**The quality of mental health care delivered to patients with schizophrenia and related disorders in the Italian mental health system. The QUADIM project**

**A multi-regional Italian investigation based on healthcare utilization databases.**

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**SUPPLEMENTARY MATERIAL**

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**Supplementary Table S1.** Service interventions, treatments and activities delivered by Community Mental Health Centers (CMHCs) and Day Centers (DCs), and their classification in the Italian Mental Health Information System.

|  |  |
| --- | --- |
| **OUTPATIENT VISITS** (delivered by territorial and day-care facilities of CMHCs) | **Italian Mental Health Information system codes** |
|  |  |
| **Generic care** |  |
| Psychiatric visit | 01 |
| Individual meeting with a professional | 03 |
| Consultation | 04 |
| Medico-legal assessment | 05 |
| Standardized psychological assessments using test | 06 |
| Drug administration | 11 |
| Meeting with relatives | 12 |
| Staff Meeting | 15 |
| Healthcare facilities stay | 20 |
| Support to daily living activity | 24 |
| Network interventions | 26 |
| **Psychosocial interventions** |  |
| Individual living skills training | 16 |
| Group living skills training | 17 |
| Individual socialization | 18 |
| Group of socialization | 19 |
| Individual bodywork (i.e., expressive, practical manual and motor intervention), leisure activities | 21 |
| Group bodywork (i.e., expressive, practical manual and motor intervention), leisure activities | 22 |
| Vocational training | 23 |
| Assistance with financial and welfare procedures; leisure activities | 25 |
| **Psychotherapy** |  |
| Psychological visit | 02 |
| Individual psychotherapy | 07 |
| Couple psychotherapy | 08 |
| Family psychotherapy | 09 |
| Group psychotherapy | 10 |
| **Psychoeducation** |  |
| Single family psychoeducation | 13 |
| Multifamily group psychoeducation | 14 |

**Supplementary Table S2.** Diagnostic and therapeutic (ICD-9-CM, ICD-10, and ATC) codes used in the current study for drawing records and fields from Healthcare Utilization databases.

|  |  |
| --- | --- |
| **SCHIZOPHRENIA** | |
|  | **ICD-10 codes**  **(Lombardy)** |
| Schizophrenia | F20.\* |
| Schizotypal disorder | F21.\* |
| Delusional disorders | F22.\* |
| Brief psychotic disorder | F23.\* |
| Shared psychotic disorder | F24.\* |
| Schizoaffective disorders | F25.\* |
| Other psychotic disorder not due to a substance or known physiological condition | F28.\* |
| Unspecified psychosis not due to a substance or known physiological condition | F29.\* |
|  | **ICD-9-CM codes**  **(Emilia-Romagna, Lazio and Palermo)** |
| Schizophrenic disorders | 295.\* |
| Delusional disorders | 297.\* |
| Other nonorganic psychoses | 298.2, 298.3, 298.8, 298.9 |
| Psychogenic paranoid psychosis | 298.4 |
| **DRUGS** | |
|  | **ATC codes** |
| Antipsychotic agents | N05A (excluded N05AN) |
| **OUTPATIENT PROCEDURES** | |
|  | **National procedure codes** |
| Psychiatric visit | 94.12.1, 94.19.1 |
| Psychological interview | 94.09 |
| Standardized psychological assessments using test | 94.01.1, 94.08.3, 94.08.4, 94.08.5, 94.08.6 |
| Couple/Family psychotherapy | 94.3, 94.42 |
| Group psychotherapy | 94.44 |
| Glycated haemoglobin | 90.27.1, 90.28.1 |
| Lipid profile | 90.14.1, 90.14.3, 90.43.2 |

**Supplementary Table S3.** Baseline characteristics of prevalent patients with Schizophrenia and related disorders treated by DMHs of four Italian areas (Lombardy, Emilia Romagna and Lazio Regions and Province of Palermo) and in the whole sample. Italy, QUADIM-MAP projects, Italy, 2015-2016

