showed that patients were relevantly affected by disorders from the Mood Disorder category. Most records are labeled "Maniacal depressive phrenosis". "Mania" and "Melancholia" (sometime reported also as "Depression") are also present, both as simple annotations or as adjectives for "phrenosis". There is a large spectrum of psychopathologic labels in this category (including the rather specific "Mild Hypomaniacal Phrenosis"), suggesting how the psychiatrists of Pisa dedicated peculiar attention to descriptions of condition from the Mood Disorder category in their records. However, data on suicide, annotated as "Suicidal tendencies", are scant. This is probably due to the nature of clinical records, where suicidal behavior or ideation were mostly included as some kind of warning near the name and not as a label under the column for diagnosis. Age Related Cognitive Impairment is the second cause for

hospitalization: this category contains the rather vague diagnoses of "presbiophrenia" and "senile dementia", the more precise "arteriosclerotic dementia" and – from 1912 onward – also "Alzheimer dementia". The third cause of hospitalization is represented by Alcohol Abuse Related Disorders: most often recorded as "Alcoholic phrenosis", "Chronic Alcoholism" or with the simple annotation "Alcohol.". Among the least frequent disorders, we find what today we would consider mostly neurological disorders, such as Epilepsy and Cognitive Impairment, both congenital ("idiocy") or acquired (i.e. meningitis). Cases of Dementia Praecox or Psychosis are slightly more frequent than those of Hysteria or Neurasthenia. It should be noted that while female patients were diagnosed with both "hysterical phrenosis" and "neurasthenic phrenosis", according to the Clinic records, males suffered only from "neurasthenic phrenosis".

More that the simple diagnostic label, these results outline the characteristic of those who were most often considered as a "chronic patient": a likely candidate for asylum treatment in early 20th century Pisa. This profile included: need of caring times longer than two months, frequent hospitalizations, low family availability and caregivers (unmarried and widowed). It has not been possible to outline any kind of "social dangerousness" criteria on asylum transfers, probably because "dangerous" patients were seldom taken to a University Clinic for treatment. It is at this point interesting to analyze a discharge certificate from 1908. "Even if the patient is dangerous for himself and the others" – the certificate reads – the physician has "released him under the patronage of the wife".

Looking at the Clinic of Pisa asylum transfers, this procedure appears almost as a mandatory nursing home confinement for those patients who suffered from cognitive impairments (whether senile, congenital or acquired) and for those who, with no available caregivers, could not safely live alone. As Age Related Cognitive Impairments and Cognitive Impairments make up a rather consistent sample the population of Pisa's Clinic, our data suggests that the availability of patients' families for caregiving (presence of a spouse, less hospitalizations, shorter hospitalization time) probably played a pivotal role in defining the discharge outcome.

## CONCLUSIONS

The data from the present study have provided a picture of psychiatric practice in Pisa that is deeply interwoven with the specific institutional context of this area over a span of years: thus, it is to be expected that other regional realities might have a very different profile, as some other studies suggest[33].

The aim of the Clinic seems to have been threefold: identification of mental and nervous illness in the nearby population, legal tutelage of both the patient and society and a monitoring function of the patient's social integration. Subjects were admitted mainly from nearby areas, requesting (or being sent for) treatment. This process positioned them inside the bureaucratic mechanism of psychiatric care. Then, the Clinic tried to neutralize the social and legal problems of mental illnesses by safeguarding both the patients and the social body during the most acute phases of the illness. During this rather short hospitalization, the personnel of the Clinic attempted to identify a caregiver, in most cases a close member of the family, who would take legal responsibility of the patient in order to avoid the need to confine the patient himself in an asylum. As a last resort, when all else failed due to the patient being too isolated from social peers or too "chronic" (for early 20th century standards), asylum transfer was prescribed. While this holds statistically true in our sample, it should be noted that every individual case has its story: and as the discharge rationale was not only based on diagnosis but also on individual contingencies as discussed above, as it follows demographic and epidemiologic populations allowing at the same time some room for notable exceptions. Psychiatric care in the Clinic of Pisa was mainly oriented towards treating acute manifestations, and then to holding a relative or member of the family responsible for the patient: asylum transfers, while sometimes reversible into a second clinical hospitalization, seem to have been less preferred by Pisa's phreniatrists than the "trial discharge" option. In most cases, asylum transfers were prescribed to those patients without a caregiver and with invasive cognitive impairments, whatever the cause. It is interesting to note that from this point of view, clinical practice was not wholly compliant with Giolitti's law 36, in the sense that did not take into account only diagnostic criteria; but, as has been already pointed out in other works, this was not an uncommon situation in 20th century Italian psychiatry[34]. However, from a different point of view, this mechanism was useful in order to avoid overcrowding of the other regional asylum facilities, whose numbers had been on the rise for a long span of years[9]. It should be noted how facility overcrowding has been a constant issue in Italian health care history, and how deinstitutionalization approaches have been debated from early 19th century to contemporary times[35,36].

The clinical rationale our data suggests is in this sense very close to some other historical reconstructions, and our findings could provide statistical support for this kind of study[8,16], and also provide useful materials to debates over deinstitutionalization[35,37]. In particular, the Clinic of Pisa seems to have somewhat filtered admissions to the asylum of Volterra (*Frenocomio S. Girolamo*), and further analyses are required to detail the mutual relationship between these two different centers for mental health, which probably had different aims. At the present stage of the work, it could be hypothesized that while Pisa managed a majority of patients that could be safely treated with short hospitalizations, Volterra mainly took care of the most chronic ones, in a dynamic relationship where patients could be moved between the two structures according to these criteria. As a closing remark, it should be noted that broader inquiries are desirable to outline the role of all the Clinics of the early 20th century in Italy: Pisa's Clinic was in fact not an isolated case, but a structure analogous to several others in different areas of the country. Finally, it seems that there was a population of patients that was never treated in reclusive structures. While present data have shed some light on this subject, still little is known of this population, especially in statistical terms.

Further data and analysis are required to deepen our knowledge of the history of psychiatry in Pisa, and - with a broader scope - of the clinical practice of mental health in early 20th century Europe.

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