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Lombardy  (N=36,076) | Emilia-Romagna  (N=17,230) | Palermo  (N=5700) | Lazio  (N=11,580) | All together  (N=70,586) |
|  |  |  |  |  |  |
| **Gender** |  |  |  |  |  |
| Men | 19,542 (54.2%) | 8888 (51.6%) | 3376 (59.2%) | 6541 (56.5%) | 38,347 (54.3%) |
| Women | 16,534 (45.8%) | 8342 (48.4%) | 2324 (40.8%) | 5039 (43.5%) | 32,239 (45.7%) |
| **Age (years)** |  |  |  |  |  |
| Mean (SD) | 51.1 (14.4) | 51.6 (14.8) | 48.8 (14.4) | 49.5 (13.8) | 50.3 (14.3) |
| 18-25 | 1341 (3.7%) | 662 (3.9%) | 310 (5.4%) | 505 (4.4%) | 2818 (4.0%) |
| 26-40 | 7069 (19.6%) | 3331 (19.3%) | 1353 (23.7%) | 2362 (20.4%) | 14,115 (20.0%) |
| 41-49 | 8628 (23.9%) | 4013 (23.3%) | 1395 (24.5%) | 3083 (26.6%) | 17,119 (24.3%) |
| ≥50 | 19,038 (52.8%) | 9224 (53.5%) | 2642 (46.4%) | 5630 (48.6%) | 36,534 (51.7%) |
| **Education years** |  |  |  |  |  |
| 0-5 | 9293 (25.8%) | 3418 (19.8%) | 1839(32.3%) | 1601 (13.8%) | 16,151 (22.9%) |
| 6-8 | 15,313 (42.4%) | 6842 (39.7%) | 3670 (64.4%) | 4793 (41.4%) | 30,618 (43.4%) |
| 9-13 | 8324 (23.1%) | 4716 (27.4%) | 0 (0%) | 3504 (30.3%) | 16,544 (23.4%) |
| ≥14 | 1329 (3.7%) | 940 (5.5%) | 186 (3.3%) | 579 (5.0%) | 3034 (4.3%) |
| *Missing data* | 1817 (5.0%) | 1314 (7.6%) | 5 (0.1%) | 1103 (9.5%) | 4239 (6.0%) |
| **Job condition** |  |  |  |  |  |
| Employed | 23,463 (65.0%) | 3608 (20.9%) | 607 (10.6%) | 2438 (21.1%) | 30,116 (42.7%) |
| Unemployed | 4156 (11.5%) | 8375 (48.6%) | 4477 (78.5%) | 8207 (70.9%) | 25,215 (35.7%) |
| Invalid | 6460 (17.9%) | 1976 (11.5%) | 611 (10.7%) | 22 (0.2%) | 9069 (12.8%) |
| *Missing data* | 1997 (5.5%) | 3271 (19.0%) | 5 (0.1%) | 913 (7.9%) | 6186 (8.8%) |
| **Family arrangement** |  |  |  |  |  |
| Living with family | 26,774 (74.2%) | 12,464 (72.3%) | 1977 (34.7%) | NA | 41,215 (69.8%) |
| Living in community | 1972 (5.5%) | 979 (5.7%) | 375 (6.6%) | NA | 3326 (5.6%) |
| Living alone | 5364 (14.9%) | 2284 (13.3%) | 352 (6.2%) | NA | 8000 (13.6%) |
| *Missing data* | 1966 (5.4%) | 1503 (8.7%) | 2996 (52.6%) | NA | 6465 (11.0%) |
| **Marital status** |  |  |  |  |  |
| Unmarried | 21,632 (60.0%) | 10,140 (58.9%) | 3588 (62.9%) | 7786 (67.2%) | 43,146 (61.1%) |
| Married | 8972 (24.9%) | 3823 (22.2%) | 1483 (26.0%) | 2119 (18.3%) | 16,397 (23.2%) |
| Separated | 1558 (4.3%) | 681 (4.0%) | 231 (4.1%) | 582 (5.0%) | 3052 (4.3%) |
| Divorced | 1402 (3.9%) | 735 (4.3%) | 122 (2.1%) | 319 (2.8%) | 2578 (3.7%) |
| Widow/er | 1182 (3.3%) | 592 (3.4%) | 191 (3.4%) | 213 (1.8.%) | 2178 (3.1%) |
| *Missing data* | 1330 (3.7%) | 1259 (7.2%) | 85 (1.5%) | 561 (4.8%) | 3235 (4.6%) |
| **Diagnosis** |  |  |  |  |  |
| F2 (Schizophrenia, schizotypal and delusional disorders) | 3417 (9.5%) | 0 (0%) | 0 (0%) | 0 (0%) | 3417 (4.8%) |
| F20 (Schizophrenia) | 14,375 (39.8%) | 7752 (45.0%) | 4107 (72.1%) | 6334 (54.7%) | 32,568 (46.2%) |
| F21 (Schizotypal disorder) | 1207 (3.3%) | 190 (1.1%) | 145 (2.5%) | 242 (2.1%) | 1784 (2.5%) |
| F22 (Delusional disorders) | 4278 (11.9%) | 3323 (19.3%) | 176 (3.1%) | 1048 (9.1%) | 8825 (12.5%) |
| F23 (Brief psychotic disorder) | 4433 (12.3%) | 1618 (9.4%) | 381 (6.7%) | 1229 (10.6%) | 7661 (10.9%) |
| F24 (Shared psychotic disorder) | 69 (0.2%) | 19 (0.1%) | 0 (0%) | 16 (0.1%) | 104 (0.1%) |
| F25 (Schizoaffective disorders) | 4352 (12.1%) | 2925 (17.0%) | 381 (6.7%) | 1644 (14.2%) | 9302 (13.2%) |
| F28 (Other nonorganic psychotic disorders) | 442 (1.2%) | 0 (0%) | 0 (0%) | 0 (0%) | 442 (0.6%) |
| F29 (Unspecified nonorganic psychosis) | 3503 (9.7%) | 1403 (8.1%) | 510 (8.9%) | 1067 (9.2%) | 6483 (9.2%) |

DMH: Department of Mental Health

**Supplementary Table S4.** Baseline characteristics of patients with Schizophrenia and related disorders newly taken-in-care by DMHs of four Italian areas (Lombardy, Emilia Romagna and Lazio Regions and Province of Palermo) and in the whole sample. Italy, QUADIM-MAP projects, Italy, 2015-2016

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Lombardy  (N=637) | Emilia-Romagna  (N=459) | Palermo  (N=152) | Lazio  (N=504) | All together  (N=1752) |
|  |  |  |  |  |  |
| **Gender** |  |  |  |  |  |
| Men | 429 (67.3%) | 290 (63.2%) | 112 (73.7%) | 317 (62.9%) | 1148 (65.5%) |
| Women | 208 (32.7%) | 169 (36.8%) | 40 (26.3%) | 187 (37.1%) | 604 (34.5%) |
| **Age (years)** |  |  |  |  |  |
| Mean (SD) | 29.0 (6.7) | 29.0 (6.5) | 29.5 (6.4) | 30.4 (6.5) | 29.5 (6.5) |
| 18-25 | 227 (35.6%) | 160 (34.9%) | 52 (34.2%) | 139 (27.6%) | 578 (33.0%) |
| 26-40 | 410 (64.4%) | 299 (65.1%) | 100 (65.8%) | 365 (72.4%) | 1174 (67.0%) |
| **Education years** |  |  |  |  |  |
| 0-5 | 252 (39.6%) | 24 (5.2%) | 19 (12.5%) | 31 (6.2%) | 326 (18.6%) |
| 6-8 | 30 (4.7%) | 168 (36.6%) | 129 (84.9%) | 202 (40.1%) | 529 (30.2%) |
| 9-13 | 152 (23.9%) | 161 (35.1%) | 0 (0%) | 175 (34.7%) | 488 (27.9%) |
| ≥14 | 134 (21.0%) | 43 (9.4%) | 3 (2.0%) | 32 (6.3%) | 212 (12.1%) |
| *Missing data* | 69 (10.8%) | 63 (13.7%) | 1 (0.7%) | 64 (12.7%) | 197 (11.2%) |
| **Job condition** |  |  |  |  |  |
| Employed | 370 (58.1%) | 107 (23.3%) | 14 (9.2%) | 106 (21.0%) | 597 (34.1%) |
| Unemployed | 85 (13.3%) | 252 (54.9%) | 134 (88.2%) | 342 (67.9%) | 813 (46.4%) |
| Invalid | 105 (16.5%) | 4 (0.9%) | 3 (2.0%) | 0 (0%) | 112 (6.4%) |
| *Missing data* | 77 (12.1%) | 96 (20.9%) | 1 (0.7%) | 56 (11.1%) | 230 (13.1%) |
| **Family arrangement** |  |  |  |  |  |
| Living with family | 491 (77.1%) | 351 (76.5%) | 70 (46.1%) | NA | 912 (73.1%) |
| Living in community | 34 (5.3%) | 19 (4.1%) | 3 (2.0%) | NA | 56 (4.5%) |
| Living alone | 50 (7.8%) | 25 (5.4%) | 3 (2.0%) | NA | 78 (6.2%) |
| *Missing data* | 62 (9.7%) | 64 (13.9%) | 76 (50.0%) | NA | 202 (16.2%) |
| **Marital status** |  |  |  |  |  |
| Unmarried | 461 (72.4%) | 322 (70.2%) | 125 (82.2%) | 406 (80.6%) | 1314 (75.0%) |
| Married | 100 (15.7%) | 64 (13.9%) | 19 (12.5%) | 42 (8.3%) | 225 (12.8%) |
| Separated | 12 (1.9%) | 9 (2.0%) | 1 (0.7%) | 10 (2.0%) | 32 (1.8%) |
| Divorced | 5 (0.8%) | 6 (1.3%) | 0 (0%) | 1 (0.2%) | 12 (0.7%) |
| Widow/er | 2 (0.3%) | 0 (0%) | 0 (0%) | 1 (0.2%) | 3 (0.2%) |
| *Missing data* | 57 (8.9%) | 58 (12.6%) | 7 (4.6%) | 44 (8.7%) | 166 (9.5%) |
| **Diagnosis** |  |  |  |  |  |
| F2 (Schizophrenia, schizotypal and delusional disorders) | 66 (10.4%) | 0 (0%) | 0 (0%) | 0 (0%) | 66 (3.8%) |
| F20 (Schizophrenia) | 121 (19.0%) | 83 (18.1%) | 42 (27.6%) | 197 (33.1%) | 413 (23.6%) |
| F21 (Schizotypal disorder) | 19 (3.0%) | 5 (1.1%) | 7 (4.6%) | 5 (1.0%) | 36 (2.0%) |
| F22 (Delusional disorders) | 51 (8.0%) | 112 (24.4%) | 6 (3.9%) | 55 (10.9%) | 224 (12.8%) |
| F23 (Brief psychotic disorder) | 162 (25.4%) | 128 (27.9%) | 53 (34.9%) | 109 (21.6%) | 452 (25.8%) |
| F24 (Shared psychotic disorder) | 6 (1.0%) | 1 (0.2%) | 0 (0%) | 2 (0.4%) | 9 (0.5%) |
| F25 (Schizoaffective disorders) | 25 (3.9%) | 29 (6.3%) | 12 (7.9%) | 62 (12.3%) | 128 (7.3%) |
| F28 (Other nonorganic psychotic disorders) | 13 (2.0%) | 0 (0%) | 0 (0%) | 0 (0%) | 13 (0.7%) |
| F29 (Unspecified nonorganic psychosis) | 174 (27.3%) | 101 (22.0%) | 32 (21.1%) | 104 (20.7%) | 411 (23.5%) |

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